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UNDERGRADUATE STUDENTS

The undergraduate experience at Rice is one of intense personal interactions. The close sense of community created by individual placement in residential colleges is extended to warm intellectual and personal relationships with members of the Rice faculty. "Inside the hedges," the beautifully designed, spacious campus is small enough to encourage a sense of belonging even as students engage with the lively cultural currents of one of the country's largest cities.

The academic philosophy at Rice is to offer students beginning their college studies both a grounding in the broad fields of general knowledge and the chance to concentrate on very specific academic and research interests. By completing the required distribution courses, all students gain an understanding of the literature, arts, and philosophy essential to any civilization, a broad historical introduction to thought about human society, and a basic familiarity with the scientific principles underlying physics, chemistry, and mathematics. Building on this firm foundation, students then concentrate on studies in their major areas of interest.

Rice University is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools (SACSCOC), the recognized regional accrediting body in the 11 U.S. Southern states.

Rice grants eleven undergraduate degrees. The majority of undergraduates earn the Bachelor of Arts (BA) or the Bachelor of Science (BS), in a range of majors. The BS degree is offered in a number of science fields and in various fields of engineering. The George R. Brown School of Engineering offers seven BS degrees, including BS degrees in Computer Science (BSCS) and in Materials Science and NanoEngineering (BSMSNE), with the five programs leading to the BS degrees in Bioengineering (BSBE), Civil Engineering (BSCSE), Chemical Engineering (BSChE), Electrical Engineering (BSEE) and Mechanical Engineering (BSME) being accredited by the Engineering Accreditation Commission of ABET, https://www.abet.org. The Shepherd School of Music also offers a Bachelor of Music (BMus), and the School of Architecture an undergraduate professional Bachelor of Architecture (BArch) degree.

Undergraduates may major in any of the numerous fields provided by the various schools of architecture, humanities, music, social sciences, natural sciences, and engineering. To accommodate the full range of individual student interests, specific interdepartmental majors and minors also are available, as are various departmental minors and selectively approved area majors. In certain departments, students also have the option of overlapping the upper-level course work of their undergraduate degree with those basic requirements necessary to earn an advanced degree in the field, considerably reducing the time required to complete their graduate studies. The Shepherd School of Music offers a dual degree in music (BMus/MMus) that may be completed with a fifth year of study. The BA–BArch professional track is the primary course of study for undergraduate architectural study at Rice. All students who successfully apply to the university and the School of Architecture enter into this program. This program leads to a degree of Bachelor of Arts with a major in Architecture (BA) after four years, followed immediately by the professional Bachelor of Architecture (BArch) degree sequence, which consists of a one year internship program (Preceptorship) and one year of advanced coursework.

Through Rice's Education Program, students interested in teaching in secondary schools may complete a program of teacher training, leading to teacher (TEA) certification in the state of Texas, while pursuing their Rice degree. Students interested in satisfying the requirements for admission to medical, dental, or law school should consult with the Office of Academic Advising for completing these programs in conjunction with the various majors.

Academic Opportunities

- Auditing Courses (p. 11)
- Majors, Minors, and Certificates (p. 11)
- Non-Traditional Coursework (p. 13)
- Study Abroad (p. 13)
- Undergraduate Degree Chart (p. 14)
- Undergraduate Degrees (p. 16)
- Undergraduate - Graduate Concurrent Enrollment (p. 17)
- Unique Programs (p. 17)

Auditing Courses

During the fall and spring semesters, currently enrolled degree-seeking Rice students, who are registered for at least one course for credit, may audit one or more courses at Rice without charge by securing permission of the instructor and by registering as an auditor with the Office of the Registrar. During the summer sessions, enrolled Rice students may audit one or more courses at Rice at the cost of the auditor fee for Rice alumni (see Cashier's website [https://cashier.rice.edu]).

Upon completion, the audited course will appear on the student's transcript with a grade of either 'AUD' or 'NC'. As noted in Grades (p. 24), instructors report the AUD grade in those instances where the auditing student has met the audit requirements of the course as defined by the instructor. A grade of NC (No Credit) is reported in instances where the auditing student has not met the audit requirements of the course as defined by the instructor.

There are no credit hours associated with audited courses, and auditing a course does not affect a student's GPA. Requests to audit a class or to change from audit to credit or vice versa must be done by the dates and deadlines documented in the posted Academic Calendar (see Academic Calendar [https://registrar.rice.edu/calendars/]).

Majors, Minors, and Certificates

Undergraduate Majors

To receive a bachelor's degree, a student must complete the requirements for at least one major. Rice offers majors in many fields. Within some majors, students have the choice of a particular area of concentration. Students also may choose to fulfill the requirements for more than one major; such majors do not necessarily need to be in related fields. Because majors are part of degree programs, students should pay particular attention to the major’s corresponding degree. In some instances, the requirements for a major may differ depending on the degree and major combination the student is pursuing. As an example, the major requirements for a Computer Science major pursuing the BA degree differ from those of a Computer Science major pursuing the BSCS degree. When a student formally declares a major, they should declare both the degree and major combination that they are pursuing. The process for declaring majors appears in the Declaring Majors or Area Majors sections below.

More detailed information on the academic majors described below may be found in the corresponding school or Programs of Study.
sections, or by contacting the department. Additional information on degrees and majors, including some maximum total hours limits for majors, can be found at Undergraduate Degrees (p. 16). Other helpful information on dual degrees and multiple majors may be found at the Major, Minors, and University Certificates (https://registrar.rice.edu/students/majors_minors/#dual) page of the Office of the Registrar’s website.

**School of Architecture**

Students admitted to the university as architecture majors must first complete four years of the BA program (architecture major) before applying to the BArch program in their senior year. If admitted, they are assigned a preceptorship with an architectural firm for a one-year period, after which they return to Rice to complete the BArch degree program. The School of Architecture also offers a BA in Architectural Studies, which provides a foundation for graduate level study of architecture and/or pursuit of other fields. More information on this academic school, its departments and programs can be found at: https://ga.rice.edu/programs-study/departments-programs/architecture/ (https://ga.rice.edu/programs-study/departments-programs/architecture/)

**George R. Brown School of Engineering**

Rice offers majors in bioengineering, chemical and biomolecular engineering, civil and environmental engineering, computational and applied mathematics, computer science, electrical and computer engineering, materials science and nanoengineering, mechanical engineering, and statistics. These programs lead to either the BA or the BS degree and may qualify students for further graduate study. More information on this academic school, its departments and programs can be found at: https://ga.rice.edu/programs-study/departments-programs/engineering/ (https://ga.rice.edu/programs-study/departments-programs/engineering/)

**School of Humanities**

Students may declare majors in art history, classical studies, English, European studies, French studies, German studies, Spanish and Portuguese, history, philosophy, religion, and visual and dramatic arts. Interdisciplinary majors are available in ancient mediterranean civilizations, Asian studies, Latin American studies, medieval and early modern studies, and the study of women, gender, and sexuality. More information on this academic school, its departments and programs can be found at: https://ga.rice.edu/programs-study/departments-programs/humanities/ (https://ga.rice.edu/programs-study/departments-programs/humanities/)

**Shepherd School of Music**

Music students may opt for either a BA or a Bachelor of Music (BMus) degree in performance, composition, music history, and music theory. Students who pass a special qualifying examination may elect an honors program that leads to the simultaneous awarding of the BMus and Master of Music (MMus) degrees after five years of study. More information on this academic school, its departments and programs can be found at: https://ga.rice.edu/programs-study/departments-programs/music/ (https://ga.rice.edu/programs-study/departments-programs/music/)

**Wiess School of Natural Sciences**

All natural sciences departments, including biosciences, chemistry, earth science, kinesiology, mathematics, neuroscience, and physics and astronomy offer programs leading to the BA degree. BS degrees are offered in some departments. Majors include astronomy, astrophysics, biochemistry and cell biology, biological sciences, kinesiology, chemical physics, chemistry, earth science, ecology and evolutionary biology, environmental studies, mathematics, and physics. Students also may elect double majors combining one of the programs in natural sciences with another science, a humanities discipline, or an engineering field. More information on this academic school, its departments and programs can be found at: https://ga.rice.edu/programs-study/departments-programs/natural-sciences/ (https://ga.rice.edu/programs-study/departments-programs/natural-sciences/)

**Declaring Majors, Minors, and Certificates**

Students declare a major, minor, or certificate via a Declaration Form. The department chair or designee must sign the form acknowledging the declaration. The department will counsel the student about the requirements that must be met to complete the major and the likelihood the student will be able to meet them. If the department believes a student is not well prepared for success in its major (or minor, or certificate), it may express its reservations on the form and/or propose a specific course of study to help the student improve his or her background. No department or program, except the School of Architecture and Shepherd School of Music, may refuse to admit an undergraduate into its program unless specific curricular conditions for such refusals are included in the relevant description of the program requirements, or in cases of resource limitations. Students may not obtain both a BA and a BS in the same major.

Students are encouraged to declare an official major as soon as they have decided on it so that a major advisor can be assigned. Students may declare a major at any time up to, before, or during the spring semester of their second year at Rice. They will not be permitted to register for the fall semester of their third year without having declared a major. The major declaration deadline is listed in the Academic Calendar (https://registrar.rice.edu/calendars/) each year. (Transfer students should declare within their first year or before reaching junior level status.) Students are always free to change their major by completing the Change of Major form. However, such a change may entail one or more additional semesters at the university. Area majors are an exception to this rule and must be declared by the fourth semester before graduation (see Area Majors below).

Some majors provide students an opportunity to declare a major concentration. Major concentrations are formally recognized subfields of study within a major, and they are represented by a coordinated set of courses emphasizing a subfield in that program. For those majors with approved concentrations, the major concentration is listed on the student’s academic transcript as an element of the official curriculum. Additionally, some majors allow for areas of specialization. Areas of specialization are pre-specified collections of elective courses that, when taken together, cover particular areas of specialization within a major
or major concentration. These can be viewed as an advising strategy to assist students in choosing electives. An area of specialization is not an academic credential and is not listed on the student’s academic transcript.

Students may declare a minor only after they have first declared a major. The declaration of minor process is identical to that of majors. Students may not major and minor in the same subject.

Additionally, students may declare their intent to pursue a university certificate only after they have first declared a major. The declaration of intent to pursue a university certificate process is identical to that of majors.

Once a student declares a major, minor, or certificate, the title of the major, minor, or university certificate is noted on the student’s transcript, and a faculty advisor in the appropriate department or program is assigned. To gain full benefit of departmental or program course offerings, students should meet regularly with faculty advisors.

To assess progress toward degree requirements, students should:

1. monitor their Degree Works degree audits (via ESTHER) to review progress toward degree requirements; and
2. meet regularly with their faculty advisors to review progress toward completion of major, minor, university certificate, and degree requirements.

For instructions on how to declare a major, minor, or certificate in ESTHER, visit the Major, Minors, and University Certificates page of the Office of the Registrar’s website.

**Area Majors**

Students with well-defined needs that are not met by established departmental or interdisciplinary majors may propose an area major. Area majors combine courses from more than one department into a cohesive plan of original study that is equivalent in quality and rigor to a traditional major.

Area majors are rare and limited by the available academic resources and must be distinct from other majors at Rice. They differ from double majors, which must conform to the requirements of both departments. An area major constitutes a single major with specific requirements that include courses from two or more departments. No course in an area major may be used to fulfill the requirements of an additional major, minor, or a certificate, and students with area majors must still meet all the other university graduation requirements.

Students initiate an area major after first consulting with faculty advisors from each of the departments involved. Once support has been obtained from these faculty advisors, students should consult the Office of Academic Advising (OAA) which serves as a liaison to the Committee on the Undergraduate Curriculum (CUC). Students work closely with each faculty advisor to design a comprehensive and substantial course of study and to decide on an appropriate title. This course of study must be formulated in a written proposal. Each faculty advisor and the OAA must sign off on the plan before submission to the chair of the CUC. The CUC determines final approval. As part of the review process, the CUC consults chairs of the involved departments to confirm that courses necessary for successful and timely completion of the major will be offered. If approved, the OAA officially certifies the area major plan to the Office of the Registrar and goes on to oversee the major on behalf of the faculty advisors. Any change in the area major requirements needs the approval of both the faculty advisors and the CUC.

Students may not propose an area major if they are within three semesters of graduation unless the Committee on Examinations and Standing rules that exceptional circumstances warrant this action. Under no circumstances may students propose an area major in their final semester before graduation.

**Non-Traditional Coursework**

Courses tailored for individual students provide a valuable opportunity for them to pursue an academic or professional interest under the supervision of a Rice faculty member. Such courses are typically titled as independent study or research, directed reading, internships, or are described as a teaching experience. Although the organization of these courses is quite variable, they are subject to the same basic requirements as other course offerings. In particular:

- The subject matter and intellectual level of the course must be appropriate for Rice.
- The instructor of record must hold a regular faculty appointment at Rice. This instructor is responsible for submitting the final grade, in consultation with the student’s immediate supervisor, if appropriate.
- The course must have a written syllabus that meets published Rice Syllabus Standards (p. 91). In addition, the syllabus must include a description of anticipated activities and topical content.
- Credit hours assigned are subject to the same amount-of-work considerations as other courses. Credit hours will be awarded in accordance with the Rice credit hour guidelines and fixed at the time of registration.
- All Academic Calendar (https://registrar.rice.edu/calendars/) (or Registrar) deadlines for registration, add/drop, completion of coursework, and grade submission must be met.

**Study Abroad**

Rice University Study Abroad provides substantial, intellectually rigorous, and culturally enriching international opportunities. Rice Study Abroad is committed to providing high quality academic-based educational programs in collaboration with prestigious international universities and select program providers. Rice approved programs are distinguished by their academic focus contributing to the curricular needs of Rice University as well as integration with host communities through opportunities such as intensive language instruction, field studies, professional internships, and independent study.

Students must make their study abroad arrangements through Rice Study Abroad (http://abroad.rice.edu/) in order to ensure proper enrollment, credit transfer, financial aid portability, scholarship eligibility, and risk management coverage.

Students should familiarize themselves with the university’s transfer credit policy, and specifically that for International Transfer Credit (p. 33), before studying abroad. Please note that some departments have additional program-specific transfer credit guidelines or restrictions.
Undergraduate Degree Chart

The School of Architecture

Architecture
- Bachelor of Architecture (BArch) Degree (p. 123)
- Bachelor of Arts (BA) Degree with a Major in Architectural Studies (p. 124)
- Bachelor of Arts (BA) Degree with a Major in Architecture (p. 125)

The George R. Brown School of Engineering

Bioengineering
- Bachelor of Science in Bioengineering (BSBE) Degree (p. 148)

Chemical and Biomolecular Engineering
- Bachelor of Arts (BA) Degree with a Major in Chemical Engineering (p. 276)
- Bachelor of Science in Chemical Engineering (BSChE) Degree (p. 277)

Civil and Environmental Engineering
- Bachelor of Arts (BA) Degree with a Major in Civil and Environmental Engineering and a Major Concentration in Civil Engineering (p. 304)
- Bachelor of Arts (BA) Degree with a Major in Civil and Environmental Engineering and a Major Concentration in Environmental Engineering (p. 307)
- Bachelor of Science in Civil Engineering (BSCE) Degree (p. 310)

Computational and Applied Mathematics
- Bachelor of Arts (BA) Degree with a Major in Computational and Applied Mathematics (p. 335)
- Minor in Computational and Applied Mathematics (p. 341)

Computer Science
- Bachelor of Arts (BA) Degree with a Major in Computer Science (p. 347)
- Bachelor of Science in Computer Science (BSCS) Degree (p. 349)

Data Science
- Minor in Data Science (p. 363)

Electrical and Computer Engineering
- Bachelor of Arts (BA) Degree with a Major in Electrical Engineering (p. 391)
- Bachelor of Science in Electrical Engineering (BSEE) Degree (p. 396)

Energy and Water Sustainability
- Minor in Energy and Water Sustainability (p. 405)

Engineering Design
- Minor in Engineering Design (p. 410)

Financial Computation and Modeling
- Minor in Financial Computation and Modeling (p. 450)

Global Health Technologies
- Minor in Global Health Technologies (p. 460)

Materials Science and Nanoengineering
- Bachelor of Arts (BA) Degree with a Major in Materials Science and NanoEngineering (p. 533)
- Bachelor of Science in Materials Science and NanoEngineering (BSMSNE) Degree (p. 534)

Mechanical Engineering
- Bachelor of Arts (BA) Degree with a Major in Mechanical Engineering (p. 554)

Bachelor of Science in Mechanical Engineering (BSME) Degree (p. 556)

Rice Center for Engineering Leadership
- Certificate in Engineering Leadership (p. 412)

Statistics
- Bachelor of Arts (BA) Degree with a Major in Statistics (p. 832)
- Minor in Statistics (p. 839)

The School of Humanities

African Studies
- Minor in African Studies (p. 105)

Ancient Mediterranean Civilizations
- Bachelor of Arts (BA) Degree with a Major in Ancient Mediterranean Civilizations (p. 109)

Art History
- Bachelor of Arts (BA) Degree with a Major in Art History (p. 133)

Asian Studies
- Bachelor of Arts (BA) Degree with a Major in Asian Studies (p. 144)

Center for Languages and Intercultural Communication
- Certificate in Language and Intercultural Communication - Arabic (p. 495)
- Certificate in Language and Intercultural Communication - Chinese (p. 497)
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- Certificate in Language and Intercultural Communication - German (p. 501)
- Certificate in Language and Intercultural Communication - Hindi (p. 503)
- Certificate in Language and Intercultural Communication - Italian (p. 504)
- Certificate in Language and Intercultural Communication - Japanese (p. 506)
- Certificate in Language and Intercultural Communication - Korean (p. 508)
- Certificate in Language and Intercultural Communication - Portuguese (p. 510)
- Certificate in Language and Intercultural Communication - Russian (p. 512)
- Certificate in Language and Intercultural Communication - Spanish (p. 514)

Cinema and Media Studies
- Minor in Cinema and Media Studies (p. 296)

Classical Studies
- Bachelor of Arts (BA) Degree with a Major in Classical Studies (p. 325)

Classical and European Studies
- Bachelor of Arts (BA) Degree with a Major in European Studies (p. 446)

English
- Bachelor of Arts (BA) Degree with a Major in English (p. 415)
- Bachelor of Arts (BA) Degree with a Major in English and a Major Concentration in Creative Writing (p. 420)

Environmental Studies
- Minor in Environmental Studies (p. 443)

French Studies
Bachelor of Arts (BA) Degree with a Major in French Studies (p. 452)

German Studies
Bachelor of Arts (BA) Degree with a Major in German Studies (p. 454)

History
Bachelor of Arts (BA) Degree with a Major in History (p. 466)
Bachelor of Arts (BA) Degree with a Major in History and a Major Concentration in History: International Concentration (p. 470)

Jewish Studies
Minor in Jewish Studies (p. 486)

Medical Humanities
Minor in Medical Humanities (p. 565)

Medieval and Early Modern Studies
Bachelor of Arts (BA) Degree with a Major in Medieval and Early Modern Studies (p. 569)
Minor in Medieval and Early Modern Studies (p. 571)

Museums and Cultural Heritage
Minor in Museums and Cultural Heritage (p. 576)

Philosophy
Bachelor of Arts (BA) Degree with a Major in Philosophy (p. 755)

Politics, Law, and Social Thought
Minor in Politics, Law and Social Thought (p. 777)

Poverty, Justice, and Human Capabilities
Minor in Poverty, Justice and Human Capabilities (p. 780)

Religion
Bachelor of Arts (BA) Degree with a Major in Religion (p. 798)
Minor in Religion (p. 804)

Spanish, Portuguese and Latin American Studies
Bachelor of Arts (BA) Degree with a Major in Latin American Studies (p. 516)
Bachelor of Arts (BA) Degree with a Major in Spanish and Portuguese (p. 822)

Study of Women, Gender and Sexuality
Bachelor of Arts (BA) Degree with a Major in Study Of Women, Gender and Sexuality (p. 841)

Visual and Dramatic Arts
Bachelor of Arts (BA) Degree with a Major in Visual And Dramatic Arts and a Major Concentration in Film and Photography (p. 857)
Bachelor of Arts (BA) Degree with a Major in Visual And Dramatic Arts and a Major Concentration in Studio Art (p. 861)
Bachelor of Arts (BA) Degree with a Major in Visual And Dramatic Arts and a Major Concentration in Theatre (p. 864)

The Jones Graduate School of Business

Business
Minor in Business (p. 272)

The Shepherd School of Music

Music
Bachelor of Arts (BA) Degree with a Major in Music (p. 610)
Bachelor of Music (BMus) Degree with a Major in Bassoon Performance (p. 612)
Bachelor of Music (BMus) Degree with a Major in Cello Performance (p. 614)

Bachelor of Music (BMus) Degree with a Major in Clarinet Performance (p. 617)
Bachelor of Music (BMus) Degree with a Major in Composition (p. 619)
Bachelor of Music (BMus) Degree with a Major in Double Bass Performance (p. 621)
Bachelor of Music (BMus) Degree with a Major in Flute Performance (p. 623)
Bachelor of Music (BMus) Degree with a Major in Harp Performance (p. 625)
Bachelor of Music (BMus) Degree with a Major in Horn Performance (p. 627)
Bachelor of Music (BMus) Degree with a Major in Music History (p. 630)
Bachelor of Music (BMus) Degree with a Major in Music Theory (p. 633)
Bachelor of Music (BMus) Degree with a Major in Oboe Performance (p. 635)
Bachelor of Music (BMus) Degree with a Major in Organ Performance (p. 637)
Bachelor of Music (BMus) Degree with a Major in Percussion Performance (p. 639)
Bachelor of Music (BMus) Degree with a Major in Piano Performance (p. 641)
Bachelor of Music (BMus) Degree with a Major in Trombone Performance (p. 644)
Bachelor of Music (BMus) Degree with a Major in Trumpet Performance (p. 646)
Bachelor of Music (BMus) Degree with a Major in Tuba Performance (p. 648)
Bachelor of Music (BMus) Degree with a Major in Viola Performance (p. 650)
Bachelor of Music (BMus) Degree with a Major in Violin Performance (p. 652)
Bachelor of Music (BMus) Degree with a Major in Vocal Performance (p. 654)

The Wiess School of Natural Sciences

Biosciences
Bachelor of Arts (BA) Degree with a Major in Biochemistry and Cell Biology (p. 161)
Bachelor of Arts (BA) Degree with a Major in Biological Sciences (p. 164)
Bachelor of Arts (BA) Degree with a Major in Ecology and Evolutionary Biology (p. 167)
Bachelor of Science (BS) Degree with a Major in Biochemistry and Cell Biology (p. 169)
Bachelor of Science (BS) Degree with a Major in Ecology and Evolutionary Biology (p. 172)
Minor in Biochemistry and Cell Biology (p. 181)
Minor in Ecology and Evolutionary Biology (p. 183)

Chemical Physics
Bachelor of Science (BS) Degree with a Major in Chemical Physics (p. 286)

Chemistry
Bachelor of Arts (BA) Degree with a Major in Chemistry (p. 290)
Bachelor of Science (BS) Degree with a Major in Chemistry (p. 291)
Earth, Environmental and Planetary Sciences
Bachelor of Arts (BA) Degree with a Major in Earth Science (p. 366)
Bachelor of Science (BS) Degree with a Major in Earth Science (p. 368)

Environmental Science
Bachelor of Arts (BA) Degree with a Major in Environmental Science and a Major Concentration in Earth Science (p. 430)
Bachelor of Arts (BA) Degree with a Major in Environmental Science and a Major Concentration in Ecology and Evolutionary Biology (p. 433)
Bachelor of Science (BS) Degree with a Major in Environmental Science and a Major Concentration in Earth Science (p. 436)
Bachelor of Science (BS) Degree with a Major in Environmental Science and a Major Concentration in Ecology and Evolutionary Biology (p. 439)

Kinesiology
Bachelor of Arts (BA) Degree with a Major in Kinesiology and a Major Concentration in Health Sciences (p. 490)
Bachelor of Arts (BA) Degree with a Major in Kinesiology and a Major Concentration in Sports Medicine (p. 492)

Mathematics
Bachelor of Arts (BA) Degree with a Major in Mathematics (p. 548)
Bachelor of Science (BS) Degree with a Major in Mathematics (p. 549)
Minor in Mathematics (p. 552)

Neuroscience
Bachelor of Arts (BA) Degree with a Major in Neuroscience (p. 749)
Minor in Neuroscience (p. 751)

Physics and Astronomy
Bachelor of Arts (BA) Degree with a Major in Astronomy (p. 759)
Bachelor of Arts (BA) Degree with a Major in Physics (p. 761)
Bachelor of Science (BS) Degree with a Major in Astrophysics (p. 762)
Bachelor of Science (BS) Degree with a Major in Physics and a Major Concentration in Applied Physics (p. 764)
Bachelor of Science (BS) Degree with a Major in Physics and a Major Concentration in Biological Physics (p. 765)
Bachelor of Science (BS) Degree with a Major in Physics and a Major Concentration in Computational Physics (p. 767)
Bachelor of Science (BS) Degree with a Major in Physics and a Major Concentration in General Physics (p. 769)
Minor in Physics (p. 771)

The School of Social Sciences
Anthropology
Bachelor of Arts (BA) Degree with a Major in Anthropology (p. 113)
Minor in Anthropology (p. 116)

Cognitive Sciences
Bachelor of Arts (BA) Degree with a Major in Cognitive Sciences (p. 329)

Economics
Bachelor of Arts (BA) Degree with a Major in Economics (p. 376)

Linguistics
Bachelor of Arts (BA) Degree with a Major in Linguistics (p. 525)

Managerial Studies
Bachelor of Arts (BA) Degree with a Major in Managerial Studies (p. 529)

Mathematical Economic Analysis
Bachelor of Arts (BA) Degree with a Major in Mathematical Economic Analysis (p. 545)

Political Science
Bachelor of Arts (BA) Degree with a Major in Political Science (p. 773)

Psychological Sciences
Bachelor of Arts (BA) Degree with a Major in Psychology (p. 787)

Social Policy Analysis
Bachelor of Arts (BA) Degree with a Major in Social Policy Analysis (p. 809)

Sociology
Bachelor of Arts (BA) Degree with a Major in Sociology (p. 813)
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Sport Mangement
Bachelor of Arts (BA) Degree with a Major in Sport Management and a Major Concentration in Sport Analytics (p. 825)
Bachelor of Arts (BA) Degree with a Major in Sport Management and a Major Concentration in Sport Law (p. 827)
Bachelor of Arts (BA) Degree with a Major in Sport Management and a Major Concentration in Sport Leadership (p. 829)

The Dean of Undergraduates
Center for Civic Leadership
Certificate in Civic Leadership (p. 299)

Naval Science
Minor in Naval Science (p. 747)

Undergraduate Degrees

Bachelor of Arts Degrees
The specific requirements of individual majors leading to the Bachelor of Arts degree vary widely. No department may specify more than 80 semester credit hours (including prerequisites, required courses, and related laboratories included) for the Bachelor of Arts.

In addition to meeting the degree requirements for all bachelor's degrees, to qualify for the Bachelor of Arts, students in all fields except architecture must complete at least 60 semester credit hours in coursework outside of major requirements. Students in architecture must complete at least 45 semester credit hours in coursework outside of major requirements.

Bachelor of Science Degrees in the Wiess School of Natural Sciences
The Bachelor of Science degree is offered with majors in astrophysics, biochemistry and cell biology, chemistry, chemical physics, earth science, environmental science, ecology and evolutionary biology, mathematics, and physics. The specific degree requirements vary from field to field and differ from those of the Bachelor of Arts in that there are greater technical requirements. No department may specify more than 80 semester credit hours (including prerequisites, required courses, and related laboratories) for the Bachelor of Science. To earn a BS degree in one of these fields, students must complete at least 60 semester credit hours in coursework outside the major.
Bachelor of Science Degrees in the George R. Brown School of Engineering

- Bioengineering (BSBE)
- Chemical Engineering (BScChE)
- Civil Engineering (BSCE)
- Computer Science (BSCS)
- Electrical Engineering (BSEE)
- Materials Science and NanoEngineering (BSMSNE)
- Mechanical Engineering (BSME)

The Bachelor of Science degree in a given engineering field is distinct from the Bachelor of Arts degree in that it must meet greater technical requirements. In establishing a departmental major for the Bachelor of Science degrees, departments may specify up to a defined maximum number of hours of coursework towards that major (including prerequisites, required courses, and related laboratories).

For the declared majors associated with the Bachelor of Science degrees, the Bioengineering department specifies up to 98 semester credit hours of coursework towards its major; the Chemical and Biomolecular Engineering department may specify up to 97 semester credit hours; the Civil and Environmental Engineering department up to 95; the Computer Science department up to 85; the Electrical and Computer Engineering department up to 86; the Materials Science and NanoEngineering department up to 95; and the Mechanical Engineering department specifies 87 semester credit hours of coursework.

To earn the corresponding Bachelor of Science degrees, students must meet the following minimum semester credit hour requirements in total course work:

- Bioengineering majors — a total of at least 131 semester credit hours
- Chemical Engineering majors — a total of 132 semester credit hours
- Civil Engineering majors — a total of at least 133 semester credit hours
- Computer Science majors — a total of at least 128 semester credit hours
- Electrical Engineering majors — a total of at least 134 semester credit hours
- Materials Science and NanoEngineering majors — a total of at least 132 semester credit hours
- Mechanical Engineering majors — a total of at least 127 semester credit hours

The programs leading to BS degrees in Bioengineering, Civil Engineering, Chemical Engineering, Electrical Engineering, and Mechanical Engineering are accredited by the Engineering Accreditation Commission of ABET, https://www.abet.org.

Other Bachelor’s Degrees

The professional Bachelor of Architecture (BArch) degree requires a fifth year of study and a one-year preceptorship. The Bachelor of Music (BMus) degree requires advanced courses in performance and ensemble in addition to the core music curriculum.

Undergraduate - Graduate Concurrent Enrollment

Advanced Rice undergraduate students may be accepted into a Rice graduate program prior to receiving their undergraduate degree. Their formal graduate program enrollment is deferred until after the bachelor’s degree has been awarded, at which time the students will complete a minimum of one semester of residency as a Rice graduate student. With certain stipulations, undergraduate students may i.) begin work on their graduate degree at Rice prior to completing all degree requirements for their bachelor’s degree, and ii.) must complete the requirements for a bachelor’s degree and the master’s degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).

While concurrently enrolled in a graduate program, each semester Rice undergraduates are required to maintain enrollment in no fewer than 12 credit hours of study to count toward the undergraduate degree and may be enrolled in no more than six hours of study to count toward the graduate degree. By default, all courses in which the undergraduate students are enrolled count toward the undergraduate degree, regardless of the course number. To designate courses that will count toward the graduate degree, Rice undergraduates concurrently enrolled in a graduate program must submit a Undergraduate Student in Graduate Degree Program Special Registration Request Form (https://registrar.rice.edu/sites/q/files/bxs751/f/Undergraduate%20Student%20in%20Graduate%20Degree%20Program%20Special%20Registration%20Request.pdf) as part of the registration process each semester. Students submit the completed form to the Office of the Registrar once registration is open, but no later than the Friday of the second week of courses for each term. Please note: If a student were to have a change of plans and withdraw from the graduate degree program before completing the bachelor’s degree, those courses taken toward the graduate degree program would be returned to the undergraduate record.

Important: Please note that seeking a graduate degree while still a Rice undergraduate may have financial aid implications. Undergraduate students applying for graduate programs should consult with the Office of Financial Aid prior to accepting an offer of admission. Any undergraduate students enrolled in a graduate degree program will not be eligible to request a continuance of their federal financial aid beyond their eighth semester of study at Rice. Furthermore, students will not be eligible for any undergraduate financial aid after the completion of their undergraduate degree requirements. Once the undergraduate degree is conferred, students that have been concurrently enrolled will be classified as a graduate student. Students are only eligible for graduate loans if classified as a graduate student. Students are not classified as graduate students until they have successfully completed their undergraduate degree program.

Unique Programs

Rice undergraduates have the opportunity to pursue a number of unique academic programs during their course of study. A few are highlighted below:

Century Scholars Program

The University’s goals of attracting superior undergraduates, fostering collaboration between students and professors, and sustaining a commitment to undergraduate education have culminated in a groundbreaking scholarship and mentoring program. The Rice University Century Scholars program matches select incoming freshmen...
Academic Policies and Procedures

All undergraduate students are subject to the academic regulations of the university. Students are responsible for making certain they meet all departmental and university requirements and academic deadlines.

The Committee on Examinations and Standing (EX&S) administers the rules and regulations documented here. Under unusual or mitigating circumstances, students may submit a written petition requesting special consideration to the committee. Students should address all correspondence to the EX&S committee in care of the Office of the Dean of Undergraduates. Further information about the petition process can be found on the Dean of Undergraduates website, at [https://dou.rice.edu/committee-examinations-and-standing](https://dou.rice.edu/committee-examinations-and-standing).

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- Admission (p. 18)
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Admission

Dating back to the founding of Rice University, our first president, Edgar Odell Lovett, mandated that we aspire to be a world-class university of the highest standing. Dr. Lovett challenged us “to assign no upper limit to our educational endeavor.” He envisioned students and faculty as a community of scholars, their minds exercised by spirited discourse (John Boles, A University So Conceived: A Brief History of Rice, p. 17, third rev. ed. 2006). Therefore, as an integral part of the university’s mission, we seek a broadly diverse student body where educational diversity increases the intellectual vitality of education, scholarship, service, and communal life at Rice. We seek students, both undergraduate and graduate, of keen intellect and diverse backgrounds who not only show potential for success at Rice, but also who will contribute to the educational environment of those around them. Rice selects a group of applicants who, considered individually and collectively, will take fullest advantage of what we have to offer, contribute most to the educational process at Rice, and be most successful in their chosen fields and in society in general. Our evaluation process employs many different means to identify these qualities in applicants. History shows that no single gauge can adequately predict a student’s preparedness for a successful career at Rice. For example, we are cautious in the use of standardized test scores to assess student preparedness and potential. An applicant is considered in competition with all other applicants. In making a decision to admit or award financial aid, we are careful not to ascribe too much value to any single metric, such as rank in class, grade point average, or standardized test scores.

We use a broader perspective that includes such qualitative factors as the overall strength and competitive ranking of a student’s prior
institution, the rigor of his or her particular course of study, letters of recommendation, essays, responses to application questions, and (where required) auditions and portfolios. Taken together with a student's academic record and test scores, these additional factors provide a sound basis to begin assessing the applicant's potential on all levels.

Beyond indicators of academic competence, we look for other qualities among applicants, such as creativity, motivation, artistic talent, and leadership potential. We believe that students who possess these attributes in combination with strong academic potential will contribute to, and benefit from, a more vibrant, diverse educational atmosphere. Through their contributions and interactions with others, students will enrich the educational experience of all faculty and students. These qualities are not revealed in numerical measurements, but are manifested in the breadth of interests and the balance of activities in their lives.

Rice University strives to create on its campus a rich learning environment in which all students will meet individuals whose interests, talents, life experiences, beliefs, and world views differ significantly from their own. We believe that an educated person is one who is at home in many different environments, at ease among people from many different cultures, and willing to test his or her views against those of others. Moreover, we recognize that in this or any university, learning about the world we live in is not by any means limited to the structured interaction between faculty and students in the classroom, but also occurs through informal dialogue between students outside of the classroom.

To encourage our students' fullest possible exposure to the widest possible set of experiences, Rice seeks through its admission policies to bring bright and promising students to the university from a range of socioeconomic, cultural, geographic, and other backgrounds. We consider an applicant's race or ethnicity as a factor in the admission process and believe that racial and ethnic diversity is an important element of overall educational diversity. Though race or ethnicity is never the defining factor in an application or admission decision, we do seek to enroll students from underrepresented groups in sufficient and meaningful numbers as to prevent their isolation and allow their diverse voices to be heard. We also seek students whose parents did not attend college as well as students from families with a well-established history of college-level education. Rice places a premium on recruitment of students, regardless of their races or ethnicities, who have distinguished themselves through initiatives that build bridges between different cultural, racial, and ethnic groups. In so doing, we endeavor to craft a residential community that fosters creative, intercultural interactions among students, a place where prejudices of all sorts are confronted squarely and dispelled.

In assessing how well an applicant can contribute to enlivening the learning environment at Rice, we also try to determine the relative challenges that he or she may have faced. For economically disadvantaged students, this may mean achieving a high level of scholastic distinction while working a job in high school. For a first generation college student, it might mean achieving high standards for academic success within an environment relatively indifferent to intellectual attainment. Or it might mean overcoming a disability to excel in sports, music, or forensics. For students who do not have particular disadvantages, we also look at whether they chose a more challenging road than the normal path through high school. This might mean an especially strenuous course of study, a prolonged, in-depth engagement in a school project, or a particularly creative and wide-ranging set of extracurricular activities.

Rice does not view offers of admission as entitlements based on grades and test scores. Our admission process combines an examination of academic ability with a flexible assessment of an applicant's talents, experiences, and potential, including potential diversity contributions; it precludes any quick formula for admitting a given applicant or for giving preference to one particular set of qualifications without reference to the class as a whole. Rice is a highly selective institution and receives many more applications from viable candidates than it has available spaces. An inevitable consequence of Rice's approach is that some highly accomplished students will not be admitted. However, by selecting a wide range of matriculants of all types, the admission process seeks to enrich the learning environment at Rice and thus improve the quality of a Rice education for all students.

Due to the nature of the Rice education, Rice admits undergraduate degree candidates on a full-time basis only.

Applicants are selected on a competitive basis in six academic divisions: architecture, engineering, humanities, music, natural sciences, and social sciences. Candidates should give careful consideration to the category under which they wish to be considered. However, once enrolled, students are able to move freely among most divisions after consultation with their advisors. Music students must pursue the music program for at least the first year before changing divisions. The schools of music and architecture maintain limited enrollments; all majors are subject to faculty approval.

Those offered admission are expected to complete the remainder of their high school courses with the same superior performance that led to their admission.

First-Year Applicants

The areas of focus generally used in evaluation of first-year candidates for admission include: scholastic record as reflected by the courses taken and the quality of academic performance, recommendations from high school, the application presentation of personal information, special talents, essays, and standardized testing.

The High School Record—Students must complete at least 16 college preparatory units as follows:

<table>
<thead>
<tr>
<th>Category</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>4</td>
</tr>
<tr>
<td>Social Studies</td>
<td>2</td>
</tr>
<tr>
<td>Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>Laboratory Science (e.g. biology, chemistry, physics)</td>
<td>2</td>
</tr>
<tr>
<td>A foreign language</td>
<td>2</td>
</tr>
<tr>
<td>Additional credits in any of the categories above</td>
<td>3</td>
</tr>
</tbody>
</table>

The natural science and engineering divisions require trigonometry (precalculus) or other advanced mathematics courses and both chemistry and physics. Students may substitute a second year of chemistry or biology for physics.

Students admitted with curriculum deficiencies will be asked to complete the required work by taking high school or college-level courses during the summer before enrollment at Rice.

Note: Because of the admission competition to enter Rice, successful applicants generally have taken 20 or more college preparatory courses in high school, many at the college level. Therefore, only those students who have more than 20 college preparatory courses may have the Office...
of the Registrar consider for Rice credit their college courses taken in high school.

Transfer of Coursework Taken During High School—College-level courses taken during high school years may be considered for credit at Rice University on receipt of the following documentation:

1. An official transcript of all college courses sent directly from the college(s) attended. The college courses should be part of the normal curriculum of the college and taught by regular members of the college faculty.
2. Official notification by letter from the high school principal or guidance counselor that the credit earned was not used to meet high school diploma requirements. College-level courses that appear on the high school transcript will not yield credits at Rice.

Recommendations—Candidates must submit evaluations from their counselor and two teachers. At least one teacher recommendation should relate to the applicant’s intended area of study, and both should highlight their academic strengths and contributions in the classroom.

The Application—All first-year applicants must complete the Common Application, the Coalition Application, or the QuestBridge Application. The application and the Rice supplement provide the committee with important information on the student's background and gives the applicant an opportunity to provide statements on his or her interests, experiences, and goals. The application fee is $75. Students for whom this fee creates a hardship may apply for a waiver. First-year applicants should provide proof of a fee waiver for the SAT or ACT test, or a NACAC fee waiver form, or eligibility for the school free or reduced lunch program. In any case, a letter from the student's high school counselor is required. Financial stress created by application fees to other institutions is not considered a valid reason to grant a fee waiver.

Standardized Testing—All first-year applicants for Fall 2020 must submit at least one of the following:

- SAT (Reading/Writing/Language and Math). The SAT Essay is optional.
- ACT. Writing is optional.

These exams are administered by the College Board and the American College Testing Program. Applicants attending U.S. high schools can submit either self-reported or official scores during the application process. Admitted students who choose to enroll at Rice will be required to submit official test scores prior to matriculation. First-year applicants who will graduate from high schools outside the U.S. and all transfer applicants will be required to submit an official score report at the time of application. Rice uses the highest scores from any sitting on the SAT and the ACT in order to consider each applicant's most positive test results.

Applicants whose first language is not English are required to demonstrate English proficiency, which can be achieved in one of two ways. Those who have received two years of full-time instruction in English at a high school or college are not required to submit English proficiency testing. Applicants who have not received two years of full-time instruction in English must submit official test scores from the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS). The minimum acceptable score on the TOEFL Internet-based test is 100 or a 7.5 on the Paper-delivered test. The minimum acceptable score on the IELTS is a seven.

In addition to the standardized testing requirement, Rice recommends applicants submit two SAT Subject Tests related to their proposed area of study.

To be considered official, all scores must be sent directly from the testing organization. Rice's College Board code is 6609, our ACT code is 4152, and our TOEFL code is 6609.

Personal Interview—Although a personal interview is not a requirement, we recommend an interview for first-year applicants as an excellent opportunity to discuss the applicant's interests, needs, and questions.

On-campus interviews are conducted by the admission staff and a select group of Rice senior students. Off-campus interviews are conducted throughout the United States and abroad by Rice alumni. Important dates regarding interviews can be found on the admission website. The Rice Admission Committee makes no distinction between on-campus and off-campus interviews. Interviews are available to high school seniors only.

Music Audition—All applicants to the Shepherd School of Music must submit all required documents by December 1. An Audition Profile Form, preliminary recording, or portfolio of composition on music history is also required.

Architecture Portfolio—Architecture applicants must submit a portfolio along with the required application materials by the deadline for either the Early Decision or Regular Decision Plan.

Decision Plans

Early Decision Plan—Early Decision is a binding decision plan designed for students who have selected Rice as their first choice. Students may initiate applications to other colleges under nonbinding plans but must withdraw those applications if admitted to Rice.

Early Decision applicants must complete the required standardized testing prior to or by the November testing dates in their senior year. All other materials should be submitted by November 1. Admission notices will be mailed by mid-December. The admission committee will admit, defer, or deny Early Decision applicants. Deferred applicants are considered with the Regular Decision pool.

It is important to note that, if admitted under Early Decision, a candidate must withdraw all other college applications, may not submit any additional applications after accepting the offer, and must accept Rice's offer of admission by submitting a $300 nonrefundable deposit by January 1. An additional $100 housing deposit is required of those desiring on-campus accommodations.

Those accepted under Early Decision who demonstrate financial aid eligibility will receive a financial aid package in the admission packet. To apply for need-based aid, Early Decision applicants must submit the Free Application for Federal Student Aid (FAFSA), the College Scholarship Service Profile (CSS PROFILE) and the student and parent income tax and W-2 forms by November 15, 2019. Complete the FAFSA at https://fafsa.gov/. Rice's FAFSA code is 003604. Register for the CSS PROFILE at https://student.collegeboard.org/css-financial-aid-profile (https://student.collegeboard.org/css-financial-aid-profile/). Students will complete the PROFILE online. The PROFILE number for Rice is 6609. For more detailed information go to https://financialaid.rice.edu (http://financialaid.rice.edu/).

Regular Decision Plan—Students who apply Regular Decision must submit their materials by January 1 to receive notification by April 1. Candidates who miss the deadline must do so in full knowledge that...
they are in a less competitive position. Regular Decision applicants must complete their standardized tests by December of their senior year of high school.

Regular Decision applicants who are offered admission must submit a $300 enrollment deposit by May 1 to reserve their places in the incoming class. Those who desire a room on campus must pay an additional $100 deposit. Enrollment deposits are not refundable.


Shepherd School of Music—All candidates applying to the Shepherd School of Music must submit their application and all required supporting documents by December 1. Admission notification is April 1. Admitted students must submit a $300 nonrefundable deposit by May 1.

Rice/Baylor Medical Scholars Program—All candidates interested in the Rice/Baylor Medical Scholars Program must submit the Baylor College of Medicine application to Rice University by December 1. Rice application materials are due by November 1 for Early Decision or December 1 for Regular Decision.

Accelerated Students

Rice University will accept applications from students who are completing high school in less than four years. It is important to note that these students will compete with other candidates who will be completing four years of high school. Therefore, it is the candidates’ responsibility to demonstrate that they have exhausted all college preparatory course work at their schools. Further, because of the residential focus and commitment to student self-governance at Rice, candidates must also demonstrate the maturity and personal development that would allow them to participate fully and responsibly in campus life. Because of the unique circumstances surrounding the accelerated student, it is strongly recommended that these candidates have an on-campus interview with an admission officer well before the application deadline.

Home-Schooled Applicants

Rice recognizes that each home-schooled applicant is in a unique educational program. To ensure that our evaluation process is fully informed, home-schooled applicants are encouraged to provide clear, detailed documentation of their curriculum of study, assessment tools, and learning experiences. Rice requires a recommendation from an applicant’s counselor and two teachers. For home-schooled applicants, at least one of these recommendations must be from someone not related to the student.

Transfer Students

Students with superior records from two-year or four-year colleges or universities may apply as transfer candidates. Applicants should have completed at least 12 semester hours of college work since graduating from high school. Students with less than 12 semester hours should apply through the first-year admission process. High school students enrolled in an Early College program or Dual Enrollment program are not eligible to apply as transfer students and should apply through the first-year admission process. Students who have already completed a bachelor’s degree may not apply for transfer admission.

Applicants for transfer admission must file the following with the Office of Admission:

- The Transfer Common or Coalition Application and Rice supplement.
- Official transcripts of all high school and college work completed to date, as well as courses in progress
- Professional evaluation of transcripts from non-U.S. institutions. Recommended evaluators are SpanTran (https://www.spantran.com/) and Education Credential Evaluators (https://www.ece.org/).
- Two college instructor recommendations
- The college official’s report
- SAT or ACT
- A $75 application fee (non-refundable)

Applications with the appropriate documents must be submitted by March 15. Rice receives applications only for the fall term. Notification of the admission decisions are made on a rolling basis between May 1 and June 1. The criteria used in evaluating transfer applications are similar to those applied to applicants for the first-year class, except that special emphasis is given to performance at the college level. Because of the highly competitive nature of transfer admission, it is recommended that applicants have a minimum 3.20 (4.00 scale) grade point average on all college work. The SAT must be taken by December 2019 or the ACT must be taken by February 2010.

Applicants whose first language is not English are required to demonstrate English proficiency, which can be achieved in one of two ways. Those who have received two years of full-time instruction in English at a high school or college are not required to submit English proficiency testing. Applicants who have not received two years of full-time instruction in English must submit official test scores from the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS). The minimum acceptable score on the TOEFL Internet-based test is 100 or a 7 on the Paper-delivered test. The minimum acceptable score on the IELTS is a seven.

Students for whom the $75 application fee creates a hardship may apply for a waiver. Transfer applicants must send a copy of the Student Aid Report that they receive after completing the Free Application for Federal Student Aid (FAFSA) along with a request for a fee waiver to the Office of Admission. Financial stress created by application fees to other institutions is not considered a valid reason to grant a fee waiver. U.S. citizens, permanent residents, DACA students, and undocumented students who have lived in the United States for an extended period of time are eligible for an application fee waiver.

Transfer students must be registered in residence at Rice for at least four full semesters during the fall or spring terms and must complete no fewer than 60 semester hours before earning a Rice degree.
Advanced Placement/International Baccalaureate/International Certificate Programs

Advanced Placement—Students who score a four or five on the applicable Advanced Placement College Board examinations taken before matriculation at Rice may receive university credit for the corresponding Rice course(s). For more information, see AP Credit [https://registrar.rice.edu/students/ap_credit/].

International Baccalaureate—Students who complete the International Baccalaureate diploma and receive a score of six or seven on a higher-level IB exam may receive course credit for the corresponding Rice course(s). For more information, see IB Credit [https://registrar.rice.edu/students/ib_credit/].

International Certificate Programs—Students who have completed various international certificate programs may receive course credit for corresponding Rice courses; however, each student’s documentation will be reviewed individually and on a case-by-case basis. The General Certificate of Education A-Level (United Kingdom), the Abitur (Germany), and the Baccalaureate (France) are eligible for review. For more information, see International Exam Credit [https://registrar.rice.edu/students/international_exam/].

Academic and Judicial Discipline

Academic Probation

Students are placed on academic probation at the end of any semester if:

• Their grade point average for that semester is less than 1.67, or
• Their cumulative grade point average is less than 1.67 (this requirement is waived if the grade point average for that semester is at least 2.00)

The period of probation extends to the end of the next semester in which the student is enrolled. Students on academic probation may not be candidates for, or hold, any elected or appointed office, nor are they allowed to enroll in more than 17 semester hours.

Academic Suspension

Students are suspended from the university at the end of any semester if they:

• Earn grades that will place them on academic probation a third time, or
• Have a grade point average for the semester that is less than 1.00 (exceptions are made for students completing their first semester at Rice).

Students readmitted after a previous suspension will again be suspended if in any succeeding semester they fail to achieve at least one of the following requirements:

• a cumulative and semester grade point average of at least 1.67, or
• a semester grade point average of at least 2.00.

The first suspension period is normally one semester; the second suspension period is at least two semesters. Students may only return for a fall or spring semester following suspension, not for summer school. Students are not readmitted after a third suspension.

Participation in student activities on and off campus and use of Rice facilities, including, but not limited to, the student center, the colleges, the playing fields, the recreation center, and the computer labs, are limited to enrolled students.

Students placed on academic suspension are notified by the Office of the Registrar after all final grades have been received and posted to their record. Suspension is lifted the first day of class of the semester when the student returns to the university. When students serve the nominal term of suspension but do not intend to return to Rice, suspension is lifted after permission from the Committee on Examinations and Standing is granted.

Students facing a first or second academic suspension who verify with the Office of the Registrar, academic advising, and their department that successful completion of their proposed academic plan would satisfy their degree requirements in one semester if allowed to return, may petition the dean of undergraduates for immediate readmission. This is known as the "senior exception rule", and students may be granted this exception only once. If granted, both the immediate readmission and the exception will be noted on the student’s academic transcript.

Senior exception students that do not complete their degree requirements in the one semester for which they were readmitted, but finish with a GPA which allows for good academic standing may be allowed to continue with their studies at Rice, but only by petitioning and receiving approval from the dean of undergraduates.

Students seeking readmission after academic suspension should address a letter of petition to the Committee on Examinations and Standing, in care of the Office of the Dean of Undergraduates, which must be received by June 1 for readmission in the fall semester and November 1 for readmission in the spring semester. The petition should demonstrate what the student did while they were separated from Rice and how they have prepared themselves to function successfully as a student at Rice. The petition must include two supporting letters from persons for whom the student has worked during the suspension period on probation or suspension will not have the terms “academic probation” or “academic suspension” placed on their transcript for that semester, but will instead have the notation of “Good Standing with Exception” and be permitted to graduate.

Readmission After Academic Suspension

Readmission After Academic Suspension
not become candidates for, or hold, any elected or appointed office, nor are they allowed to enroll in more than 17 semester hours.

In some instances, the committee may postpone approval of readmission or rule that suspension is permanent. Although it may do so at its discretion, the Office of the Registrar does not normally place on probation or suspension students who perform poorly in the Rice Summer Sessions. Students should be aware, however, that Rice Summer Sessions grades are included in their grade point averages.

Disciplinary Probation, Suspension, and Expulsion

The Code of Student Conduct (p. 46) applies to all Rice students and encompasses conduct both on and off campus. The Office of Student Judicial Programs may sanction students including implementing disciplinary probation, suspension, or expulsion for violations of the Code of Student Conduct or the Honor Code. Students who have been expelled, who are serving a suspension, who are under investigation for disciplinary violations, or who have pending Code of Conduct or Honor Code proceedings against them may not receive their degree, even if they have met all academic requirements for graduation. Students who are suspended or expelled must leave the university within the time frame specified by Student Judicial Programs, generally 48 hours from being informed of the decision, though in cases of unusual hardship, Student Judicial Programs may extend the deadline. Any tuition refund will be calculated from the official date of suspension or expulsion based on the refund schedule noted in the Academic Calendar (https://registrar.rice.edu/calendars/), published by the Office of the Registrar. A grade of 'W' will be awarded to all enrolled courses regardless of when the suspension or expulsion began. Expelled students will have the expulsion noted on their transcript.

While on disciplinary probation or suspension, students may not run for, or hold, any elective or appointed office in any official Rice organization. Participation in student activities on and off campus and use of Rice facilities, including, but not limited to the student center, the colleges, the playing fields, the recreation center, and the computer labs, are reserved for enrolled students.

Students seeking readmission after a suspension for Honor Code or Code of Conduct violations or other nonacademic action should submit a petition in writing to the Office of Student Judicial Programs by emailing SJP@rice.edu. That petition should include information on what the student did while away from Rice, including any schooling or employment; how the student met any requirements described by Rice at the time of separation; what the student did to address any issues leading to the separation; and what the student learned from the separation. Once approved by Student Judicial Programs, the petition is forwarded to the dean of undergraduates for final readmission approval and action.

Degree Revocation

The University reserves the right to revoke any degrees granted. A degree awarded may be revoked if the University becomes aware that the degree should not have been granted, such as a degree that was obtained by violating the Honor Code or Code of Student Conduct or by deception, misrepresentation, falsification of records, academic misconduct, research misconduct, or if the work submitted in fulfillment of— and indispensable to— the requirements for such degree are determined to fail to meet the academic standards that were in effect at the time the degree was awarded. Notification of the date of revocation will appear on the student’s transcript, and the student will be asked to return the diploma. The Provost receives all recommendations for revocation of degrees and, after consideration and review, forwards to the President any recommendations deemed to be warranted. The Provost may also initiate and forward to the President his or her own recommendation for a degree revocation. The President will consider all such recommendations forwarded by the Provost and effectuate those he or she determines to be warranted. Procedures governing degree revocations may be obtained from the offices of the Registrar, Provost, or President.

The University also reserves the right to withdraw a degree to correct an administrative error, such as an incorrectly listed degree, or in a situation where it was found that a student had not actually fulfilled all graduation requirements.

Attendance and Excused Absences

Students are expected to attend all scheduled activities for all of the classes for which they are registered during the entire course of the academic semester for which they are enrolled. The Academic Calendar (https://registrar.rice.edu/calendars/) indicates normal class days, recesses, and holidays. Instructors, however, may schedule required activities on other days, including recesses, holidays, and weekends, if required by programmatic needs, such as laboratories or field trips. Such requirements must be clearly stated in the online course description available at registration and on the syllabus, and instructors should try to provide compensatory time off for students.

The university understands that students participating in university-sponsored events, including athletics competitions, will miss some class sessions during the semester. Students will inform their instructors in a timely manner and in advance of absences resulting from participation in such events. In these cases, faculty will give students a reasonable accommodation to make up for the work missed.

Two university-sponsored events, including athletics competitions such as games, matches, or tournaments, may be scheduled for the period beginning with the Monday of the last week of classes and ending with the last day of final exams (a 17-day period). Scheduling additional events requires approval from the Committee on Examinations and Standing. For the two allowable events, one may be scheduled during the last week of classes, one may be scheduled during the reading period (defined as the day following the last day of classes through the day before finals begin), or one may be scheduled during the Finals Period.

This policy permits flexibility in scheduling; however, the maximum number of allowable events over the three periods is two. For these events, only one night outside of Houston is allowed per period. Events where scheduling is not under the control of the university do not count toward this two-event limit. This rule also applies to cases in which participation is on an individual basis, such as by track student-athletes. All university-sponsored organizations with events during this period must notify the Office of Academic Advising at least one month prior to the event.

Absences for activities other than university-sponsored events may be negotiated on an informal basis between the student and the faculty member. Alternatively, absences may be formally excused on a case-by-case basis if a petition explaining the nature of the event, accompanied by suitable documentation, is submitted to the Committee on Examinations and Standing at least two weeks before the event.
Examinations are considered final examinations when they:

- are given during the final examination period,
- fall between the last day of classes and the first day of final examinations,
- are considered the last exam for the course, or
- require comprehensive knowledge of the entire course.

Such exams may be given only during the final examination period.

All undergraduate-level courses are assigned a final examination time by the Office of the Registrar. Upon request, graduate-level courses may be scheduled for a final examination time. Instructors may choose to use that officially assigned time for a scheduled final examination, may choose to give a take-home exam, or may choose to give no exam at all. If they choose to give a scheduled final examination, the Office of the Registrar will assign a room, and the final exam will be administered in that room at the designated time. Some instructors assign end-of-term projects or papers rather than final examinations. With regard to due dates, final papers or projects will be treated the same as take-home exams.

Take-home exams should be made available to students as soon as possible after the semester’s last day of classes, and no later than the end of the next business day after classes have ended. Take-home exams may be no longer than five hours in length. The due date of take-home exams may be no earlier than the end of the examination time assigned to that class by the Office of the Registrar. Instructors may specify due dates later than this time, but not later than the end of the last day of the examination period.

As noted in the Faculty Grading Guidelines (p. 90), no student should be given an extension of time or opportunity to improve a grade that is not available to all members of the class, except for verified illness or justified absence from campus. However, students cannot be required to take more than two scheduled exams in two consecutive calendar days. Students also cannot be required to complete more than two take-home and/or scheduled final exams on the same calendar day (unless this is the last day of the examination period). In both instances, if the student wishes to make alternative arrangements and is unable to work out such arrangements with the instructor(s) involved, the instructor of the third and any subsequent exams will be required to allow the student to reschedule that exam.

Grades

See also Faculty Grading Guidelines (p. 90) and Syllabus Standards (p. 91).

Pass/Fail Option

Undergraduates may register for courses on a Pass/Fail basis. Students:

- May not take more than one course as a Pass/Fail per semester for each full year of residence (students studying in off-campus programs through Rice are considered to be in residence for the purpose of this rule).
- May not take more than four courses as Pass/Fail.
- May not take more than a total of 14 semester hours total as Pass/Fail.
- May register for only one course as Pass/Fail in a semester.
- May not take as Pass/Fail a repeatable course previously taken and designated as Pass/Fail.
- May not take as Pass/Fail those courses used to meet the requirements for their major, minor, or certificate.*
Students may convert a pass/fail course to a graded course by submitting the proper online conversion form, via ESTHER, and must adhere to the pass/fail deadlines as stated in the Academic Calendar (https://registrar.rice.edu/calendars/). Students wishing to designate a course as pass/fail during the summer sessions should see Registration During Summer Sessions (p. 31).

Students should be aware that while a grade of P does not affect their grade point average, a grade of F is counted as a failure and is included in their GPA. Students who take a course during the Rice summer session and auditing a course does not affect a student's GPA. Request to audit the student met the audit requirements of the class, or the NC if they instructors report either the AUD or the NC grade symbol, the AUD if students successfully completes the course, or the U if they have not. Students should be aware that while a grade of S or U does not affect their grade point average, no credit will be awarded if a grade of U is received. Courses with a grade of S will count towards total credits earned.

**Audit**

Students have the option of auditing courses. For auditing students, instructors report the S if the student successfully completes the course, or the U if they have not. There are no credit hours associated with an AUD grade designation. (See Credit) is given to students who do not meet the audit requirements.

**NC (“No Credit”)**

This designation signals that no credit was granted for the course. It is used in situations where a person auditing a course has not met the audit requirements of the course as defined by the instructor. (See Audit above.)

**Grading Symbols**

Instructors are required to report a grade for all students whose names appear on the class roster. They grade their students using the following conventional symbols: A+, A, A-, B+, B, B-, C+, C, C-, D+, D, D-, F.

**Grade Designations**

Under certain circumstances, special designations accompany the student's grade. These designations do not affect the grade point average. The special designations include the following:

**AUD (“Audit”)**

This designation is only used for students auditing the course, and specifically where the auditing student has met the audit requirements of the course as defined by the instructor. A grade designation of 'NC' (No Credit) is given to students who do not meet the audit requirements. There are no credit hours associated with an AUD grade designation. (See Audit above.)

**INC (“Incomplete”)**

Instructors report this designation to the Office of the Registrar when a student fails to complete a course because of verified illness or other circumstances beyond the student's control that occur during the semester. Students must provide independent corroboration of their illness or circumstances, and they are expected to coordinate with the instructor prior to final grades being submitted. For an INC received in the fall semester, students must complete the work by the end of the first week of the spring semester or an earlier date as defined by the instructor, and instructors must submit a revised grade by the end of the second week. For an INC received in the spring or summer semester, students must complete the work before the start of the fall semester or an earlier date as defined by the instructor, and instructors must submit a revised grade by the end of the first week. If a grade is not submitted by the appropriate deadline, the INC will be automatically converted to a failing grade.

Students with an INC must be certain that tests, papers, and other materials affecting their grade or essential to completing a course requirement are delivered by hand to the appropriate professor or office according to the timeline previously stated, for the instructor to grade the documents and submit the final grade to the Office of the Registrar by the deadline. Loss or lateness because of mail service is not an acceptable excuse for failing to meet academic deadlines. Students also should be aware that they may be placed on probation or suspension when the INC is changed to a grade, either by an instructor or by default.

**NG (“No Grade”)**

This designation signals that no credit was granted for the course. As a non-punitive grade, the NG is applied administratively and used in rare situations.

**OT (“Other”)**

Instructors report this designation to the Office of the Registrar when a student fails to appear for the final examination after completing all the other required work for the course. An OT received during a fall semester must be resolved and instructors must submit a revised grade by the end of the first week of the spring semester. An OT received during a spring semester must be resolved and instructors must submit a revised grade by the end of the fourth week after Commencement. An OT received during a summer semester must be resolved and instructors must submit a revised grade by the end of the first week of the fall semester. If a grade
is not submitted by the appropriate deadline, the OT will be automatically converted to a failing grade. Students should be aware that they may be placed on probation or suspension when the OT is changed to a grade, either by an instructor or by default.

SA (“Study Away”)
This designation is used for students that participate in a course of study hosted at another institution, such as a Rice-sanctioned Study Abroad program, or an approved Inter-Institutional agreement. The grade of SA is awarded for the Rice placeholder course, carries no grade points and there are no credit hours earned for a course which receives a grade of SA. There is corresponding transfer credit that is articulated once an official transcript is received from the host school.

W (“Official Withdrawal from University”)
Students who officially withdraw from the university after the designated drop deadline, the seventh week of classes, will receive a final grade of “W” for each course in which they were enrolled at the time of withdrawal.

Students who officially withdraw from the university by the drop deadline will not receive the grade of “W” for any courses in which they were enrolled for that semester. These courses will not be included on the official transcript.

W (“Late Drop with Approval”)
A student who receives approval from the Committee on Examinations and Standing to drop a course after the designated drop deadline will receive a grade of “W” for that course. When requests for late drops are denied by the committee, the Office of the Registrar records the submitted grade.

If a student drops a class before the designated drop deadline for the semester, the course will not be included on his/her official transcript. New matriculants in their first semester at Rice may drop a class up until the last day of classes, and through the end of week ten in their second semester, if that is a full-term Spring semester, and the course will not be included on the student’s official transcript.

Grade Points
To compute grade point average, letter grades are assigned numeric values as follows:

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Numeric Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>4.00</td>
</tr>
<tr>
<td>A</td>
<td>4.00</td>
</tr>
<tr>
<td>A-</td>
<td>3.67</td>
</tr>
<tr>
<td>B+</td>
<td>3.33</td>
</tr>
<tr>
<td>B</td>
<td>3.00</td>
</tr>
<tr>
<td>B-</td>
<td>2.67</td>
</tr>
<tr>
<td>C+</td>
<td>2.33</td>
</tr>
<tr>
<td>C</td>
<td>2.00</td>
</tr>
<tr>
<td>C-</td>
<td>1.67</td>
</tr>
<tr>
<td>D+</td>
<td>1.33</td>
</tr>
<tr>
<td>D</td>
<td>1.00</td>
</tr>
<tr>
<td>D-</td>
<td>0.67</td>
</tr>
<tr>
<td>F</td>
<td>0.00</td>
</tr>
</tbody>
</table>

1 Effective Academic Year 2018-2019, the A+ grade is now worth 4.00, not 4.33, in calculating the GPA.

Grade Point Average Calculation
For each course carrying standard letter grades, the credit hours attempted and the points for the grade earned are multiplied. The grade points for each course are added together, and the sum is divided by the total credit hours attempted. Grade point averages are noted each semester on the student’s official transcripts. Courses taken on a S/U or pass/fail basis are excluded from the grade point average calculation.

Graduation Requirements
The General Announcements (GA) is the official Rice curriculum. In the event that there is a discrepancy between the GA and any other websites or publications, the GA shall prevail as the authoritative source.

Degree Requirements for All Bachelor’s Degrees
Students are responsible for making certain that their plan of study meets all degree and major (and minor and/or certificate) requirements. To graduate from Rice University, all students must:

- Be registered at Rice University full-time for at least four full fall and/or spring semesters*.
- Complete the requirements of at least one major and degree program.
- Complete at least 120 semester credit hours (some degree programs require more than a minimum 120 credit hours).
- Complete at least 60 semester credit hours at Rice University.
- Complete at least 48 semester credit hours in upper-level coursework (courses at the 300-level or above).
- Complete more than half of the upper-level coursework (at least 25 of the 48 minimum semester credit hours) at Rice University.
- Complete more than half of the upper-level coursework required by the declared major(s) at Rice University (as designated by the department or program, some may specify a higher proportion).
- Complete at least 60 semester credit hours outside of major requirements for Bachelor of Arts and Bachelor of Science degrees.

Exceptions include:

- Students pursuing the BA degree with a major in architecture must complete at least 45 credit hours outside of major requirements.
- Students pursuing the BMus (Bachelor of Music) degree, or a BS degree in engineering are not subject to this ‘outside of major’ requirement.
- Complete all Rice coursework with a cumulative grade point average of at least 1.67 or higher.
- Complete all Rice coursework that satisfy major, minor and/or certificate requirements (as designated by the department or program):
  - with a cumulative grade point average of at least 2.00 or higher.
  - with the standard letter grade earned (not on a Pass/Fail basis)**.
- Satisfy the Writing and Communication Requirement (see below).
- Complete courses to satisfy the Distribution Requirements (see below).
- Complete one Lifetime Physical Activity Program (LPAP) course for one credit hour. Students with disabilities may make special arrangements to satisfy this requirement.
• Otherwise be a student in good academic and disciplinary standing and not under investigation.

PLEASE NOTE:

• **LPAP courses:** No more than 4 hours of credit for LPAP courses may be counted toward graduation.
• **COLL courses:** No more than 3 hours of credit for student-taught College Courses (COLL) may be counted toward graduation. (This includes all courses COLL 100 - COLL 199 as well as the COLL 200 Teaching Practicum.)
• **Full-time registration:** Participation in a full semester Rice-approved Study Abroad program may count towards the fulfillment of this requirement (where full-time enrollment is at least 12 semester credit hours in that fall or spring semester).
• **Pass/Fail courses:** If students have completed Pass/Fail courses that are needed to meet the requirements for their major, minor, or certificate, they should request in writing to the Office of the Registrar that the P grade be replaced with the letter grade earned. Otherwise, the Office of the Registrar will uncover the P grade during the final degree audit process (which begins with day one of the student’s final semester). Once the P is uncovered, it will not be restored; therefore, students should review their Degree Works degree audits carefully to ensure that the courses are applied in their degree audit as expected.

In order to earn a second degree, students must fulfill the requirements outlined in the Dual-Degree Requirements section below.

**Writing and Communication Requirement**

All students must complete and pass a First-Year Writing-Intensive Seminar (FWIS). An FWIS is a content-based, 3-credit hour seminar open only to first-year students that can focus on any topic, and in which writing and communication pedagogy plays a significant role in assignments and grading. To facilitate success in meeting this requirement, all students must take the Composition Examination prior to matriculating. Students who fail the Composition Exam, or fail to take it, must successfully complete the FWIS 100 Fundamentals of Academic Communication course during their first semester, and prior to enrolling in the FWIS course used to meet the graduation requirement. FWIS 100 cannot be used to meet the Writing and Communication (FWIS) graduation requirement.

All first-year students must enroll in and successfully complete an FWIS during their first year at Rice, and all first-year students will be notified prior to Orientation Week if they have been assigned to take an FWIS during the fall or spring of their first year. The following transfer credit restrictions exist for FWIS courses, and this Writing and Communication Requirement:

• Students who matriculate as freshmen may not substitute pre-matriculation transfer credit for the FWIS.
• Transfer students who wish to satisfy the FWIS requirement with courses from another institution must apply for this credit in their first semester at Rice. The course taken at another institution will only be considered for transfer as an equivalent FWIS course i.) with the approval of the Program Director, and ii.) provided that the course transfers in as at least 2.5 semester credit hours.
• Neither freshmen nor transfer students may satisfy the FWIS requirement by taking an equivalent course at another institution after matriculating at Rice.

All FWIS courses carry the FWIS designation and cannot be taken as Pass/Fail. Students are allowed to change FWIS sections during the first two weeks of classes each semester, but they cannot drop one FWIS section without simultaneously adding another. After week two, FWIS courses cannot be dropped. In extraordinary circumstances, students may submit a petition to the Committee on Examinations and Standing (https://dou.rice.edu/committee-examinations-and-standing/), who may approve a drop on an exception basis.

See the Program in Writing and Communication’s web site (https://pwc.rice.edu/) for FWIS section descriptions and for more information on the required English Composition Exam.

**Distribution Requirements (Groups I / II / III)**

Distribution courses introduce the knowledge, intellectual skills and habits of thought characteristic of disciplines or of inquiry across disciplines within three main areas: humanities, social sciences, and natural sciences and engineering. They are broad-based, accessible to non-majors, and provide a foundation that enables students to integrate knowledge from multiple perspectives. No single course is expected to fulfill all the criteria or goals of a distribution group. Courses that presume students’ special expertise or that teach techniques or career-based skills without exposure to modes of analysis and scholarship in the relevant discipline are not eligible for distribution credit. Research or independent study courses and internships and practica are also excluded.

**Group I**

These courses, which are broad in theme and scope, prompt students to probe the modes of knowledge, inquiry or creative practice characteristic of the arts and humanities. Group I courses provide students with essential knowledge and tools for thinking critically about history and culture, and for understanding the centrality of such capacity to informed participation in social, political, and professional life.

**Group II**

These courses introduce the theories, problems, methodologies, and substance of the social sciences. They are intended to familiarize students with different approaches to the study of human behavior and how individuals interact with and are shaped by cultural, social, economic, and political groups and institutions. Because of the complexity and scope of human behavior, these courses may be multidisciplinary in nature. Group II courses provide a foundation for thinking about the social worlds we inhabit and the diverse behavioral factors that both structure human activity at multiple scales and contribute to the dynamism of social and cultural systems.

**Group III**

These courses are designed to give students a basic knowledge of the capabilities and limitations of scientific inquiry and technological development, and to develop their skills in analytical thinking and quantitative reasoning. They provide grounding in the scientific method, engineering design, theorem development, or quantitative analysis. They provide students with the essential knowledge and tools required to appreciate, understand, and critically assess the elegance and power of the natural world and our effect upon it. Some understanding of basic scientific concepts and how the scientific process produces new knowledge is essential for informed participation in contemporary society. In an increasingly data-driven world, an
understanding of how numerical and categorical information can be
manipulated and interpreted is also vital. The goal of Group III courses
is to promote an understanding of the value and impact of scientific
thinking and engineering design, and to foster a critical appreciation
of experimentation, quantitative applications, and scientific research.

Academic Planning for Distribution Requirements

Each student is required to complete at least 3 courses of designated
distribution courses of at least 3 credit hours each in each of Distribution
Groups I, II, and III. The 3 courses in each group must include courses
in at least two departments in that group. Divisional or interdisciplinary
designations, e.g., HUMA or NSCI, count as departments. For the purpose
of this rule, a course taken at another institution and transferred to Rice
as an equivalent distribution course will be counted as one of these
courses, provided that the course earns at least 2.5 semester credit
hours.

Students must complete the distribution requirements in each group by
taking courses that are designated as a distribution course at the time
of course registration, as published in that semester’s Course Offerings
(https://courses.rice.edu). Courses taken outside of Rice and transferred
in can be used to satisfy distribution requirements, assuming they are on
the list of approved and designated distribution courses at the time they
were taken. Completed courses taken prior to matriculation are subject to
the list of designated distribution courses at the time of matriculation.

Applicable Academic Graduation Requirements

Students enrolled in bachelor’s programs may choose to follow the
graduation general and program requirements in effect for any academic
year between their matriculation or graduation. This is known as the
GA Year, or Catalog Year in the university’s degree audit system, Degree
Works.

If the student graduates more than seven years after their matriculation,
they must graduate under the regulations in effect at the time of their
last readmission, or those in effect for any academic year between their
readmission and graduation. Departments and programs may review
coursework completed more than seven years before the student’s
anticipated graduation. However, if they determine that a course no
longer satisfies the requirements of that major, minor, or certificate, then
it is not credited toward the program’s requirements, although it remains
on the student’s record.

Academic credential (degree program, major, minor, or certificate)
requirements may vary from year to year during the period between a
student’s matriculation and graduation. The department or program may,
at its discretion, make any of these variations available to a student for
completion of the program requirements. When declaring the degree and
major, minor, or certificate, students and advisors should identify and
clearly document the catalog year and the requirements to be followed.
Each should retain a copy of the documented requirements. If a new
degree program, major, minor, or certificate is created during the student’s
time at Rice, the new program will be available to the student as of the
year the program appears in the General Announcements.

Application for Degree and Degree Conferral

Students are responsible for making certain that their plan of
study meets all degree and major (and minor and/or certificate)
requirements. To graduate from Rice University, all students must submit
an Application for Degree Form available in ESTHER. This form is required
for all students who plan to complete their degree requirements at the
end of a fall, spring, or summer semester. A late fee will be assessed
for applying after the deadline (please consult the semester-specific
Academic Calendar (https://registrar.rice.edu/calendars) for deadlines).

Upon completion of degree requirements, degrees are approved by the
faculty and conferred in December, May, and August. Fall and Spring
degree recipients may then participate in the annual commencement
ceremony, celebrated each year after the conclusion of the spring
semester. Under specific, limited circumstances, an undergraduate
student may participate in commencement without being a degree
recipient, provided that the student would be joining his or her
matriculating class in that commencement. The specific policy, rules and
procedures are available on the Office of the Dean of Undergraduates’
website. Summer degree recipients have the option of participating in the
following year’s annual commencement ceremony.

Dual-Degree Requirements

To earn a second four-year bachelor’s degree, also known as a dual
degree, currently enrolled undergraduates who have not yet completed
their first bachelor’s degree must:

• Be accepted for the second major by the major’s department or
  program
• Fulfill all requirements for the second degree
• Complete at least 30 additional semester hours at Rice University,
beyond the hours required for their first degree (these hours are
applied to the second degree)

Students seeking a second degree should submit an additional
declaration of major form with the Office of the Registrar (https://
registrar.rice.edu/students/majors-minors/). This paperwork should
include the addition of the proposed degree and major programs
along with the approval of the chair or undergraduate advisor of each
department involved, indicating that the proposed course program
satisfies all major and degree requirements.

Students with a previously earned bachelor’s degree from Rice who wish
to earn a second bachelor’s should look at the Second Bachelor’s Degree
for Rice Alumni (p. 86) page.

Leaves, Withdrawals and Readmission

All students taking a leave or withdrawal from Rice should submit
their written request on an Undergraduate Separation Request Form
(https://dou.rice.edu/student-resources/petitions-special-requests/
undergraduate-separation-request/). Student separations are effective
when acknowledged by the university. Approval of a withdrawal and
leave of absence is always contingent on the student’s satisfactory
completion of course work in the semester preceding the leave. Students
performing poorly may have their approved leave converted to an
academic suspension.
After a separation of more than four semesters, students seeking to return to Rice must submit a written petition to the dean of undergraduates who has discretion to submit it to the Committee on Examinations and Standing. The petition should be received no later than June 1 for the fall semester and November 1 for the spring semester. The petition should include an academic plan approved by the Office of Academic Advising and two letters of support. Academic plans must be reviewed and approved by the Office of Academic Advising by June 1 for readmission in the fall semester and November 1 for readmission in the spring semester. To allow time for review and revision of the academic plan, students must submit their first draft academic plan by October 7 in the fall semester and by May 7 in the spring semester. Guidelines for completing an academic plan can be found on the Academic Advising website (https://oaa.rice.edu/academic-planning/).

Coordinating Separations and Returns

Rice is committed to students' long-term success and to seeing them thrive during their college experience. Part of that commitment means that Rice supports students if they decide to leave the university for a period of time. Professionals in these areas also work with students to plan a roadmap back to Rice.

The Office of the Dean of Undergraduates oversees readmission processes. Each request for readmission will be reviewed individually. The dean of undergraduates or his/her designee will make readmission decisions. Students are encouraged to contact the Office of the Dean of Undergraduates with questions about separations and re-enrollment at the university.

Students are expected to follow the process outlined in their letter from the dean of undergraduates and any other communications from Rice regarding expectations for separation and readmission. Additionally, sometimes students are separated from Rice through more than one process and are required to submit readmission requests to multiple university departments. In certain cases, readmission may be accompanied by additional requirements to support the success and wellbeing of the student.

Leave of Absence

Students may request a leave of absence from the university by submitting their written request on an Undergraduate Separation Request Form (https://dou.rice.edu/student-resources/petitions-special-requests/undergraduate-separation-request/) at any time before the first day of classes in the semester for which they are requesting a leave. A leave of absence taken after the first day of classes is considered a voluntary withdrawal.

To gain readmission following an approved leave of absence of not more than four semesters, students must notify the Office of the Dean of Undergraduates no later than June 1 for the fall semester and November 1 for the spring semester. We strongly recommend that the student consult with the Office of Academic Advising about their academic plan.

Voluntary Withdrawal and Readmission

Students may withdraw voluntarily from the university at any time during the semester up until the last day of classes. Students wishing to withdraw should inform their college magister and submit their written request on an Undergraduate Separation Request Form (https://dou.rice.edu/student-resources/petitions-special-requests/undergraduate-separation-request/). The Office of the Dean of Undergraduates may notify other offices of the university as necessary. Students who fail to give notice of withdrawal should expect to receive grades reflective of any missed academic work.

If students are in good academic standing at the time of their withdrawal, they may be considered for readmission after submitting a written petition to the Office of the Dean of Undergraduates. The petition, received no later than June 1 for the fall semester, and November 1 for the spring semester, should include an academic plan approved by the Office of Academic Advising and two letters of support. Academic plans must be reviewed and approved by the Office of Academic Advising by June 1 for readmission in the fall semester and November 1 for readmission in the spring semester. To allow time for review and revision of the academic plan, students must submit their first draft academic plan by October 7 in the fall semester and by May 7 in the spring semester. Guidelines for completing an academic plan can be found on the Academic Advising website (https://oaa.rice.edu/academic-planning/).

If students withdraw within five weeks of the last day of classes, they must submit the written application on an Undergraduate Separation Request Form (https://dou.rice.edu/student-resources/petitions-special-requests/undergraduate-separation-request/) to the dean of undergraduates who has discretion to submit it to the Committee on Examinations and Standing. If students withdraw within five weeks of the last day of classes, the Committee on Examinations and Standing takes into account their grades (which reflects their performance up to the day of withdrawal) when ruling on their readmission. For purposes of readmission, students whose grades would have led to suspension had they not withdrawn are treated as if they had been suspended.

If students voluntarily withdraw for medical or psychological/psychiatric reasons, students are encouraged to contact the Student Wellbeing Office (https://wellbeing.rice.edu/home/) about the readmission process.

Medical Withdrawal

Students may request a medical withdrawal from the university by submitting their written request on an Undergraduate Separation Request Form (https://dou.rice.edu/student-resources/petitions-special-requests/undergraduate-separation-request/) at any time during the semester, up until the last day of classes. Students considering taking time off for personal reasons related to their wellbeing and mental health are also encouraged to contact the Student Wellbeing Office (https://wellbeing.rice.edu/home/) about the roadmap back to Rice. The Student Wellbeing Office is part of the Dean of Undergraduates Division and serves as a liaison to the medical readmission process during the separation process and when students are ready to return.
Following a medical withdrawal, students should submit a written petition for readmission to the Office of the Dean of Undergraduates no later than June 1 for the fall semester and November 1 for the spring semester. This petition must include documentation of treatment provided. Students also may be required to schedule an interview with the director of the Rice Counseling Center (https://wellbeing.rice.edu/rice-counseling-center/) or Student Health Services (http://health.rice.edu/) or their designees. Academic plans must be reviewed and approved by the Office of Academic Advising by June 1 for readmission in the fall semester and November 1 for readmission in the spring semester. To allow time for review and revision of the academic plan, students must submit their first draft academic plan by October 7 in the fall semester and by May 7 in the spring semester. Guidelines for completing an academic plan can be found at the Office of Academic Advising (https://oaa.rice.edu/academic-planning/).

Students who withdraw for psychological reasons within the last five weeks of a semester are strongly encouraged to focus on their wellbeing needs and will not be eligible to apply for immediate readmission. Therefore, petitions for readmission will be considered in the following readmission request cycle and must be received no later than the applicable June 1 or November 1 deadline.

**Involuntary Withdrawal**

The university may insist on a student's involuntary withdrawal if, in the judgment of the dean of undergraduates or his/her designee, the student's behavior includes, but is not limited to, one or more of the following:

- Poses a threat to the safety or welfare of him/herself or other members of the Rice community;
- Has a serious medical or a psychological condition that the student cannot effectively address while enrolled or which is likely to be severely exacerbated by the Rice academic and/or living environment;
- Demonstrates behavior that seriously interferes with the education of other members of the Rice community;
- Is not able to continue functioning as a student.

Following an involuntary withdrawal, students should submit a written petition for readmission to the Office of the Dean of Undergraduates (https://dou.rice.edu/) no later than June 1 for the fall semester and November 1 for the spring semester. This petition must include documentation of treatment provided. Students may be required to schedule an interview with the director of the Rice Counseling Center (https://wellbeing.rice.edu/rice-counseling-center/) or Student Health Services (https://health.rice.edu/) or their designees. Academic plans must be reviewed and approved by the Office of Academic Advising by June 1 for readmission in the fall semester and November 1 for readmission in the spring semester. To allow time for review and revision of the academic plan, students must submit their first draft academic plan by October 7 in the fall semester and by May 7 in the spring semester. Guidelines for completing an academic plan can be found on the Academic Advising website (https://oaa.rice.edu/academic-planning/).

Students who are involuntarily withdrawn for psychological reasons after the designated drop deadline of the fall or spring semester may not petition for readmission for the semester immediately following the semester from which they are withdrawn. Petitions should be received no later than the applicable June 1 or November 1 deadline to be considered for readmission for the upcoming semester.

**Unauthorized Withdrawal**

Students who leave the university without proper notification of withdrawal are considered to have resigned. Resigned students will only be considered for readmission under exceptional circumstances. In order to be considered for readmission, students must submit a petition no later than June 1 for the fall semester and November 1 for the spring semester to the dean of undergraduates who has the discretion to submit it to the Committee on Examinations and Standing (https://dou.rice.edu/committee-examinations-and-standing/). The petition should include an academic plan approved by the Office of Academic Advising and two letters of support. Academic plans must be reviewed and approved by the Office of Academic Advising by June 1 for readmission in the fall semester and November 1 for readmission in the spring semester. To allow time for review and revision of the academic plan, students must submit their first draft academic plan by October 7 in the fall semester and by May 7 in the spring semester. Guidelines for completing an academic plan can be found on the Academic Advising website (https://oaa.rice.edu/academic-planning/).

**Resignation**

A student may resign from the university by notifying the dean of undergraduates in writing. Resignation means the student is withdrawing, is no longer a student at Rice, and will not return to Rice. A resignation becomes effective when accepted by the dean of undergraduates. In general, if a student is under investigation for a potential Code of Student Conduct violation or has charges pending under the Code, disciplinary proceedings will terminate upon acceptance of the resignation by the dean of undergraduates. However, this general rule does not apply if the resigning student has been charged with sexual assault, sexual harassment, dating violence, stalking or any other behavior that could result in expulsion. A student who resigns is not eligible to receive a degree from Rice, even if the student has otherwise met all of the requirements for the degree. A notation will appear on the resigned student’s transcript indicating that the student is ineligible to reenroll unrelated to academic or financial reasons.

**All Separated Students, Presence on Campus**

All students separated from Rice, whether voluntarily or involuntarily, withdrawn, resigned, or due to academic or disciplinary suspension, must leave campus within 48 hours. Exceptions are granted by the dean of undergraduates or, in the case of disciplinary suspensions, the Office of Student Judicial Programs. All separated students must return their college key to their college coordinator and their student ID to the dean of undergraduates. Participation in student activities on and off campus and use of Rice facilities, including, but not limited to, the student center, the colleges, the playing fields, the recreation center, and the computer labs, are limited to enrolled students. Separated students are expected to be away from Rice during the term of the separation. If the student is employed by Rice at the time of separation, he or she
must relinquish such employment or petition the dean of undergraduates (https://dou.rice.edu) for written permission to continue the on-campus employment; separated students may not begin employment with Rice during the separation. Noncompliance with these requirements may delay readmission.

All Readmitted Students, Return to Campus

Students who have been readmitted must comply with any restrictions or requirements placed upon them by the dean of undergraduates or the Office of Student Judicial Programs. Failure to comply with or follow the restrictions or requirements may be cause for disciplinary action under the Code of Student Conduct (https://sip.rice.edu/). Student Judicial Programs may implement a period of disciplinary probation and/or other restrictions as a condition of any readmission.

Completing Graduation Requirements Elsewhere

Students planning to complete graduation requirements at another institution must first secure formal written approval from the dean of undergraduates by submitting their written request on an Undergraduate Separation Request Form (https://dou.rice.edu/student-resources/petitions-special-requests/undergraduate-separation-request/). Transfer credit is subject to all Rice’s transfer credit policies and must be approved by the Registrar. All other graduation requirements apply, and the student is expected to adhere to all requirements and deadlines.

Name Changes

To comply with a number of government agencies’ reporting requirements, the university must record the name of each student who is a U.S. citizen as the student’s name appears on his or her Social Security card. Students who need to change their names on Rice University records and who are U.S. citizens must notify the Office of the Registrar and present a Social Security card, marriage license, divorce decree or court order, and picture identification when submitting the form. After the change is implemented, the name on the Rice University transcript will read as printed on the supporting document(s).

Registration

Currently enrolled students register in April for the fall semester and in November for the spring semester. Student registration is prioritized based on a student matriculation term and their hours completed and in academic history. Students matriculating in the fall complete their registration during Orientation Week before classes begin in August. Students matriculating mid-year register during Mid-Year Orientation before classes begin in January. Students are strongly encouraged to meet with their divisional or major advisor to discuss their courses for the upcoming semester.

New students may not register or attend classes until they return a properly completed health data form and meet immunization and TB screening requirements. Additionally, all first-time undergraduate students, including transfers, must meet the meningococcal meningitis vaccine requirement to live on campus. Immunizations required for admission are diphtheria/tetanus, measles, rubella, and mumps, meningococcal meningitis, with immunizations against hepatitis B and chicken pox recommended. The Mantoux tuberculin skin test is also required. A late fee of $30 is charged for failure to submit a fully completed health data form by the required date.

Each year, the Office of the Registrar publishes specific registration deadlines for the semesters of that year in the Academic Calendar (https://registrar.rice.edu/calendars/). Deadline due dates for student account balances for each term are published here in the General Announcements under the appropriate sections and on the Cashier’s website (https://cashier.rice.edu/). Any student not registered as of the last day to add classes or any student who is in arrears or becomes in arrears after the last day to add classes will be withdrawn from the university. Withdrawn students will not be allowed to receive credit for the withdrawn semester.

Appeals to this policy must be addressed to the dean of undergraduates. If readmitted, students must petition the Committee on Examinations and Standing (https://dou.rice.edu/committee-examinations-and-standing/) (a $75 fee per course will be assessed) to add classes late and must pay a late registration fee of $125. Additionally, students who are readmitted after being withdrawn for nonpayment will be assessed a $375 readmission fee.

Drop/Add

During the first two weeks of classes, students may add or drop courses without penalty. After the second week of the semester, the following conditions apply for adds and drops. Undergraduate students:

- May not add courses after the second week of classes, except in extenuating circumstances and with the approval of the Committee on Examinations and Standing (https://dou.rice.edu/committee-examinations-and-standing/) (a $75 fee per course will be assessed)
- May drop courses through the seventh week of classes without penalty
- May not drop courses after the end of the seventh week of classes except in extenuating circumstances and with the approval of the Committee on Examinations and Standing (https://dou.rice.edu/committee-examinations-and-standing/) (a $75 fee per course will be assessed). Students who receive approval to drop a course after the designated drop deadline will receive a grade of “W” for that course.

Newly matriculated undergraduate students, both new first-time and transfer students in their first full-term semester at Rice (Fall or Spring), are permitted to drop courses up to the last day of classes. These same students, in their second semester at Rice, if that semester is a full-term Spring semester, are permitted to drop courses through the tenth week of classes without a fee.

Students are allowed to change FWIS sections during the first two weeks of classes each semester, but they cannot drop one FWIS section without simultaneously adding another. After week two, FWIS courses cannot be dropped. In extraordinary circumstances, students may submit a petition to the Committee on Examinations and Standing (https://dou.rice.edu/committee-examinations-and-standing/) who may approve a drop on an exception basis.

There are a small number of courses for which an approved drop-back provision exists. Under certain conditions, for the course pairings on that approved list, a student can drop from the advanced course into the identified lower course until the seventh week of class. More information on this, including the list of courses, may be found on the Office of the Registrar (https://registrar.rice.edu) website, on the Drop-Back Provision page (https://registrar.rice.edu/students/dropback/).
For courses with start and end dates not coinciding with Rice's typical semester calendar, otherwise known as "part of term" courses, the Office of the Registrar will consult with the instructor and:

- Set the add deadline approximately one-seventh of the way into the course
- Set the drop deadline approximately one-half of the way into the course
- Post these special deadlines on the Office of the Registrar's website, under Academic Calendars (https://registrar.rice.edu/calendars/).

Students may not drop courses where the Honor Council has ruled a loss of credit.

Note: Weeks are defined as academic instruction; thus, midterm recess is not included in this calculation.

Course Load

Students at Rice normally enroll for 15 to 17 semester credit hours each semester. For most students, this allows completion of graduation requirements in 8 semesters. In some instances a student may feel the need to petition for a registration overload. Petitioning for a registration overload should be a last resort and only for students with truly extenuating circumstances that would necessitate a course overload. The petition process for receiving a registration overload is dependent upon the student's matriculation semester.

For Students that Matriculated to Rice Prior to Fall 2016 Semester:

- Students must secure permission in writing from the Office of the Academic Advising to register for more than 20 credit hours in any semester. Guidelines and the petition form can be found on the Academic Advising website (https://oaa.rice.edu/overloads-and-part-time-status/).
- Petitions for more than 24 credit hours are not considered.
- No student may receive credit for more than 20 semester credit hours in a semester, including courses taken elsewhere, without prior written approval.

For Students that Matriculated to Rice in the Fall 2016 Semester, and thereafter:

- Students must secure permission in writing from either the Office of the Academic Advising or their appropriate major advisor(s) to register for more than 18 credit hours in any semester.
- Updated guidelines (as of Fall 2017) and a new process and timeline for petition approval can be found on the Academic Advising website (https://oaa.rice.edu/overloads-and-part-time-status/).
- Music students and architecture students are not held to this semester credit hour limit due to their unique curricula; the credit hour limit for these students remains 20 credit hours per semester.

Students must secure permission in writing from the Office of the Dean of Undergraduates (https://dou.rice.edu/student-resources/petitions-special-requests/) before registering for courses if they want to:

- Complete graduation requirements elsewhere
- Register for less than 12 semester credits hours, which will move the student to part-time status
- Register concurrently at another university, regardless of the delivery method of the course
  a. In the absence of extenuating circumstances necessitating concurrent registration, such permission will not generally be granted.
  b. Credit for coursework at another college or university completed in a semester while enrolled at Rice will not be recorded by the Office of the Registrar without prior receipt of written permission from the dean of undergraduates.

Students also should be aware that the Office of the Registrar must report a student's part-time status to various groups, such as loan agencies, scholarship foundations, insurance companies, etc. It is in the student's best interest to determine if he or she will be affected in any way by part-time status.

For more information, visit the Office of the Registrar website (https://registrar.rice.edu/home/).

Course Numbering System

Courses numbered 100-499 are considered undergraduate level, with the 100-299 sequence classified as lower-level (freshman/sophomore) and the 300-499 sequence classified as upper-level (junior/senior). Courses numbered 500 and above are considered to be at the post-baccalaureate or graduate level. Graduate and undergraduate students may, with departmental approval, take certain courses outside their designated level.

Repeated Courses

Students may repeat courses previously taken; however the record of all attempts and the corresponding earned grades remain on the transcript. Additionally the grades for all attempts are included in both the term and cumulative grade point average calculations. If students repeat courses previously passed, credit is awarded only for the course with the highest grade. For example, a student took HIST 117 and received a grade of B. The student then repeated HIST 117 and received a grade of A. Both grades—the B and the A—appear on the transcript and are included in his/her GPA; however, he/she only receives three credits toward his/her degree. On the transcript, a repeated course is indicated by one of the following values:

I – Included in GPA and earned hours
A – Included in GPA, but excluded from earned hours
E – Excluded from both GPA and earned hours

Each course attempt will be included in a student's academic history. Under no circumstances will repeated course attempts be removed from a student's academic history or official transcript, nor will a student be retroactively dropped from a course that they completed.

Some Rice University courses may be repeated for credit. They are specifically noted in the Course Offerings (https://courses.rice.edu) each semester. If a course may be repeated for credit, each grade appears on the permanent record and is included in the student's grade point average.
If students repeat courses for which they have received either advanced placement or transfer credit, the credit will be removed from the transfer or advanced placement credit. Nor can credit be received twice for students transferring in courses that repeat courses previously completed at Rice. Likewise, students will not receive transfer credit for courses previously completed at Rice with a passing grade, with the exception of courses designated as repeatable for credit. In extraordinary extenuating circumstances, an exception to the repeat transfer credit rule can be granted by the dean of undergraduates.

Students may not receive credit twice for cross-listed, equivalent, or graduate/undergraduate equivalency courses taken at the same time. If the course is not repeatable, students may not receive credit for cross-listed, equivalent, or graduate/undergraduate equivalency courses taken in different semesters.

**Change in Registration**

The Academic Calendar ([https://registrar.rice.edu/calendars/](https://registrar.rice.edu/calendars/)) lists deadlines for dropping or adding a course or section. This schedule is binding for all students. Adding or dropping a course, including transferring from one section to another or changing credit status in a course, must be accomplished online or through the completion of the appropriate forms and submission to the Office of the Registrar. Changing a course to/from audit status must be done by the deadlines as posted in the Academic Calendar ([https://registrar.rice.edu/calendars/](https://registrar.rice.edu/calendars/)) for the applicable semester. If a student feels they have exceptional circumstances, they can request exceptions to these deadlines by petitioning the Committee on Examinations and Standing ([https://dou.rice.edu/committee-examinations-and-standing/](https://dou.rice.edu/committee-examinations-and-standing/)).

**Registration During Summer Sessions**

Registration for the Summer Sessions begins in March of each year. Currently enrolled Rice students should register for summer courses online via ESTHER ([https://ester.rice.edu/](https://ester.rice.edu/)) as per normal registration processes and procedures. Rice students should be aware that the registration and payment deadlines do differ, depending on the summer session, and should familiarize themselves with the Academic Calendar ([https://registrar.rice.edu/calendars/](https://registrar.rice.edu/calendars/)). Summer courses that do not generate enrollments sufficient to cover their costs may be canceled prior to the first day of class.

**Pass/Fail During Summer Sessions**

Currently enrolled Rice students can designate a summer course as Pass/Fail during the summer sessions, but can do so only by visiting the Office of the Registrar in person and completing a Pass/Fail Designation form. Similarly, conversions of summer Pass/Fail grades can only be done via paper form at the Office of the Registrar. Students should adhere to the applicable Pass/Fail deadlines, as stated in the Academic Calendar ([https://registrar.rice.edu/calendars/](https://registrar.rice.edu/calendars/)).

**Auditing Courses During Summer Sessions**

As noted in Auditing Courses (p. 11), currently enrolled Rice students may audit one or more summer courses at Rice at the cost of the auditor fee for Rice alumni (see Cashier’s Website ([https://cashier.rice.edu/](https://cashier.rice.edu/))).

**Transcript Policies**

Rice University provides official hard-copy transcripts and electronic transcripts. Official transcripts are issued only at the request of the student. Official transcript requests should be made at least five working days before the desired date of issue. A $10 fee per transcript must be received before a transcript is issued.

Transcripts that have been presented for admission or evaluation of credit become a part of the student’s permanent record and are not reissued. Transcripts from other institutions, if needed, must be sent to Rice University directly from the original issuing institution.

**Transfer Credit**

Courses taken at another college or university that are appropriate to the Rice curriculum may be approved for transfer credit toward a Rice undergraduate degree. Students must have taken the course at a United States academic institution accredited by a regional accrediting agency, or at a foreign institution accredited by the appropriate agency, such as the government’s Ministry of Education. Studies done in one’s home country constitute transfer credit through the Office of the Registrar. Official transcripts from the transfer credit institution must be sent directly from the institution’s registrar to Rice’s Office of the Registrar or hand-delivered in an official sealed envelope. For students participating in an official study abroad program (i.e., studying in a country that is not one’s home country) this coursework must be approved by Rice’s Study Abroad Office.

All coursework must have earned a grade of at least a C- or the equivalent. Students may not transfer courses taken pass/fail or on a similar basis at other institutions. Additionally, students will not receive transfer credit for courses previously completed at Rice with a passing grade, with the exception of courses designated as repeatable for credit. In extraordinary extenuating circumstances, an exception to the repeat transfer credit rule can be granted by the dean of undergraduates.

The following types of non-traditional coursework will not transfer to Rice for undergraduate credit: a.) life experience; courses offered by non-collegiate sponsors such as businesses and government agencies, and labor unions, even if evaluated by the American Council on Education (ACE); b.) equivalency examinations (e.g., CLEP; c.) remedial, college preparatory, and life skills courses; d.) MOOCs (massive open online courses); and e.) areas of study offered by regionally accredited institutions but not offered at Rice, such as agriculture, hotel management, police academy, and fire science.

Generally, grades earned for transfer credit are not entered on the Rice transcript, and transferred courses have no effect on a student’s Rice grade point average. However, where coursework taken at other institutions has been approved by the faculty as an explicitly specified component to a program’s curriculum, the courses will be entered on the transcript and counted in the student’s Rice grade point average (including grades lower than C-). Such opportunities are listed in the program curriculum description. Students should keep in mind that if they choose to pursue an advanced degree, the transcripts from transfer credit institutions, with the actual grades earned in the transferring courses, will be requested as part of a graduate school’s admission process.

After matriculation at Rice, students are limited to 15 semester hours of summer school transfer credit. This restriction is waived for credit earned during an official summer study abroad program through the Study Abroad Office. Additionally, transfer credit taken at another institution while concurrently enrolled at Rice is subject to Rice’s course load (p. 32) policy. Individual departments may place additional restrictions on particular courses and/or institutions. Similarly, various
majors, minors, certificates and degree programs may limit the amount of transfer credit that students may apply to them.

All transferable credits from schools utilizing a system other than the semester hour (such as quarter hours or ECTS credits) will be converted to semester hours. In accordance with university guidelines and based on the external transcript, the Office of the Registrar will determine appropriate transferable credit hours and whether the credits are upper-level or lower-level. In no instance will a course transfer in with credit greater than the semester hour equivalent originally earned for the coursework.

Students with much transfer credit should be aware of the general graduation requirements (p. 26), including the following: Students must be registered at Rice full-time for at least four full fall and/or spring semesters, complete at least 60 semester hours, more than half of their upper-level degree work, and more than half of their upper-level major work at Rice; for the purpose of distribution eligibility, a course taken at another institution and transferred to Rice as an equivalent distribution course must earn at least 2.5 semester credit hours. (Students also should check their specific departmental major requirements).

Prematriculation Transfer Credit

For transfer work completed prior to matriculation, the Office of the Registrar, in conjunction with the academic departments, determines whether courses are appropriate for transfer to Rice as Rice equivalent courses or as TRAN, general elective hours. TRAN will be indicated as either upper- or lower-level and will count toward the total hours needed for graduation and for required upper-level credit if the TRAN credit is designated by the Office of the Registrar as upper-level. If courses transferred to Rice as TRAN credit are subsequently granted Rice equivalent course credit by the Office of the Registrar and academic department, the TRAN credit is reduced by the number of credit hours of the Rice equivalent course. The Rice equivalent course is then listed on the student’s transcript and satisfies the university and major requirements the Rice course satisfies.

Postmatriculation Transfer Credit

Continuing students who plan to transfer courses are strongly advised to seek prior approval. Without such approval, students cannot be certain transfer credit will be accepted at Rice. To receive Rice equivalent credit, students are required to complete the appropriate form through the Office of the Registrar and secure approval from the designated transfer credit advisor in the department offering the Rice equivalent course. Unless approval is secured before or after completing the transfer credit, students can expect transferable courses to be granted TRAN. Transfer credit will be evaluated only after the Office of the Registrar receives an official transcript from the other college or university.

International Transfer Credit

Students seeking transfer credit for courses taken prematriculation and postmatriculation at institutions outside the United States must present a professional course-by-course evaluation of the foreign official transcript. The professional evaluation must verify that the foreign institution is equivalent to a regionally accredited U.S. academic institution and must include an explanation of credits earned (including U.S. semester hour equivalents), grade equivalents, and course levels (lower or upper level). Two reliable services with course-by-course evaluations that include this required information are:

- SpanTran (https://www/spantran.com/)
- Education Credentials (https://www.ece.org/)

All professional evaluations should be obtained from one of these two recommended credential services and submitted to the Office of the Registrar. Payment for the professional evaluation is the responsibility of the student.

Students participating in an official study abroad program through the Study Abroad Office are exempt from the requirement of having the international transcript professionally evaluated, unless the Office of the Registrar is unable to make a clear distinction of the credit earned. Study abroad international transfer credit may be transferred back to Rice in the following situations:

Third-Party Providers

Students participating in a study abroad program with a third party provider must provide a School of Record transcript in order to transfer credit back to Rice.

Direct Enrollment

Students participating in a study abroad program with direct enrollment into a foreign university should be prepared to provide a professionally evaluated transcript if the Office of the Registrar is unable to make a clear distinction of the credit earned.

European Credit Transfer System (ECTS)

A number of European institutions use the European Credit Transfer System (ECTS). One ECTS credit is comparable to one-half (0.5) semester hour credit at Rice. It is suggested that students take 30 ECTS credits per semester, which will transfer to Rice as 15 semester hours. A minimum full-time load during the fall and spring semesters is 24 ECTS, which will transfer to Rice as 12 semester credit hours.

Transfer credit for study away from Rice, including international study, is governed by guidelines established by Rice’s Faculty Senate, available here (https://professor.rice.edu/uploadedFiles/Professor/Faculty_Senate/Guidelines%20for%20international%20credit%20rev.pdf).

Veterans Information

Qualified veterans, dependents of deceased or disabled veterans whose death or disability is a direct result of their military service, or dependents in receipt of transferred benefits from a veteran may be eligible for VA educational benefits under one of the following programs while attending Rice University:

- Chapter 30: Montgomery G.I. Bill® - Active Duty/Discharged
- Chapter 31: Vocational Rehabilitation
- Chapter 32: Veterans Educational Assistance Program (VEAP)
- Chapter 33: Post 9/11 G.I. Bill®
- Chapter 35: Dependents Education Assistance
- Chapter 1606: Montgomery G.I. Bill® - Selected Reserve
- Chapter 1607: Reserve Education Assistance Program (REAP)

Rice University does not impose any penalty, including the assessment of late fees, the denial of access to classes, libraries, or other institutional facilities, or the requirement that a covered individual borrow additional funds, on any covered individual because of the individual’s inability to meet his or her financial obligations to Rice University due to the delayed disbursement funding from VA under Chapter 31 or Chapter 33 (other than those that may be required by the particular aid program itself). Rice
University may require additional payment or impose a fee for the amount that is the difference between the amount of the student's financial obligation and the amount of the VA education benefit disbursement. In some cases, the student may be required to submit a Free Application for Federal Student Aid (FAFSA).

If you qualify for state or federal education benefits through military service and payment to the school is delayed, you may be eligible for a 60 day deferment of tuition and fees to avoid late fees and/or being dropped from classes. The deferment request form is available here: https://www.tvc.texas.gov/wp-content/uploads/2017/09/HB-846-Form-Fillable.pdf. Submit the completed form to the Office of the Registrar.

At Rice University, veterans' benefits are managed through the Office of the Registrar. This office assists all veterans and their dependents who wish to receive Veterans Administration (VA) educational benefits.

Please see the Office of the Registrar's website (https://registrar.rice.edu/students/veterans/) regarding the documentation required to obtain educational allowances from the VA.

Veterans who are planning to attend the university should contact Rice University's Veterans Affairs Representative (registrar@rice.edu) at least two months before the date of entry. Such time is required to expedite the processing of paperwork for educational allowances from the VA.

For certification of benefits, students should have an enrollment of at least half time (6 credit hours for undergraduates).

For additional information regarding other veterans' educational programs, contact the Office of the Registrar at 713-348-4999 or registrar@rice.edu.

Student Services and Organizations

- Clubs and Organizations (p. 35)
- Disability Resource Center (p. 36)
- Financial Aid (p. 36)
- Health, Counseling and Wellbeing (p. 39)
- Student Government (p. 41)
- Tuition, Fees and Expenses (p. 41)
- Undergraduate Student Life (p. 43)

Clubs and Organizations

Office of Student Activities

The Office of Student Activities, located in the Rice Student Center, oversees the activities of various campus-wide student organizations, student requests for facilities usage, and coordination of various leadership development programs.

In addition to managing the registration process, finances, and general advising for over 250 registered clubs at Rice University, Student Activities provides direct advising to the following organizations:

- Student Association (SA) (https://sa.rice.edu/) - Undergraduate student government, including college presidents
- Graduate Student Association (GSA) (https://gsa.rice.edu/) - Graduate student government
- Impact Rice Retreat (IRR) (https://studentcenter.rice.edu/impact/) - A student-led leadership development retreat for freshman and sophomore students
- Leadership Summit (https://studentcenter.rice.edu/summit/) - Advanced student leadership development program
- Rice Program Council (https://riceprogramcouncilsite.wordpress.com/) - Host campus-wide student events on and off campus

The Rice University clubs are divided into eleven genres: Academic/Honorary, Cultural/International, Environmentalism and Sustainability, Political, Recreational/Sport, Religious/Spiritual, Service, Social Justice, Social/Special Interest, STEM, and Visual/Performing Arts. The full list of registered clubs can be found online (https://studentcenter.rice.edu/club-listings/). Student Activities also provides leadership development opportunities in the form of Lunch and Lead sessions, Base Camp workshops, the Impact Rice Retreat, Leadership Summit, and additional Club Development programs.

A large number of student organizations address special student interests, such as the Black Student Association, the Hispanic Association for Cultural Enrichment at Rice, the Chinese Student Association, Rice Young Democrats, and Rice University College Republicans. There are also numerous sport related clubs such as sailing, rugby, volleyball, and soccer. Some of the special-interest groups include a pre-med society, a pre-law society, and Habitat for Humanity.

Many organizations are associated with academic and professional disciplines, such as foreign language clubs, honor societies, and student affiliate groups such as the American Institute of Chemical Engineers, the American Society of Civil Engineers, and the American Society of Mechanical Engineers.

Student Activities also recognizes a number of religious and spiritual organizations. These include, but are not limited to, Chi Alpha Christian Ministries, the Baptist Student Ministry, Catholic Student Association, Hillel, the Muslim Student Association, and the Boniuk Council for Interfaith. Many of these clubs are assisted by local clergy or staff, and form the Joint Campus Ministers (https://studentcenter.rice.edu/student-activities/group/club-resources/joint-campus-ministries/).

The Clubs Office is located in the basement of the Rice Student Center and provides computers, workspace, storage, and a color copier for club convenience.

For more information on the Office of Student Activities, please visit https://studentactivities.rice.edu/.

Center for Civic Leadership

The Center for Civic Leadership (CCL) fosters engaged citizenship among Rice undergraduates through integrated curricular and experiential learning opportunities. These opportunities help students develop the capacity to exercise civic leadership by better understanding themselves, their responsibilities as citizens, the complexity of social issues, and the mechanisms for creating sustainable change in Houston and communities beyond. By serving as the hub for the university’s engagement with off-campus partners in Houston, the United States, and around the world, the CCL assists Rice faculty and staff with creating additional experiential learning opportunities with external partners.

In addition to academic coursework in leadership, the CCL offers research, service, advocacy, philanthropy, and public policy opportunities
that enable students to work with a range of off-campus partners in the public, private, and non-profit sectors. Programs include Urban Immersion, Alternative Spring Break, Houston Action Research Teams, the Loewenstein Fellowship in Civic Research and Service, and the Leadership Rice Mentorship Experience. While CCL programs are open to all undergraduates, those who seek greater depth and intentionality in their leadership development have the opportunity to pursue the Certificate in Civic Leadership. As home to undergraduate fellowships advising, the CCL also enables students to build upon their academic and leadership experiences to identify undergraduate and post-baccalaureate opportunities that best meet their future goals.

For more information on the Center for Civic Leadership, please visit https://ccl.rice.edu.

Rice Student Volunteer Program
By heightening student awareness of community needs and generally raising social consciousness, the Rice Student Volunteer Program (RSVP) has organized volunteer projects for Rice students, faculty, and staff since 1985. Historically, the most popular event of each semester is Outreach Day, a Saturday when students volunteer with multiple nonprofit agencies throughout the Houston area, learning how to take thoughtful action to build a stronger, more just community. RSVP invites each student’s involvement as an officer, a committee member, a project organizer, or an interested participant in any RSVP event.

For more information on the Rice Student Volunteer Program, visit https://www.rsvp.rice.edu.

Intercollegiate Speech and Debate
Consistently ranked in the top 10 nationally, the George R. Brown Forensic Society sponsors competition in the categories of Individual Events, Lincoln–Douglas, and Parliamentary Debate. The society provides students with the chance to hone their public speaking skills and to qualify for competition both at the American Forensic Association National Individual Events Tournament and at the National Parliamentary Debate Championships. Recognizing the importance of developing strong communication skills, the society has an open admission policy, inviting students with little or no previous experience as well as those with extensive high school backgrounds to become members of one of the most successful teams at Rice.

For more information on speech and debate, please visit: https://debate.rice.edu/.

Office of Multicultural Affairs
The Office of Multicultural Affairs (OMA) has, as its primary mission, coordinating and implementing comprehensive educational, cultural, and social programs designed to emphasize inclusiveness, while promoting intercultural dialogue, awareness, and respect for diversity. Through advocacy, cultural programs, and education, OMA also helps students understand and appreciate racial, ethnic, gender, and other differences, while creating opportunities for students to challenge prejudice and expand their cultural knowledge and appreciation.

OMA utilizes its programming and support systems to provide an optimum developmental environment where all members of the University community may develop to the highest level of their potential in an atmosphere free from harassment and bias, thereby ensuring Rice’s standing as an intellectually and culturally vibrant community. Cultural student clubs, such as the Black Student Association, the Hispanic Association for Cultural Enrichment at Rice, and the South Asian Society meet regularly with OMA to discuss programming logistics and other issues. Another major program for students under OMA is HARAMBE, (Swahili for ‘working together in unity’ or ‘let’s pull together’), a group that seeks to create a unifying event for entering African-American students, allowing them to build social and academic connections with peers, faculty, and staff.

For more information about the Office of Multicultural Affairs, please visit https://oma.rice.edu/.

Disability Resource Center
Located on the first floor of Allen Center, the Disability Resource Center coordinates campus services for individuals with documented disabilities. For academic accommodations, adaptive equipment, or disability-related housing needs, the Disability Resource Center is the campus resource for all students with disabilities. Information is maintained on scholarships, internships, and other programs specific to students with disabilities. For more information, see the Disability Resource Center website at https://drc.rice.edu. Students can schedule an appointment with the director of the Disability Resource Center by calling 713-348-5841.

Section 504/ADA Coordinator—The director of affirmative action serves as the Section 504/ADA coordinator at Rice University. Concerns or complaints relative to disability issues should be directed to the:

Office of Affirmative Action (https://professor.rice.edu/professor/EEOAA.asp)
205 Allen Center
713-348-4930

Financial Aid
The financial aid programs at Rice provide assistance to meet demonstrated need for university attendance for all admitted students. Through grants, endowments, low-interest loans, campus work opportunities, or a combination of these programs, Rice makes every effort to provide students and families assistance to meet their educational expenses. The financial aid program receives funding from many sources. Rice uses contributions from alumni and friends to establish and maintain scholarships and loan funds. Federal and state grant, work, and loan programs also provide funds. Awards are based primarily on financial need and a computed Expected Family Contribution (EFC), although there also are attractive loan opportunities for students and families who demonstrate no need. Financial information is also available online at the Office of Financial Aid (https://financialaid.rice.edu/) website.

The university determines need for first-time students by having them complete the College Scholarship Service (CSS) PROFILE (https://student.collegeboard.org/css-financial-aid-profile/). Students register for CSS PROFILE by visiting its website at https://www.collegeboard.org/https://cssprofile.org (http://cssprofile.org). Students will complete the PROFILE online. The PROFILE number for Rice is 6609. First-time students also complete the Free Application for Federal Student Aid (FAFSA (https://fafsa.ed.gov/)). The FAFSA school code for Rice is 003604. Student and parent income tax documents, including W-2 forms, are required to be submitted to The College Board using Institutional Documentation (IDOC) Service (https://idoc.collegeboard.org/idoc/).
The university determines need for continuing students by having them complete the FAFSA (https://fafsa.ed.gov/) and the PROFILE (https://student.collegeboard.org/css-financial-aid-profile/). Additional documents may be requested by the Office of Financial Aid and uploaded through ESTHER.

“Need” is the amount required to meet the difference between each student’s basic educational expenses and his or her family’s resources. Parents are expected to contribute according to their financial means, taking into account income, assets, home equity, number of dependents, and other relevant factors. Students are expected to contribute as well from their own assets and earnings, including appropriate borrowing against future earnings.

Additional information about applying for financial aid and how aid works at Rice is available online through the Office of Financial Aid (https://financialaid.rice.edu/). 

**Need-Based Application Process**

Rice University is a need-blind school. Applicants are admitted to the university regardless of their family’s ability to pay for college. Rice will meet 100% of demonstrated financial need as determined by university calculations. Rice considers applicants for all appropriate assistance administered by the university, including grants, scholarships, loans, and work. Students receive notification of an offer after their financial aid files are complete. The Office of Financial Aid provides financial assistance only for coursework sponsored through Rice University.

To apply for financial assistance, first-time students must submit the following:

- Free Application for Federal Student Aid (FAFSA) (https://fafsa.ed.gov/)
- Student and parent income tax documents and W-2 forms (IDOC (https://idoc.collegeboard.org/idoc/))

Priority application dates for first-time students:

- Early Decision: November 15
- Regular Decision: March 1
- Transfer Applicants: April 15

Continuing students must submit the following:

- CSS PROFILE (https://cssprofile.collegeboard.org/)
- Free Application for Federal Student Aid (FAFSA) (https://fafsa.ed.gov/)
- Additional documents may be requested by the Office of Financial Aid

Priority application date for continuing students: February 1

Continuing students who submit financial aid applications by January 1 may receive an earlier award notification.

**Decision**

Financial aid offers are determined annually. Award amounts are specified in the financial aid offer letter. Because financial circumstances change from year to year, Rice conducts an annual review of need and offers aid accordingly. For this reason, continuing students must complete the CSS PROFILE and file the FAFSA every year that they seek assistance.

The university, from time to time, may adjust its methods of computing financial need or its policies regarding the types of financial assistance that it offers to meet the financial needs of the largest possible number of students. Therefore, the amount and type of financial aid may change from year to year, even when the student’s financial situation appears to remain relatively stable.

**Disbursements**

Financial aid awards during the academic year occur in two equal disbursements (fall and spring semesters), and are released to the student’s account once all requirements are completed. The scheduled disbursements are credited a week prior to the start of each term or upon completion of financial aid requirements, whichever is later. Missing requirements may be reviewed through the financial aid tab in Esther (https://esther.rice.edu/). Additional disbursement information is available on the Office of Financial Aid (https://financialaid.rice.edu) website.

**Types of Financial Aid and Assistance**

**Need-Based Scholarships/Grants**

Various need-based scholarships and grants are awarded to assist students with demonstrated need. Institutional need-based grants (i.e. Rice Investment Grant, Rice Grant, etc.) may be exchanged for endowed or named scholarships in part or in full.

**Merit Scholarships**

Merit Scholarships are offered through the Office of Admission to incoming students. Merit scholarships may only be used for coursework sponsored by Rice University. Should a student with a merit award graduate early, unexpended merit funds will not be granted to the student. Merit scholarships may be exchanged for endowed or named scholarships in part or in full.

**Student Loan Funds**

To assist students and parents with educational financing, the Office of Financial Aid participates in the following programs:

- **Federal Direct Loans**—These are low-interest loans made to students attending school on at least a half-time basis. Subsidized loans require need-based financial aid eligibility, but unsubsidized loans are not based on financial need.

- **Federal Direct PLUS Loan**—The PLUS loan is a low-interest loan to parents or legal guardians of dependent undergraduate students. Eligibility is not based on demonstrated financial need.

- **Private Education Loans**—These nonfederal and state loans are available to students attending school on at least a half-time basis. Eligibility is not based on financial need. These are credit-based loans and may require a co-signer.

A few endowments for student loans have been established at Rice primarily as memorial tributes. These funds exist separately from the normal financial aid program. Rice uses them to make small emergency loans to students experiencing unexpected financial problems or showing additional need beyond regular eligibility. All requests for these loans must be submitted to the Office of Financial Aid.
Additional information regarding loan options is available online through the Office of Financial Aid (https://financialaid.rice.edu/).

**Student Employment Programs**

Opportunities for employment are available to students, either on or off campus, during the academic year. Students are eligible to work under either the Federal Work-Study Program or the Rice Work Program. Students interested in employment should access the Office of Financial Aid (https://financialaid.rice.edu/student-employment/) webpage.

**Deferred Payment Plan**

Rice offers a deferred payment plan to enable families to finance students' educational costs. This plan divides each semester's charge over four installments. Details are available to eligible students each semester at the time of billing. Students arrange for deferred payment through the Cashier's Office (https://cashier.rice.edu/).

**Summer Aid**

Effective with Summer Session 2019, degree-seeking Rice undergraduates who receive need-based aid during the academic year are eligible to receive financial aid toward a total of nine credit hours of Rice summer coursework during their time as a Rice undergraduate. This aid is only available for for-credit Rice Online, in class, or 'Rice in country' coursework, and for participants in other Rice faculty-led overseas programs offered for Rice credit during the summer. It is not available for non-Rice summer programs.

A summer request form is required to be submitted to the Office of Financial Aid for consideration of summer aid eligibility. The summer request deadline and additional information is available through the Office of Financial Aid (https://financialaid.rice.edu/).

**Financial Aid Eligibility**

Undergraduate students are eligible to apply for need-based Rice sponsored and federal/state/private aid during the first eight semesters at Rice; for transfer students the number of semesters is prorated based on the number of hours transferred. If a student is enrolled beyond eight semesters, the student may apply for federal/state/private aid for an additional two semesters. (Architecture students may apply for Rice sponsored aid for two semesters following their preceptorship to complete the BArch degree.) If a student attends part time during a semester or withdraws during a term, the semester is counted toward the number of semesters aid is available.

**Undergraduates Enrolled in Graduate Courses**

In some cases, an undergraduate student may be accepted provisionally to a Rice graduate program, allowing the student to pursue simultaneously graduate and undergraduate degrees while still classified as an undergraduate student. In order to maintain need-based financial aid eligibility as a full-time undergraduate, the student must be classified as an undergraduate student and be enrolled in at least 12 undergraduate semester credit hours toward the undergraduate degree. If the undergraduate hours drop below 12 semester credit hours, then the need-based financial aid may be adjusted or cancelled. Need-based aid is not available once the student is classified as a graduate level student or graduate level credit hours exceed undergraduate level credit hours for the semester.

**International Students**

Need-based aid is available to international students and is decided on a case-by-case basis. If the student indicated on the application for admission that need-based aid would be required to attend, then the student must submit an application for need-based aid to the Office of Financial Aid, and that office will determine whether there is demonstrated need. Eligible students must reapply each year by submitting a CSS Profile (https://cssprofile.collegeboard.org/).

International students not receiving need-based aid in their first year are not eligible to apply for need-based aid in subsequent years at Rice.

**Consumer Information**

A summary listing of student consumer information is available through the Office of Financial Aid (https://financialaid.rice.edu/).

**Loan Counseling**

Students who are recipients of federal student loans will be required to complete online loan entrance counseling before funds will be credited to student accounts. Students also will be required to complete online exit counseling at the completion of a program of study, enrollment of less than half-time, or withdrawal from Rice. Failure to complete online loan exit counseling will result in a transcript hold.

**Satisfactory Academic Progress**

Federal regulations (CRF § 668.34) require that students demonstrate satisfactory academic progress toward completion of their degree to continue to receive institutional, federal, and state financial aid. With the exception of the BArch degree program in architecture, eligibility for institutional aid is limited to the equivalent of 8 semesters of undergraduate enrollment, including coursework taken at other colleges and universities. In addition to meeting the standard for receiving financial aid, students must also meet the academic standards of Rice University.

Satisfactory academic progress is comprised of three areas as required by federal regulations. A student must complete their degree within a specified period that does not exceed 150% of the published length of the program, demonstrate they are making progress towards the completion of their degree by successfully completing 67% percent of all attempted courses, and maintain a cumulative 1.67 GPA, which is consistent with meeting graduation requirements. This regulation applies to each financial aid applicant, whether a previous recipient or not.

Credits counted in the maximum time are all attempted credits (even when not a financial aid recipient). Attempted credits include:

- Earned credits – Passed (A+ through D), Satisfactory (S)
- Repeated courses
- Withdrawal
- Failures – Failed (F), Unsatisfactory (U)
- Incomplete
- All accepted transfer credits (including Study Abroad courses) toward the degree program

If a student fails to meet the satisfactory academic progress standards by the end of the academic year, the student will be placed on Financial Aid Suspension and will not be eligible for aid until the satisfactory academic progress standards are met.

**Appeal**

Students are allowed to appeal their Financial Aid Suspension in cases of the death of a relative, an injury or illness of the student, or other special circumstances. Students must submit a letter discussing why the student failed to make satisfactory academic progress, and what has changed in the student's situation that will allow the student to
demonstrate satisfactory academic progress at the next evaluation. Supporting documentation (doctor’s letter or academic plan) must accompany the appeal letter and must be submitted to the Office of Financial Aid prior to the beginning of the subsequent term. The Appeals Committee will review appeals on a case-by-case basis.

If an appeal is approved by the Appeals Committee, the student will be placed on financial aid probation and may receive financial aid for one probationary semester. At the end of the probationary term, the student must meet the satisfactory academic progress standards or meet the requirements of an approved academic plan developed by the student’s academic department(s).

Financial Aid after Academic Suspension
Students who have been suspended by the university for academic reasons need to be aware that if they are readmitted by the Committee on Examinations and Standing, they may not be eligible for financial aid based on their prior academic performance. Students who are petitioning for readmission are advised to contact the Office of Financial Aid to determine their aid eligibility.

Return of Title IV Funds
Students who receive federal funds as part of their aid packages and do not complete the academic term may be subject to returning a portion of those funds. Contact the Office of Financial Aid for information about “Return of Title IV Funds” policies and procedures.

Health, Counseling and Wellbeing

Health and Wellness Support Services Fee
By paying an annual student Health and Wellness Support Services Fee, all students gain access to the Student Health Services (https://health.rice.edu/), Rice Counseling Center (https://wellbeing.rice.edu/) and the Student Wellbeing Office (https://wellbeing.rice.edu/). Detailed information on the care and services each provide is available from these centers.

Student Health Services
Student Health Services, an outpatient medical clinic, is located in the Morton L. Rich Health Center. The clinic is staffed by primary care physicians, nurses, and ancillary support staff. More information can be found at https://health.rice.edu (https://health.rice.edu/).

Clinic hours are from 8:00 a.m. to 5:00 p.m., Monday through Friday, during fall and spring semesters. For after-hours and weekend medical care, students may choose among a number of local clinics and hospitals (guidance on self-care as well as local healthcare options can be found on the website). The clinic is open full-time from the first day of Orientation Week until the day before commencement. It is closed during Thanksgiving and the winter break. The clinic also is open for reduced hours during the summer months. Visitors to the clinic are covered by the services fee, however, students must pay for all medical care outside the clinic’s purview, including blood tests, x-rays, and outside physician consultations. Should such medical care be necessary, students are urged to review their insurance coverage and pick the best available option.

Care at the clinic is arranged through appointment at 713-348-4966. In emergencies, students should call the Rice University Police Department (https://rupd.rice.edu/) at 713-348-6000.

The Student Health Service provides the following:
- Medical care for illness and injury with referrals to specialists when needed
- Maintenance of health records for all students
- Immunizations and other preventive services
- General information for all students
- Contraceptive counseling and routine Pap smears
- Physical examinations

Confidentiality for Health Services
The Student Health Service physician–patient relationship is a confidential one. Medical records will be released only on receipt of written authorization from the student or as required by law or when the patient poses a significant risk to herself or himself or another person. Physicians with Student Health Services are considered confidential employees under Title IX, meaning that should a student wish to speak about domestic or sexual violence or stalking with a physician, his/her information is confidential and will not be released without the student’s written consent. The only exception is for students under the age of 18.

Health Insurance
All registered, degree-seeking students are required to maintain health insurance coverage while enrolled at Rice University.

Students are required to either enroll in the Rice student health insurance plan administered by Aetna Student Health, or complete an online waiver application demonstrating comparable insurance coverage (https://studenthealthinsurance.rice.edu/about/waiver-requirements/). Every eligible student will have the insurance premium fee placed on their account until they have actively enrolled in insurance coverage or submitted a waiver. The student’s tuition bill will be updated based on successful completion of enrollment or the waiver application. Insurance and waiver applications, as well as specific dates for enrolling, frequently asked questions, and more can be found on the Rice Student Health Insurance website: https://studenthealthinsurance.rice.edu (https://studenthealthinsurance.rice.edu/home/).

The fall student insurance open enrollment period will begin on July 9, 2019 and end on August 30, 2019. The spring student insurance open enrollment period will begin on December 2, 2019 and end on January 17, 2020. Please note, however, that students have until August 30, 2019 (Fall) or January 17, 2020 (Spring) to remove the student insurance charge by submitting a successful waiver application. All students who have not taken action to enroll in or waive coverage by the open enrollment deadlines will be automatically enrolled in the student insurance annual plan. The premium amount will not be prorated. Once enrolled in coverage, students are unable to cancel coverage for any reason. Please note the automatic enrollment process does require additional processing time. You may have to pay out of pocket for medical services until your enrollment has been processed. Once processed, you will be able to file a claim for reimbursement.

For questions concerning the Rice plan, please contact studentinsurances@rice.edu or call (713) 348-5544.

Note: Students may enroll in an annual plan or by semester only. If you waive coverage in the fall open enrollment period, you are still expected to have insurance coverage for the spring. If you enroll in the fall semester plan, you may enroll or submit a waiver for the spring semester plan. If you are auto-enrolled in the fall, you will be enrolled in the annual
Wellbeing and Counseling Center Services

Center Contact Information

The Wellbeing and Counseling Center provides confidential counseling treatment, as well as wellbeing case management services and Title IX support for graduate and undergraduate students. The Center also provides mental health and wellbeing related education for the student body. The Wellbeing and Counseling Center is located in the Barbara and David Gibbs Recreation and Wellness Center. The Center is open Monday - Friday from 9:00 a.m. to 5:00 p.m. Walk-ins are available during business hours. For appointments contact the Wellbeing and Counseling Center at 713-348-3311 (24/7) or visit https://wellbeing.rice.edu/ for more information. In emergencies, students should call the Rice University Police Department (https://rupd.rice.edu/) at 713-348-6000.

Rice Counseling Center

Rice Counseling Center addresses students' psychological needs with various programs and services. Typically, students who use the counseling services bring with them very common concerns: roommate problems, breakup of a relationship, academic and/or interpersonal anxiety, family problems, difficulties adjusting to Rice, or confusion about personal goals, values, and identity. Counselors are equipped to handle a variety of issues, including substance use, eating concerns, sexual assault and relationship violence, depression, and the coming-out process. Rice Counseling Center offers both individual and group counseling, as well as educational workshops and programs.

When students need long term or specialized counseling or treatment, counselors refer them to an outside provider. The students, or their health insurance, must pick up these costs. All students who have paid the Health and Wellness Support Services Fee are eligible for initial assessment sessions, consultations, crisis intervention, and educational programming. Students who have worked with a mental health professional prior to enrolling at Rice are encouraged to make contact with the Rice Counseling Center prior to coming to Rice. This will allow the student to make arrangements for a continued care plan. This plan may involve working with the Rice Counseling Center or working with the center to find a suitable off-campus provider.

The Rice Counseling Center can be contacted at 713-348-3311 or at https://wellbeing.rice.edu/. The Rice Counseling Center provides the following services:

- Psychological crisis intervention, on a walk-in emergency basis during regular office hours or by phone at any time, 24 hours a day, by calling 713-348-3311. This includes after hours and weekends.
- Initial intake to assess needs and assignment to an appropriate level of care
- Short-term individual and couples counseling
- Group therapy and support groups
- Medication consultations with the center’s psychiatrist for students in counseling at the center
- Other consultations (e.g., how to make a referral or how to respond to a friend in distress)
- Educational programming (e.g., various presentations on mental health issues)

Confidentiality for Counseling

Rice Counseling Center services are confidential; information about a student is not released without the student’s written consent except as required by Texas state law. Before entering a therapeutic relationship with a counselor, students may review and discuss confidentiality with their counselor; ask all necessary questions, and be certain they understand how confidentiality will be applied in their case. As detailed in RCC’s treatment agreements, state law does not extend confidentiality to several circumstances, including where:

1. there is risk of imminent harm to the student or others;
2. the counselor has reason to believe that a child or an elderly or handicapped person is, or is in danger of, being abused or neglected;
3. a court order is issued to release information; or
4. the counselor suspects that the student has been the victim of sexual exploitation by a former health care provider during the course of treatment with that provider.

In addition, RCC sometimes provides de-identified information to administrative officials who are in a need-to-know capacity. In some cases the terms of the treatment engagement with RCC may require a student to share assessments, diagnoses, or treatment plans from non-Rice treating professionals with Rice counselors.

Therapists with Rice Counseling Services are considered “confidential” employees under Title IX, meaning that should a student wish to speak about domestic or sexual violence or stalking with their therapist, their information is confidential and will not be released without his or her written consent. The only exception to this is for students under the age of 18.

Student Wellbeing Office

The Student Wellbeing Office provides wellbeing advising and case management services to support students who have experienced wellbeing challenges that may be impacting their personal or academic goals and overall success at Rice. Wellbeing advisors connect students to university resources and procedural options to help students during their enrollment. If students decide to take time off to focus on their wellbeing needs, wellbeing advisors work with them and serve as liaisons to the medical readmission process when students are ready to return. Wellbeing advisors also coordinate with the clinical counselors and Title IX Support to provide wellbeing programs and education for the student body.

For more information, please visit https://wellbeing.rice.edu/studentwellbeing (https://wellbeing.rice.edu/studentwellbeing/) or contact the office at 713-348-3311 or wellbeing@rice.edu.

Office of Sexual Violence Prevention and Title IX Support

Rice encourages any student who has experienced an incident of sexual, relationship, or another form of interpersonal violence, harassment, or gender discrimination to seek support. There are many options...
available both on and off campus for all students, regardless of whether the perpetrator was a fellow student, a staff or faculty member, or someone unaffiliated with the university. Students have access to a Title IX resource navigator who will assist the student in determining the best path for them. Furthermore, students who have been accused of committing interpersonal violence or harassment can also seek support (https://safe.rice.edu/) under Title IX.

Students should be aware when seeking support (http://safe.rice.edu/) on campus that most employees are deemed ‘responsible,’ and thus are required by Title IX to disclose all incidents of non-consensual interpersonal behaviors to Title IX professionals on campus who can act to support that student and meet their needs. Rice prioritizes student privacy and safety, and only shares disclosed information on a need-to-know basis.

The therapists at the Rice Counseling Center and the doctors at Student Health Services are ‘confidential’ employees, meaning that Rice will not be informed about the incident if a student discloses it to one of these staff members.

For more information, including how to reach out to Title IX Support, please visit https://safe.rice.edu or email titleixsupport@rice.edu.

### Student Government

All undergraduate students are members of the Rice Student Association (SA) (https://sa.rice.edu/), which is governed through the Student Senate. The senate includes the president, two vice presidents, the secretary, the treasurer, the eleven college presidents, and eleven college senators. Each year committees are appointed within the SA to work on important projects. The SA strives to communicate with the Rice administration, faculty, and staff to implement changes benefiting the Rice community and to collaborate with the eleven colleges to establish a Rice identity. The SA is also the umbrella organization for all registered undergraduate student clubs and is a constant resource for any student. Please visit https://sa.rice.edu (https://sa.rice.edu/) for more information about the SA.

### Award Presentations

The Rice Student Association presents three coveted awards annually, two to students and one to a faculty or staff member. The Rice Outstanding Senior Awards are presented to graduating seniors who have contributed the most to excellence throughout their time at Rice. The Rice Service Award, a memorial to Hugh Scott Cameron, first dean of students at Rice, is awarded to students who have rendered distinguished service to the student body. The Mentor Recognition Award recognizes extraordinary service to the student body by a current member of the faculty or staff. Student committees appointed by the association make the selections.

### Tuition, Fees and Expenses

The following costs apply to undergraduates in the 2019-2020 school year.

#### Tuition & Fees

<table>
<thead>
<tr>
<th>tuition &amp; fees</th>
<th>hour</th>
<th>semester</th>
<th>annual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate Tuition (Entering and Continuing)</td>
<td>$2,014</td>
<td>$24,165</td>
<td>$48,330</td>
</tr>
</tbody>
</table>

1 Individual pricing may apply based on the following:

- **Part-Time Enrollment** refers to enrollment of less than 12 credit hours during a semester. Students seeking part-time enrollment must obtain approval from the Office of the Dean of Undergraduates (https://dou.rice.edu/reduced-course-load-requests/) and adjust their schedule accordingly within the first two weeks of the semester. Part-time enrollment tuition is calculated on the per-credit rate. Students are also assessed a one-time per semester part-time enrollment fee. Students not approved for part-time enrollment or students with approval who fail to adjust their schedule before the end of the second week of classes will be assessed the full-time enrollment tuition charge.

<table>
<thead>
<tr>
<th>Required Fees</th>
<th>Fall</th>
<th>Spring</th>
<th>Annual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Activity Fee</td>
<td>$59</td>
<td>$59</td>
<td>$118</td>
</tr>
<tr>
<td>Student Recreation Center Fee</td>
<td>$53</td>
<td>$53</td>
<td>$106</td>
</tr>
<tr>
<td>Health and Wellness Support Services Fee</td>
<td>$279</td>
<td>$279</td>
<td>$558</td>
</tr>
<tr>
<td>Health Insurance - Student Premium only</td>
<td>$980</td>
<td>$1,502</td>
<td>$2,482</td>
</tr>
</tbody>
</table>

2 Fifth-year students in professional degree programs and students working toward a second bachelor's degree pay a reduced student activities fee of $6.85 per semester, which covers the Student Association, Student Organizations Activity, University Court, and Honor Council portions of the Student Activity Fee.

3 All students must also have health insurance. For more information, see Health Insurance (https://sa.rice.edu/undergraduate-students/student-services-organizations/health-counseling-wellbeing/) on this page or visit https://studenthealthinsurance.rice.edu/current-rates (https://studenthealthinsurance.rice.edu/current-rates/).

<table>
<thead>
<tr>
<th>Orientation Week Fees</th>
<th>Fall</th>
</tr>
</thead>
<tbody>
<tr>
<td>O-Week Activity Fee – Freshmen/Transfers</td>
<td>$330</td>
</tr>
<tr>
<td>O-Week Room &amp; Board – Freshmen/Transfers</td>
<td>$350</td>
</tr>
<tr>
<td>O-Week Room &amp; Board – Coordinators</td>
<td>$200</td>
</tr>
<tr>
<td>iPrep Program Fee (Incoming International Undergraduate and Exchange Students)</td>
<td>$195</td>
</tr>
</tbody>
</table>

### Course Fees

Courses having additional charges are provided on the Course Schedule. In some cases the associated charges may be in lieu of Rice tuition and/or required fees.

### Additional Fees

The following charges are separate from the regular fees. Charges due to late registration or course changes made after the deadline are described in the Registration (p. 31) section.
### Tuition, Fees and Expenses

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Fee</td>
<td>$75</td>
</tr>
<tr>
<td>College Withdrawal (breach of housing agreement)</td>
<td>$1,000</td>
</tr>
<tr>
<td>Diploma Fee: Facsimile (8x10, mini-diploma)</td>
<td>$20</td>
</tr>
<tr>
<td>Diploma Fee: Parchment (17x23, official diploma)</td>
<td>$50</td>
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<tr>
<td>Diploma Mailing Fee: Domestic</td>
<td>$30</td>
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<tr>
<td>Diploma Mailing Fee: International</td>
<td>$50</td>
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<tr>
<td>Enrollment Verification</td>
<td>$10</td>
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<tr>
<td>Internship per Semester</td>
<td>$325</td>
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<tr>
<td>Late Application for Graduation</td>
<td>$100</td>
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<tr>
<td>Late Course Change Fee (Add/Drop)</td>
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<tr>
<td>Late Payment Fee (calculated on amount past due)</td>
<td>1.5%</td>
</tr>
<tr>
<td>Late Registration Fee (Week 1-3)</td>
<td>$75</td>
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<tr>
<td>Late Registration Fee (after Week 3)</td>
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<tr>
<td>Letter of Standing</td>
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<tr>
<td>Part-time Enrollment Fee</td>
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<tr>
<td>Payment Plan Fee</td>
<td>$75</td>
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<tr>
<td>Preceptorship per semester</td>
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<tr>
<td>Readmission fee after withdrawal for nonpayment</td>
<td>$375</td>
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<tr>
<td>Recreation Center Membership fees (Annual)</td>
<td>$137</td>
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<tr>
<td>Recreation Center Membership fees (Summer)</td>
<td>$34</td>
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<tr>
<td>Replacement Diploma Fee</td>
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<td>Replacement Rice ID</td>
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<tr>
<td>Returned Payment Fee</td>
<td>$30</td>
</tr>
<tr>
<td>Study Abroad Fee for Summer</td>
<td>$228</td>
</tr>
<tr>
<td>Summer Health and Wellness Support Services Fee (Early Fall Matriculants)</td>
<td>$147</td>
</tr>
<tr>
<td>Transcript Fee</td>
<td>$10</td>
</tr>
<tr>
<td>Transcript Express Delivery Fee</td>
<td>$30</td>
</tr>
</tbody>
</table>

### Rates for Students Studying Abroad

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tuition and Fees</strong> Semester</td>
<td></td>
</tr>
<tr>
<td>Sponsoring Institution Agreement - Tuition Paid at Rice</td>
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<tr>
<td>Rice University Tuition</td>
<td>$24,165</td>
</tr>
<tr>
<td><strong>Required Fees</strong></td>
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</tr>
<tr>
<td>Student Activity Fee</td>
<td>$59</td>
</tr>
<tr>
<td>Sponsoring Institution Agreement - Tuition Paid at Sponsoring Institution</td>
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</tr>
<tr>
<td>Rice University Tuition</td>
<td>-</td>
</tr>
<tr>
<td><strong>Required Fees</strong></td>
<td></td>
</tr>
<tr>
<td>Enrollment Continuance Fee</td>
<td>$456</td>
</tr>
<tr>
<td>Student Activity Fee</td>
<td>$59</td>
</tr>
</tbody>
</table>

### Billing Information

Electronic billing (E-Bill) is the official mechanism for student billing at Rice University. E-Bills are generated monthly. Fall and Spring E-Bills are generated on the 1st of each month, having a due date of the 10th.

Fall semester charges are due in full by August 10. Spring semester charges are due in full by January 10. Payment Plans are available for students who wish to pay installments over the course of the semester. Accounts not enrolled in a payment plan or paid in full by the term due dates are subject to Late Payment Fees.

Summer E-Bills are generated on the 1st for Summer months, having a due date on the 10th. Charges are due by the due date on the E-Bill notice. Payment Plans are not available for the Summer semester.

### Late Payments

Student accounts not paid in full (or whose payment plan is not current) by the billing due date will be subject to a 1.5% late fee. Late fees are calculated based on the amount past due. Students experiencing difficulty with paying their balance should contact the Cashier’s Office promptly to discuss payment options.

### Delinquent Accounts

Rice University reserves the right to block or cancel the registration of any student who fails to pay, when due, any indebtedness to the institution.

Academic credits, transcripts, and diplomas will be withheld until all financial obligations are paid in full.

### Student Financial Responsibility Agreement

Before enrollment for a new semester can occur, students must consent to a Student Financial Responsibility Agreement ([https://cashier.rice.edu/student-financial-responsibility-agreement/](https://cashier.rice.edu/student-financial-responsibility-agreement/)).

### Refunds

#### Tuition and Fee Reversals for Withdrawals and Drops

**University Withdrawals**

Students officially withdrawing from all courses or dropping one or more course(s) are eligible for a 100% refund of tuition and fees through the deadlines listed on the Academic Calendar ([https://registrar.rice.edu/calendars/](https://registrar.rice.edu/calendars/)) by semester.

Students officially withdrawing from all courses after the 100% tuition reversal period are eligible for a partial reversal of tuition. Fees are not reversed. Consult the Academic Calendar ([https://registrar.rice.edu/calendars/](https://registrar.rice.edu/calendars/)) for specific tuition refund prorations based on the date of withdrawal.

**Dropped Courses**

Students dropping individual course(s) after the 100% tuition reversal period will not be eligible for a refund and will remain liable for payment of full tuition and fee charges though certain exceptions may apply, outlined in the Registration Drop/Add ([https://ga.rice.edu/undergraduate-students/academic-policies-procedures/registration/#text](https://ga.rice.edu/undergraduate-students/academic-policies-procedures/registration/#text)) section. Non-attendance does not constitute an official course drop or withdrawal.

All charges due to Rice University must be paid before refunds or adjustments will be permitted.
In cases of academic or disciplinary suspension, eligibility for tuition refunds and adjustments will depend on the conditions of the suspension and will be entirely at the option of the institution. Should unforeseen circumstances beyond the reasonable control of Rice University result in curtailing classes, closing residence facilities, or otherwise withdrawing services that are a normal function of the institution, refunds of any nature will be at the discretion of university administration.

Financial Aid
In addition to the university's reversal schedule and in accordance with the Higher Education Amendments of 1992, if a student completely withdraws from the university and has utilized Federal Title IV funds (e.g., Federal Pell Grant, Federal Supplemental Educational Opportunity Grant [SEOG], Academic Competitiveness Grant, National SMART Grant, Federal Perkins Loan, Federal Direct Stafford Student Loan, Federal Direct PLUS, Federal Direct Graduate PLUS), during the semester in which they withdraw, the university will observe the federally mandated process in determining what, if any amount of money must be returned to the federal program(s).

The calculation of the return of funds may result in the student owing a balance to the university and/or the Department of Education.

Refund of Credit Balances
Student account credits resulting from excess Federal Financial Aid payments, scholarship payments, and loan payments are automatically refunded by the Cashier's Office; however, there may be certain circumstances where credits on student accounts occur that may not be automatically refunded. Reversed charges, over payments, tuition waivers, and other varying factors may lead to a credit balance on a student account.

For those credits not automatically refunded, students may request disbursement of the credit balance through email to cashier@rice.edu.

Refund Delivery
Refunds are issued daily to students that are enrolled in Electronic Refund Delivery (https://cashier.rice.edu/general-refund-information/). For students not enrolled in Electronic Refund Delivery (https://cashier.rice.edu/general-refund-information/), refund checks are issued weekly and are mailed directly from JP Morgan Chase to the student mailing address on record.

Health Insurance
All students, full-time or part-time—including those on away status—must have appropriate health insurance. For information about health insurance, visit Health, Counseling and Wellbeing (p. 39). For current premium rates for university-provided student health insurance, see the Student Health Insurance (https://studenthealthinsurance.rice.edu/current-rates/) website.

Living Expenses
Residence fees cover dining hall costs and residence maintenance. They are established each year as needs dictate. For 2019-20, the annual room and board charge for residence in a residential college is $14,140.

<table>
<thead>
<tr>
<th>Room and Board</th>
<th>Semester</th>
<th>Annual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room</td>
<td>$4,850</td>
<td>$9,700</td>
</tr>
<tr>
<td>Off Campus Meal Plan - Option A</td>
<td>$2,220</td>
<td>$4,440</td>
</tr>
</tbody>
</table>

Off Campus Meal Plan - $750
Option B
$1,500

Off Campus Meal Plan - $1,350
Option C
$2,700

Off Campus Meal Plan - $700
Option D
$1,400

Off Campus Meal Plan - $425
Option E
$850

Off Campus Meal Plan - $600
Option F
$1,200

Housing
An electronic housing agreement must be signed in Esther no later than April 30 for students to receive residential room assignments. New students are required to submit a $100, non-refundable housing deposit no later than April 30, which will be applied to that semester's room and board charges. For more information about housing, see Undergraduate Student Life (https://ga.rice.edu/undergraduate-students/student-services-organizations/life/).

Meal Plans
College Dining provides all-you-care-to-eat meals with the purchase of the meal plan. All students living on campus must purchase a meal plan. It is recommended that students living off campus also purchase a meal plan. More information is available at http://dining.rice.edu/.

Refunds for Housing and Meal Plans
Students who move out of their college may receive a prorated credit to their student account, equal to the difference between the payments received and the reduced room and board charges. A termination fee will be applied. Exceptions for academic suspension, Rice-sponsored study abroad, family emergencies, and other isolated incidents will be considered on a case-by-case basis.

Undergraduate Student Life
Residential Colleges
Each undergraduate student at Rice, whether living on campus or not, is a member of one of 11 residential colleges. All colleges are sex and gender neutral.

Each college has faculty magisters who live in a house next to the college. Reporting to the dean of undergraduates, the magisters have overall responsibility for all aspects of student life in the college, especially for encouraging broad cultural and intellectual interests and for promoting self-discipline and effective self-government within the college. Upon agreement, the students and magisters invite other members of the Rice faculty to become resident and nonresident associates of the college. Faculty associates act as advisors to the students and participate in the various activities of the college. Colleges also have nonfaculty university associates and community associates drawn from various professions in the Houston area.

Each college exists as a self-governing group of students. The elected officers and representatives are responsible to the magisters and to the college membership for:

• Directing the college's academic, cultural, social, and athletic activities
Rights and Responsibilities

• Expenditure of college funds
• Maintaining order in the college

While uniformity among the colleges has never been sought and each college has developed its own particular interests and character, all seek to foster fellowship among their members and a mature sense of honor, responsibility, and sound judgment.

College Assignment

Each undergraduate, upon acceptance by the university, is designated a member of one of the colleges. Two students entering Rice for the first time may request assignment to the same college, but they may not designate which college. New students also may request membership in the same college as an immediate family member (mother, father, sister, or brother). Except for these cases, students have no individual choice of college.

Housing

College buildings include a dining hall and public rooms, which are available to both resident and nonresident members, and living quarters for resident students from all classes and all academic disciplines.

The university guarantees housing for all incoming students. Information about the residential colleges and room application forms accompany the notice of admission sent to each new undergraduate. Room reservations cannot be made before notification of admission. Registered sex offenders may not live in campus housing.

About 75 percent of Rice undergraduates live in the on-campus residential colleges. On-campus housing is not guaranteed beyond the first year at Rice. Although most of the students who want to live in the colleges can be accommodated, demand usually exceeds the available number of rooms. The determination of housing for sophomores, juniors, and seniors is made by their residential college government. Sophomores, juniors, and seniors draw for rooms according to the priority system of their residential college. Some students, while remaining full members of the college, choose voluntarily to live off campus for one or more years. No student is required to live on campus; however, those members of the colleges who live off campus are encouraged to eat in their colleges and to participate in college activities. Further information on housing in the residential colleges is available from the Office of the Dean of Undergraduates, and information on off-campus housing is available from the Student Center Administration Office.

For more information on campus housing, see Tuition, Fees, and Expenses (p. 41).

Meal Plans

College Dining provides all-you-care-to-eat meals with the purchase of the meal plan. All students living on campus must purchase meal plan A. It is recommended that students living off campus also purchase a meal plan. Its other services include:

• Assistance with food allergies confirmed and clearly diagnosed by a physician
• Sack lunches for students who must miss a meal due to a job conflict
• Sick trays for students when requested by the Student Health Service

• Alternate menu entrees, whenever possible, to accommodate students’ religious practices

Meals are served cafeteria style. The colleges provide three meals per day Monday through Saturday and lunch and dinner on Sunday. Meals are not served during the Thanksgiving holiday, winter break, or spring break.

College Courses

One of the colleges’ important activities is their sponsorship of courses and workshops open to all students. By expanding course offerings outside the traditional departments, college courses promote the academic involvement of the colleges while introducing students to interdisciplinary topics of particular interest.

For more information, see the College Courses (p. 1073) listing.

Rice Student Center

The Student Center provides services and developmental opportunities to build community and enrich the Rice experience through facilities, events, student run businesses, and student activities. It houses a variety of retail and dining operations including the campus store, Sammy’s, 4.Tac0, and Ambassador Cafe. The Graduate Student Lounge, Multicultural Center, and the Clubs offices are all located in the basement with other student life offices throughout the building, including meeting rooms for departments, clubs, and organizations. Visitors can also make use of an ATM located outside the store and ask questions of the Information Desk staff located near the circle drive. Students and visitors alike can enjoy a beverage of their choice and fellowship with their peers at the Rice Coffeehouse (https://coffeehouse.rice.edu), purchase a late night snack from the Hoot (https://thehoot.rice.edu), or visit the new Rice Bikes (https://bikes.rice.edu) location in the Housing and Dining Garage located on the inner loop to rent a bicycle or get repairs.

For more information on the Rice University Student Center, go to https://studentcenter.rice.edu (https://studentcenter.rice.edu/).

Rights and Responsibilities

• Access to Student Records (p. 44)
• Code of Student Conduct (p. 46)
• Honor System (p. 46)
• Student Responsibility (p. 46)

Access to Student Records

Notification of Rights under the Family Educational Rights and Privacy Act (FERPA)

The Family Educational Rights and Privacy Act (FERPA) is a federal law that protects the privacy of, and limits access to, student education records. The law affords students the following rights with respect to their education records:

1. the right to inspect and review the student’s education records within 45 days after the date Rice University (‘Rice’) receives a request for access;
2. the right to seek amendment of the student’s education records that the student believes are inaccurate, misleading, or otherwise in violation of the student’s privacy rights under FERPA;
3. the right to provide written consent to disclosures of personally identifiable information (‘PII,’ as defined by law) contained in the student’s education records, except to the extent FERPA authorizes disclosure without consent;
4. the right to file a complaint with the U.S. Department of Education concerning alleged failures by Rice to comply with the requirements of FERPA. The name and address of the federal office that administers FERPA is:

Family Policy Compliance Office
U.S. Department of Education
400 Maryland Ave., S.W.
Washington, DC 20202

Inspect and Review Records
A student should make written request to any offices that maintain student education records, identifying the record(s) the student wishes to inspect. Though not exhaustive, as a guide for students, this is a list of the primary offices that maintain student education records: Office of the Registrar, Office of the Dean of Undergraduates, Office of Graduate and Postdoctoral Studies, Office of Student Judicial Programs, Office of Admission, Office of Financial Aid, Center for Career Development, Office of Student Activities, Office of Academic Advising, Office of International Students and Scholars, Cashier’s Office, and departmental offices. The appropriate Rice official will make arrangements for access and notify the student of the time and place where the records may be inspected. If the records are not maintained by the Rice official to whom the request is submitted, that Rice official will advise the student of the correct official to whom the request should be addressed.

Amendment of Records
Any questions, problems, or written requests for amendment of records should be submitted to the Office of the Registrar. A student requesting to amend a record should clearly identify the part of the record the student wants changed and specify why it should be changed. If Rice decides not to amend the record as requested, Rice will notify the student in writing of the decision and of the student’s right to a hearing regarding the request for amendment. Additional information regarding the hearing procedures will be provided to the student when the student is notified of the right to a hearing.

Disclosure of Information
As permitted by FERPA, Rice reserves the right to publish or release the following directory information without prior consent:

1. Name; permanent, local, mailing, and campus address; residential college affiliation; telephone and mobile number(s); campus email address(es); and Net ID
2. Date and place of birth
3. Classification, degrees or programs, and majors and minors
4. Participation in officially recognized activities and sports
5. Weight and height of members of athletic teams
6. Dates of attendance, degrees, honors, and awards received
7. The most recent previous educational agency or institution attended by the student
8. Photograph

Students who would like Rice to withhold this directory information may do so by logging in to ESTHER, clicking Personal Information, clicking Release or Withhold Directory Information, and indicating that the information should be withheld. Thereafter, Rice will withhold access to, and release of, the student’s directory information until further written instruction is received from the student. For more information regarding FERPA, please visit the U.S. Department of Education’s website (https://www2.ed.gov/policy/gen/guid/fpco/ferpa/).

FERPA permits the disclosure of PII from students’ education records, without consent of the student, if the disclosure meets certain conditions found in 34 C.F.R. §99.31 of the FERPA regulations. Except for disclosures to school officials, disclosures related to some judicial orders or lawfully issued subpoenas, disclosures of directory information, and disclosures to the student, Section 99.32 of the FERPA regulations requires the institution to record the disclosure. Eligible students have a right to inspect and review the record of disclosures. A postsecondary institution may disclose PII from the education records without obtaining prior written consent of the student –

• To other school officials, within Rice whom Rice has determined have legitimate educational interests and require this information in order to perform instructional, supervisory, advisory, administrative, or other duties for Rice. These school officials include faculty, research personnel, staff (including law enforcement unit personnel and health staff), trustees, or students serving on official committees (such as disciplinary or grievance committees) or assisting another school official. A school official has a legitimate educational interest if the official needs to review an educational record in order to fulfill his or her professional responsibility to Rice. This includes contractors, consultants, auditors, attorneys, collection agents, volunteers, or other parties to whom Rice has outsourced institutional services or functions, provided that the conditions listed in §99.31(a)(1)(i)(B) - (a)(1)(i)(B)(3) are met. (§99.31(a)(1))
• To officials of another school where the student seeks or intends to enroll, or where the student is already enrolled if the disclosure is for purposes related to the student’s enrollment or transfer, subject to the requirements of §99.34. (§99.31(a)(2))
• To authorized representatives of the U.S. Comptroller General, the U.S. Attorney General, the U.S. Secretary of Education, or State and local educational authorities, such as a State postsecondary authority that is responsible for supervising the university’s State-supported education programs. Disclosures under this provision may be made, subject to the requirements of §99.35, in connection with an audit or evaluation of Federal- or State-supported education programs, or for the enforcement of, or compliance with, Federal legal requirements that relate to those programs. These entities may make further disclosures of PII to outside entities that are designated by them as their authorized representatives to conduct any audit, evaluation, or enforcement or compliance activity on their behalf. (§§99.31(a)(3) and 99.35)
• In connection with financial aid for which the student has applied or which the student has received, if the information is necessary to determine eligibility for the aid, determine the amount of the aid, determine the conditions of the aid, or enforce the terms and conditions of the aid. (§99.31(a)(4))
• To organizations conducting studies for, or on behalf of, the school, in order to: (a) develop, validate, or administer predictive tests; (b) administer student aid programs; or (c) improve instruction. (§99.31(a)(6))
• To accrediting organizations to carry out their accrediting functions. (§99.31(a)(7))
• To parents of an eligible student if the student is a dependent for IRS tax purposes, though Rice limits such information to financial details of the student’s enrollment. (§99.31(a)(8))
The Code of Student Conduct applies from the time they begin engaging with the university as a student, including participating in any activities related to their student status. For online students, the Code of Student Conduct applies from the time they begin engaging with the university as a student or the college. The Honor Council conducts an ongoing program to acquaint new students and faculty with the honor system. The Honor Code and other related information and resources are located at the homepage of the Honor Council: https://honor.rice.edu/.

**Student Responsibility**

The university expects all Rice students to exercise personal responsibility over their actions. Their behavior should reflect a respect for the law and for their contractual obligations, a consideration for the rights of others, and shared standards of considerate and ethical behavior.

Students are responsible for knowing and following all information, policies, and procedures listed in this General Announcements. Questions should be directed to the appropriate office or administrator.

Rice utilizes e-mail as an official form of communication and sends correspondence to a student’s Rice email address. Students should frequently check and maintain their Rice email inbox. Failure to do so does not relieve students of the responsibility to act or respond in a timely manner to official notices sent via email. Rice encourages self-discipline, recognizing that effective student government, including judicial processes, and the integrity of the honor system depend on the willingness of all students to meet community standards of conduct.

The university, however, reserves the right to insist on the withdrawal of any student whose conduct it judges to be clearly detrimental to the best interests of either the student or the university. The appropriate authorities take such action only after careful consideration.

No individual or group may use the name of the university or one of its colleges without prior approval of the university or the college.

**Honors and Distinctions**

- Academic Honor Societies (p. 47)
- Honors Programs (p. 47)
Academic Honor Societies

Honor societies at Rice include the following:

**AGLSP National Honor Society**
The Association of Graduate Liberal Studies Program (AGLSP) National Honor Society serves to recognize the scholarly achievement of graduate students and scholars in liberal studies programs across the U.S. and Canada. Students are selected, approved and invited to join the Honor Society three times annually. (Rice chapter: 2015)

**Chi Epsilon**
The Civil Engineering Honor Society. It serves to recognize students of high scholarship, character, practicality, and sociability. Students are inducted into the society once or twice annually and are selected from the pool of upper division level civil engineering students. (Rice chapter: 1995).

**Delta Phi Alpha**
To promote an interest in the German language and literature (Gamma Xi chapter at Rice: April 1949).

**Eta Kappa Nu**
Founded in 1904 at the University of Illinois for electrical engineering students to stimulate and reward scholarship as well as assist and encourage its members to grow professionally throughout their lives (Rice chapter: January 1981).

**Omega Psi**
Omega Pi unifies members of the Cognitive Science program on campus through an affiliation with its national chapter (Rice chapter: October 2017).

**Omicron Delta Epsilon**
To promote study in economics (Rice chapter: 1981).

**Phi Beta Kappa**
Founded in 1776 at the College of William and Mary to recognize intellectual achievement and the love of learning among students in the liberal arts and sciences (Rice chapter: March 1, 1929).

**Phi Lambda Upsilon**
National honorary chemical society promoting high scholarship and original investigation in all branches of pure and applied chemistry (Rice chapter: 1926).

**Pi Delta Phi**
Organized to interest French students in competing for high standing in scholarship (Theta chapter at Rice: May 1930).

**Pi Sigma Alpha**
The National Political Science Honor Society. It aims to provide networking opportunities for political science students and to promote campus interest in political science (Rice chapter: 2008).

**Psi Chi**
Founded in 1929 at Yale University to encourage, stimulate, and maintain excellence in scholarship and to advance the science of psychology (Rice chapter: April 23, 1990).

**Sigma Delta Pi**
To promote an interest in the Spanish language and literature (Rice chapter May 14, 1953).

**Sigma Xi**
For the promotion of research in science (Beta of Texas chapter at Rice: March 23, 1938).

**Tau Beta Pi Association**
Organized to interest engineering students in competing for high standing in scholarship (Gamma of Texas chapter at Rice: December 18, 1940).

**Tau Sigma Delta**
National honor society in architecture and applied arts (Tau chapter at Rice: May 7, 1961).

For more information on these honor societies, please visit the Rice Club Listings page [here](https://studentcenter.rice.edu/club-listings/) or the department associated with the Honor Society.

Honors Programs

To enroll in the two semester Rice Undergraduate Scholars Program, students register for HONS 470 and HONS 471 Proposal Development and Research. This program is for juniors and seniors in all disciplines who are considering graduate study and an academic career after graduation. Students enroll in the program plan and execute independent research under the supervision of a sponsoring faculty member (they may apply for funding to cover expenses related to their projects). They meet once a week to discuss each other's work and to hear a range of presentations on life in academia. Students may apply in the spring of each year. For more information, contact the program's faculty co-director.

Individual departments may offer undergraduates the option of honors program enrollment. These programs enable students to receive advanced training or to deepen their understanding of a given discipline through an intensive program of independent supervised research. Customary procedure is for students to submit a proposed project to their department’s Undergraduate Committee, which helps them rework it, as needed, into a substantial but feasible proposal. Once accepted, students are assigned a faculty advisor to guide their research. The project concludes in an honors thesis, which the advisor and two readers evaluate, and an oral examination. Departments also use honors programs to recognize formally students who have shown outstanding work through the individual projects. Acceptance into a departmental honors program is at the discretion of the faculty.
specific requirements and procedures, students should contact the individual departments.

**President’s Honor Roll**

The President’s Honor Roll, published each semester, recognizes outstanding students. To be eligible, students must have earned grades in a total of 12 or more semester hours without receiving a grade of F. Courses taken as Pass/Fail may not be counted for the purposes of this rule. Approximately the top 30 percent of undergraduates receive recognition each semester. While undergraduates enrolled in a four-year bachelor’s degree program are always eligible for the President’s Honor Roll, students enrolled in five-year bachelor’s or master’s programs are eligible only during their first eight semesters.

**University Honors**

**Latin Honors**

Unlike the President’s Honor Roll, which recognizes academic excellence achieved over a single semester, eligibility for the three categories of Latin Honors (summa cum laude, magna cum laude, and cum laude) are based on the cumulative grade point average for all undergraduate work at Rice. Recipients are determined at the end of the spring semester and after receipt of all grades. The grade point average within the highest five percent of the year’s graduating majors within each school is recommended for the summa cum laude honor. The grade point average included within the next highest 10 percent is used to determine those eligible to graduate with the magna cum laude honor. Finally, the grade point average included within the next 15 percent is used to determine those majors eligible to graduate with the cum laude honor. Thus, approximately 30 percent of each graduating class, distributed approximately evenly across all schools, receives Latin Honors on graduation.

**Distinction in Research and Creative Work**

Distinction in Research and Creative Work is a university award for select undergraduates, granted at Commencement, which appears on the transcript and diploma. Students must apply to be considered for the award, and the application must be supported by a letter from a faculty member (or center director). The most common path of application would be to the student’s major department. A student whose research or other creative project is in a field outside of his or her major should submit an application to the academic department or program most closely associated with the subject matter of their project.

Eligibility for the award extends widely to include a variety of research, design, and other creative projects, as well as persistent dedication to research. Projects completed in part or entirely at other institutions or with community partners will be eligible for consideration.

Applicants must be in good academic standing and have a cumulative GPA of at least 3.30 in courses completed at Rice at the time of their graduation. The award will be granted only to projects that produce a concrete outcome—e.g. an essay, invention, design, musical composition—and demonstrate commitment and/or achievement above and beyond the norm. Students who complete senior theses, senior design projects, or other required senior capstone projects are eligible and may submit their thesis or capstone project for consideration; however, these students do not qualify automatically for consideration for this university distinction.

Responsibility for judging applications and determining those that merit the distinction award rests with the undergraduate degree programs or departments. Annually, departments and degree granting programs publish clear expectations and criteria for the research and design projects that will be considered for the award, as well as guidelines for what constitutes research or creative work above and beyond the norm within their respective fields. Departments may designate additional requirements as well, such as completion of a research seminar or oral defense.
GRADUATE STUDENTS

Since Rice opened in 1912, the university has recognized the importance of graduate study and research as a principal means of advancing knowledge. The first doctor of philosophy degree was awarded in 1918 in mathematics. Since that time, graduate study has expanded to encompass the schools of architecture, engineering, humanities, management, music, natural sciences, and social sciences, as well as interdepartmental programs. Rice now enrolls approximately 2,800 graduate students and offers advanced degrees in 37 fields of study.

Graduate programs lead to either research or professional degrees. Research programs generally require the completion of a publishable thesis that represents an original and significant contribution to the particular field of study. Research degrees include the doctor of philosophy (PhD), doctor of architecture (DArch), master of arts (MA), and master of science (MS).

Professional programs provide advanced course work in several disciplines but do not generally include independent research. These programs lead to degrees in most of the major schools, including many engineering disciplines.

All degrees conferred by the university are awarded solely in recognition of educational attainments and not as warranty of future employment or admission to other programs of higher education.

For additional information on graduate programs and requirements, please go to the Office of Graduate and Postdoctoral Sciences website, at https://graduate.rice.edu.

Academic Opportunities

- Auditing Courses (p. 49)
- Graduate Degrees (p. 49)
- Graduate Degree Chart (p. 50)
- Graduate Certificates (p. 54)
- Graduate Program Major Concentrations (p. 54)
- Non-Traditional Coursework (p. 54)

Auditing Courses

During the fall and spring semesters, currently enrolled degree-seeking Rice students, who are registered for at least one course for credit, may audit one or more courses at Rice without charge by securing permission of the instructor and by registering as an auditor with the Office of the Registrar. During the summer sessions, enrolled Rice students may audit one or more courses at Rice at the cost of the auditor fee for Rice alumni (see Cashier’s website (https://cashier.rice.edu/)).

Upon completion, the audited course will appear on the student’s transcript with a grade of either ‘AUD’ or ‘NC’. As noted in Grades (p. 24), instructors report the AUD grade in those instances where the auditing student has met the audit requirements of the course as defined by the instructor. A grade of NC (No Credit) is reported in instances where the auditing student has not met the audit requirements of the course as defined by the instructor.

There are no credit hours associated with audited courses, and auditing a course does not affect a student’s GPA. Requests to audit a class or to change from audit to credit or vice versa must be done by the dates and deadlines documented in the posted Academic Calendar (see Academic Calendar (https://registrar.rice.edu/calendars/)).

Graduate Degrees

The General Announcements (GA) is the official Rice curriculum. In the event that there is a discrepancy between the GA and any other websites or publications, the GA shall prevail as the authoritative source.

Research Degrees

Research degrees are offered in seven of the eight schools at Rice, with some degrees combining studies in more than one school. Specific requirements for advanced research degrees in each field of study appear in the appropriate departmental pages (see Departments and Programs (p. 93)). Students seeking additional material should contact the appropriate department (see Graduate Degree Chart (p. 50)).

Doctoral Programs

The PhD degree is awarded for original studies in the departments listed in the Graduate Degree Chart (p. 50); in architecture, the equivalent degree is the DArch; in music, the equivalent degree is the DMA. Candidates receive a PhD degree after successfully completing at least 90 semester credit hours of graduate study (coursework and research at the 500-level and above) and concluding an original investigation that is formalized in an approved thesis. As final evidence of preparation for this degree, the candidate must pass a public oral examination and submit the approved thesis to the Office of Graduate and Postdoctoral Studies. (See also R (p. 66) Regulations and Procedures for Doctoral Degrees (p. 65).) The residency requirement for the doctorate is four semesters of full-time graduate study at Rice University.

Thesis Master’s Programs

The MA degree is available in the departments listed in the Graduate Degree Chart (p. 50), including certain scientific fields of study. The MS degree is offered in the engineering and science fields also listed in the chart. Candidates may undertake the MArch, MArch in Urban Design, and MMus degrees as research degrees by adopting the thesis option. Candidates receive a master’s degree after completing program specific degree requirements in addition to meeting university degree requirements (See also Regulations and Procedures for Thesis Master’s Graduate Degrees (p. 68)):

- A minimum of 30 graduate semester credit hours of coursework taken at the 500-level or above (including thesis credit hours).
- A minimum of 24 graduate credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the thesis master’s degree.*
- All courses must be taken in the relevant field.
- Original work reported in an approved public oral examination and thesis submitted to the Office of Graduate and Postdoctoral Studies.

*Note: Departments or programs may identify and define in their program’s General Announcements Requirements tab stricter standards than the minimum GPA for coursework that satisfies their academic program requirements.
Most students take three or four semesters to complete a master’s degree (some programs may require more time).

**Non-Thesis Master's Programs**

Students also may pursue a non-thesis degree, sometimes referred to as a professional degree in certain departments. In some departments, the non-thesis degree also prepares the student for a doctoral-level program. This degree would be based on alternative departmental requirements and would include, but not be limited to, the following university requirements (See also Regulations and Procedures for Non-Thesis Master’s Graduate Degrees (p. 68)):

- A minimum of 30 graduate semester credit hours of coursework taken at the 500-level or above.
- A minimum of 24 graduate credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University. Some graduate programs may require full-time residency or additional semesters of residency.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree.*
- All courses taken must be in the relevant field.

*Note: Departments or programs may identify and define in their program’s General Announcements Requirements tab stricter standards than the minimum GPA for coursework that satisfies their academic program requirements. In some graduate programs, students may receive a master’s degree when they achieve candidacy for the doctoral degree. Students seeking a master’s degree in this manner must submit a petition for the degree, signed by their department chair, to the Office of Graduate and Postdoctoral Studies by the deadline specified in the following university requirements.*

**Diploma Programs**

Diploma programs at Rice are post-master’s degree academic credential programs. Diploma candidates in these programs may be awarded this academic credential after completing (See also: Regulations and Procedures for Diploma Programs):

- A minimum of 30 graduate semester credit hours of coursework taken at the 500-level or above.
- A minimum of 24 graduate semester credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University. Some diploma programs may require full-time residency or additional semesters of residency.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the diploma program.*
- All courses taken must be in the relevant field.

*Note: Departments or programs may identify and define in their program’s General Announcements Requirements tab stricter standards than the minimum GPA for coursework that satisfies their academic program requirements.

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**Graduate Degree Chart**

**The School of Architecture**

- Master of Architecture (MArch) Degree (p. 127)
- Master of Arts (MA) Degree in the field of Architecture (p. 131)
- Master of Urban Design (MAUD) Degree†
- Doctor of Architecture (DArch) Degree†

**The Glasscock School of Continuing Studies**

**Education**

- Master of Arts in Teaching (MAT) Degree, for Current Rice Undergraduates (p. 383)
- Master of Arts in Teaching (MAT) Degree, for Experienced Teachers (p. 385)
- Master of Arts in Teaching (MAT) Degree, for Experienced Teachers with Principal Certification (p. 386)
- Master of Arts in Teaching (MAT) Degree, for New Teachers (p. 388)

**School of Continuing Studies**

- Master of Liberal Studies (MLS) Degree (p. 522)
- Diploma in Liberal Studies (DLS) (p. 520)

**The George R. Brown School of Engineering**

**Applied Physics**

- Master of Science (MS) Degree in the field of Applied Physics*  
- Doctor of Philosophy (PhD) Degree in the field of Applied Physics (p. 118)

**Bioengineering**

- Master of Bioengineering (MBE) Degree (p. 154)
- Master of Science (MS) Degree in the field of Bioengineering*  
- Doctor of Philosophy (PhD) Degree in the field of Bioengineering (p. 152)
- Doctor of Philosophy (PhD) Degree in the field of Bioengineering / Doctor of Medicine (MD) Degree with Baylor College of Medicine (p. 153)

**Chemical and Biomolecular Engineering**

- Master of Chemical Engineering (MChE) Degree (p. 283)
- Master of Chemical Engineering (MChE) Degree / Master of Business Administration (MBA) Degree (p. 284)
- Master of Science (MS) Degree in the field of Chemical Engineering*  
- Doctor of Philosophy (PhD) Degree in the field of Chemical Engineering (p. 282)

**Civil and Environmental Engineering**

- Master of Civil and Environmental Engineering (MCEE) Degree in the field of Civil Engineering (p. 318)
- Master of Civil and Environmental Engineering (MCEE) Degree in the field of Environmental Engineering (p. 320)
- Master of Science (MS) Degree in the field of Civil Engineering (p. 322)
- Master of Science (MS) Degree in the field of Environmental Engineering (p. 323)
- Doctor of Philosophy (PhD) Degree in the field of Civil Engineering (p. 314)
- Doctor of Philosophy (PhD) Degree in the field of Environmental Engineering (p. 316)

**Computational Science and Engineering**
Master of Arts (MA) Degree in the field of Computational Science and Engineering
Master of Computational Science and Engineering (MCSE) Degree (p. 343)
Doctor of Philosophy (PhD) Degree in the field of Computational Science and Engineering (p. 343)

Computational and Applied Mathematics
Master of Arts (MA) Degree in the field of Computational and Applied Mathematics
Master of Computational and Applied Mathematics (MCAAM) Degree (p. 338)
Master of Computational and Applied Mathematics (MCAAM) Degree / Master of Business Administration (MBA) Degree (p. 339)
Doctor of Philosophy (PhD) Degree in the field of Computational and Applied Mathematics (p. 337)

Computer Science
Master of Computer Science (MCS) Degree (p. 352)
Master of Computer Science (MCS) Degree / Master of Business Administration (MBA) Degree (p. 356)
Master of Computer Science (MCS) Degree, Online Program (p. 358)
Master of Science (MS) Degree in the field of Computer Science (p. 359)
Doctor of Philosophy (PhD) Degree in the field of Computer Science (p. 351)

Electrical and Computer Engineering
Master of Electrical Engineering (MEE) Degree (p. 401)
Master of Science (MS) Degree in the field of Electrical and Computer Engineering
Doctor of Philosophy (PhD) Degree in the field of Electrical and Computer Engineering (p. 400)

Industrial Engineering
Master of Industrial Engineering (MIE) Degree (p. 482)
Master of Industrial Engineering (MIE) Degree / Master of Business Administration (MBA) Degree (p. 484)

Materials Science and Nanoengineering
Master of Materials Science and NanoEngineering (MMSNE) Degree (p. 539)
Master of Materials Science and NanoEngineering (MMSNE) Degree / Master of Business Administration (MBA) Degree (p. 541)
Master of Science (MS) Degree in the field of Materials Science and NanoEngineering (p. 542)
Doctor of Philosophy (PhD) Degree in the field of Materials Science and NanoEngineering (p. 538)

Mechanical Engineering
Master of Mechanical Engineering (MME) Degree (p. 560)
Master of Mechanical Engineering (MME) Degree / Master of Business Administration (MBA) Degree (p. 562)
Master of Science (MS) Degree in the field of Mechanical Engineering (p. 563)
Doctor of Philosophy (PhD) Degree in the field of Mechanical Engineering (p. 559)

Statistics
Master of Arts (MA) Degree in the field of Statistics
Master of Statistics (MStat) Degree (p. 835)

Master of Statistics (MStat) Degree / Master of Business Administration (MBA) Degree (p. 837)
Doctor of Philosophy (PhD) Degree in the field of Statistics (p. 834)

Systems, Synthetic, and Physical Biology
Master of Science (MS) Degree in the field of Systems, Synthetic and Physical Biology
Doctor of Philosophy (PhD) Degree in the field of Systems, Synthetic and Physical Biology (p. 853)

The School of Humanities
Art History
Master of Arts (MA) Degree in the field of Art History
Doctor of Philosophy (PhD) Degree in the field of Art History (p. 141)

Center for Critical and Cultural Theory
Certificate in Critical and Cultural Theory (p. 360)

English
Master of Arts (MA) Degree in the field of English
Doctor of Philosophy (PhD) Degree in the field of English (p. 423)

French Studies
Master of Arts (MA) Degree in the field of French Studies
Doctor of Philosophy (PhD) Degree in the field of French Studies (p. 475)

History
Master of Arts (MA) Degree in the field of History
Doctor of Philosophy (PhD) Degree in the field of History (p. 475)
Dual Doctor of Philosophy (PhD) Degree in the field of History, with Instituto Mora, in Mexico (p. 476)
Dual Doctor of Philosophy (PhD) Degree in the field of History, with Universidade Estadual de Campinas (UNICAMP), in Brazil (p. 477)

Philosophy
Master of Arts (MA) Degree in the field of Philosophy
Doctor of Philosophy (PhD) Degree in the field of Philosophy (p. 757)

Religion
Master of Arts (MA) Degree in the field of Religion (p. 802)
Master of Arts (MA) Degree in the field of Religion (Candidacy)
Doctor of Philosophy (PhD) Degree in the field of Religion (p. 801)
Certificate in Gnosticism, Esotericism and Mysticism (p. 463)

Study of Women, Gender and Sexuality
Certificate in the Study of Women, Gender and Sexuality (p. 845)

The Jones Graduate School of Business
Management
Master of Accounting (MAcc) Degree (p. 102)
Master of Arts (MA) Degree in the field of Business
Master of Business Administration (MBA) Degree / Doctor of Medicine (MD) Degree with Baylor College of Medicine (p. 193)
Master of Business Administration (MBA) Degree / Master of Chemical Engineering (MChE) Degree (p. 194)
Master of Business Administration (MBA) Degree / Master of Computational and Applied Mathematics (MCAAM) Degree (p. 195)
Master of Business Administration (MBA) Degree / Master of Computer Science (MCS) Degree (p. 197)
Master of Business Administration (MBA) Degree / Master of Industrial Engineering (MIE) Degree (p. 198)
Master of Business Administration (MBA) Degree / Master of Materials Science and Nanoengineering (MMSNE) Degree (p. 200)
Master of Business Administration (MBA) Degree / Master of Mechanical Engineering (MME) Degree (p. 201)
Master of Business Administration (MBA) Degree / Master of Science in Biocommunications and Health Policy (MSBHP) Degree (p. 203)
Master of Business Administration (MBA) Degree / Master of Science in Environmental Science and Policy (MSEA) Degree (p. 204)
Master of Business Administration (MBA) Degree / Master of Science in Space Studies (MSSpS) Degree (p. 206)
Master of Business Administration (MBA) Degree / Master of Science in Subsurface Geoscience (MSSG) Degree (p. 207)
Master of Business Administration (MBA) Degree / Master of Statistics (MStat) Degree (p. 209)
Master of Business Administration (MBA) Degree, Executive Program (p. 210)
Master of Business Administration (MBA) Degree, Full-Time Program (p. 214)
Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Accounting (p. 219)
Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Energy (p. 223)
Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Entrepreneurship (p. 227)
Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Finance (p. 231)
Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Health Care (p. 236)
Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Marketing (p. 240)
Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Operations Management (p. 244)
Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Real Estate (p. 249)
Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Strategic Management (p. 253)
Master of Business Administration (MBA) Degree, Online Program (p. 257)
Master of Business Administration (MBA) Degree, Professional Program (Evening, Evening Extended) (p. 265)
Master of Business Administration (MBA) Degree, Professional Program (Weekend) (p. 269)
Doctor of Philosophy (PhD) Degree in the field of Business (p. 192)
Doctor of Philosophy (PhD) Degree in the field of Business and a Major Concentration in Economics and Finance (p. 193)

**The Shepherd School of Music**

**Music**

Master of Music (MMus) Degree in the field of Bassoon Performance (p. 689)
Master of Music (MMus) Degree in the field of Cello Performance (p. 686)
Master of Music (MMus) Degree in the field of Clarinet Performance (p. 689)
Master of Music (MMus) Degree in the field of Composition (p. 692)
Master of Music (MMus) Degree in the field of Double Bass Performance (p. 695)
Master of Music (MMus) Degree in the field of Flute Performance (p. 698)
Master of Music (MMus) Degree in the field of Horn Performance (p. 701)
Master of Music (MMus) Degree in the field of Oboe Performance (p. 709)
Master of Music (MMus) Degree in the field of Orchestral Conducting (p. 712)
Master of Music (MMus) Degree in the field of Organ Performance (p. 715)
Master of Music (MMus) Degree in the field of Percussion Performance (p. 718)
Master of Music (MMus) Degree in the field of Piano Chamber Music and Accompanying (p. 721)
Master of Music (MMus) Degree in the field of Piano Performance (p. 724)
Master of Music (MMus) Degree in the field of String Quartet and Accompanying (p. 727)
Master of Music (MMus) Degree in the field of Trombone Performance (p. 729)
Master of Music (MMus) Degree in the field of Trumpet Performance (p. 732)
Master of Music (MMus) Degree in the field of Tuba Performance (p. 735)
Master of Music (MMus) Degree in the field of Viola Performance (p. 738)
Master of Music (MMus) Degree in the field of Violin Performance (p. 741)
Master of Music (MMus) Degree in the field of Vocal Performance (p. 744)
Artist Diploma (AD) in the field of Bassoon Performance (p. 581)
Artist Diploma (AD) in the field of Cello Performance (p. 583)
Artist Diploma (AD) in the field of Clarinet Performance (p. 585)
Artist Diploma (AD) in the field of Double Bass Performance (p. 586)
Artist Diploma (AD) in the field of Flute Performance (p. 588)
Artist Diploma (AD) in the field of Horn Performance (p. 589)
Artist Diploma (AD) in the field of Oboe Performance (p. 591)
Artist Diploma (AD) in the field of Piano Performance (p. 600)
Artist Diploma (AD) in the field of Trombone Performance (p. 602)
Artist Diploma (AD) in the field of Trumpet Performance (p. 604)
Artist Diploma (AD) in the field of Tuba Performance (p. 605)
Artist Diploma (AD) in the field of Viola Performance (p. 607)
Artist Diploma (AD) in the field of Violin Performance (p. 608)
Doctor of Musical Arts (DMA) Degree in the field of Cello Performance (p. 657)
Doctor of Musical Arts (DMA) Degree in the field of Clarinet Performance (p. 659)
Doctor of Musical Arts (DMA) Degree in the field of Composition (p. 661)
Doctor of Musical Arts (DMA) Degree in the field of Double Bass Performance (p. 663)
Doctor of Musical Arts (DMA) Degree in the field of Flute Performance (p. 665)
Doctor of Musical Arts (DMA) Degree in the field of Oboe Performance (p. 667)
Doctor of Musical Arts (DMA) Degree in the field of Organ Performance (p. 670)
Doctor of Musical Arts (DMA) Degree in the field of Percussion Performance (p. 672)
Doctor of Musical Arts (DMA) Degree in the field of Piano Performance (p. 674)
Doctor of Musical Arts (DMA) Degree in the field of Viola Performance (p. 676)
Doctor of Musical Arts (DMA) Degree in the field of Violin Performance (p. 678)
Doctor of Musical Arts (DMA) Degree in the field of Vocal Performance (p. 681)

The Wiess School of Natural Sciences

Applied Physics
Master of Science (MS) Degree in the field of Applied Physics
Doctor of Philosophy (PhD) Degree in the field of Applied Physics (p. 118)

Biosciences
Master of Science (MS) Degree in the field of Biochemistry and Cell Biology (p. 178)
Master of Science (MS) Degree in the field of Ecology and Evolutionary Biology (p. 180)
Master of Science in Bioscience and Health Policy (MSBHP) Degree (p. 185)
Master of Science in Bioscience and Health Policy (MSBHP) Degree / Master of Business Administration (MBA) Degree (p. 187)
Master of Science in Environmental Analysis (MSEA) Degree (p. 425)
Master of Science in Environmental Analysis (MSEA) Degree / Master of Business Administration (MBA) Degree (p. 427)
Bachelor of Arts (BA) Degree / Master of Science (MS) Degree / Doctor of Philosophy (PhD) Degree in the field of Biochemistry and Cell Biology (p. 159)
Doctor of Philosophy (PhD) Degree in the field of Biochemistry and Cell Biology (p. 175)
Doctor of Philosophy (PhD) Degree in the field of Ecology and Evolutionary Biology (p. 176)

Chemistry
Master of Arts (MA) Degree in the field of Chemistry
Doctor of Philosophy (PhD) Degree in the field of Chemistry (p. 294)

Earth, Environmental and Planetary Sciences

Master of Science (MS) Degree in the field of Earth Science (p. 374)
Master of Science in Subsurface Geoscience (MSSG) Degree (p. 847)
Master of Science in Subsurface Geoscience (MSSG) Degree / Master of Business Administration (MBA) Degree (p. 850)
Doctor of Philosophy (PhD) Degree in the field of Earth Science (p. 373)

Mathematics
Master of Arts (MA) Degree in the field of Mathematics
Doctor of Philosophy (PhD) Degree in the field of Mathematics (p. 551)

Physics and Astronomy
Master of Science (MS) Degree in the field of Physics
Master of Science Teaching (MST) Degree (p. 807)
Master of Science in Space Studies (MSSpS) Degree (p. 818)
Master of Science in Space Studies (MSSpS) Degree / Master of Business Administration (MBA) Degree (p. 820)
Doctor of Philosophy (PhD) Degree in the field of Physics (p. 771)

The School of Social Sciences

Anthropology
Master of Arts (MA) Degree in the field of Anthropology
Doctor of Philosophy (PhD) Degree in the field of Anthropology (p. 115)

Economics
Master of Arts (MA) Degree in the field of Economics
Doctor of Philosophy (PhD) Degree in the field of Economics (p. 378)
Doctor of Philosophy (PhD) Degree in the field of Economics and a Major Concentration in Economics and Finance (p. 379)

Energy Economics
Master of Energy Economics (MEEcon) Degree (p. 407)

Global Affairs
Master of Arts in Global Affairs (MAGA) Degree (p. 457)

Linguistics
Master of Arts (MA) Degree in the field of Linguistics
Doctor of Philosophy (PhD) Degree in the field of Linguistics (p. 527)

Political Science
Master of Arts (MA) Degree in the field of Political Science
Doctor of Philosophy (PhD) Degree in the field of Political Science (p. 775)

Psychological Sciences
Master of Arts (MA) Degree in the field of Psychology
Master of Human-Computer Interaction and Human Factors (MHIHIF) Degree (p. 478)
Doctor of Philosophy (PhD) Degree in the field of Psychology (p. 789)
Doctor of Philosophy (PhD) Degree in the field of Psychology and a Major Concentration in Cognitive and Affective Neuroscience (p. 790)
Doctor of Philosophy (PhD) Degree in the field of Psychology and a Major Concentration in Health Psychology and Behavioral Medicine Research (p. 791)
Doctor of Philosophy (PhD) Degree in the field of Psychology and a Major Concentration in Human-Computer Interaction and Human Factors (p. 793)

Doctor of Philosophy (PhD) Degree in the field of Psychology and a Major Concentration in Industrial-Organizational Psychology (p. 794)

Doctor of Philosophy (PhD) Degree in the field of Psychology and a Major Concentration in Psychometrics and Quantitative Psychology (p. 796)

Sociology

Master of Arts (MA) Degree in the field of Sociology*

Doctor of Philosophy (PhD) Degree in the field of Sociology (p. 815)

The Dean of Undergraduates

Center for Teaching Excellence

Certificate in Teaching and Learning (p. 855)

* Although students are not normally admitted to this degree program, graduate students may earn this degree as they work towards the PhD.

† This program is currently inactive and is not accepting applications for admission.

Graduate Certificates

Graduate certificate programs at Rice are post-bachelor’s degree academic credential programs that may be earned by students who are already enrolled in graduate degree-granting programs at Rice. In order to apply for a certificate program, students must declare the graduate certificate using the Graduate Declaration and Change of University Certificate From (https://registrar.rice.edu/sites/g/files/bxs751/f/Declaration%20of%20University%20Certificate%20%28GR%29.pdf) available from the Office of the Registrar (https://registrar.rice.edu/).

Declaration of the certificate requires the student to obtain the approval of their director of graduate studies (in the degree program to which they have been admitted) as well as approval from the appropriate certificate advisor for the university certificate program. Students may complete and acquire more than one certificate, provided that the student meets any and all of the requirements for each certificate program.

Graduate certificate programs are intended to recognize students who have achieved a defined level of competence, skill, or professional expertise, as well as to encourage students to pursue additional areas of interest in a particular area or field that may complement their coursework in the graduate degree-granting program to which they have been admitted. Upon completion, the certificate is awarded at the same time as the conferral of the student’s Rice degree, along with a formal notation on their academic transcript.

Graduate certificates are awarded when the student’s graduate degree is conferred, and the declared Graduate Certificate Candidates have completed:

• A minimum of 4 courses (12 credit hours) to satisfy certificate requirements, or
• A minimum of 3 courses (9 credit hours) and a graduate-level internship or other experiential learning opportunity.
• A minimum overall GPA of 2.67 or higher in all Rice coursework.
• A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the graduate certificate with a minimum grade of B-(2.67 grade points) in each course.*
• All coursework taken to satisfy certificate requirements with the standard letter grade earned (not on a Pass/Fail basis), with no more than one-third of the coursework taken to meet certificate requirements on a Satisfactory/Unsatisfactory basis and no more than one-third of the coursework taken to meet certificate requirements earned through transfer credit.

All requirements for the graduate degree-granting program in which the student is enrolled.

*Note: Departments or programs may identify and define in their program’s General Announcements Requirements tab stricter standards than the minimum GPA for coursework that satisfies their academic program requirements.

Graduate Program Major Concentrations

A graduate program concentration, otherwise known as a major concentration, is a formally recognized subfield of study within a discipline offered in a graduate program (master’s or doctorate-level), and it represents a coordinated set of courses which emphasize a subfield within the graduate program. The major concentration indicates the student’s focus according to research interests and/or professional goals.

Students must apply for and obtain the approval of their departmental Director of Graduate Studies or Department Chair to declare a major concentration. With departmental permission, students may apply for more than one major concentration for each graduate degree earned, assuming the program has multiple concentrations. A major concentration is available only to students in the graduate program within which the concentration is administered. For those programs with approved concentrations, the major concentration is listed on the student’s academic transcript as an element of the official curriculum.

Additionally, some programs allow for areas of specialization. Areas of specialization are pre-specified collections of elective courses that, when taken together, cover particular areas of specialization within a field of study. These can be viewed as an advising strategy to assist students in choosing electives. An area of specialization is not an academic credential and is not listed on the student’s academic transcript.

Non-Traditional Coursework

Courses tailored for individual students provide a valuable opportunity for them to pursue an academic or professional interest under the supervision of a Rice faculty member. Such courses are typically titled as independent study or research, directed reading, or internships. Although the organization of these courses is quite variable, they are subject to the same basic requirements as other course offerings. In particular:

• The subject matter and intellectual level of the course must be appropriate for Rice.
• The instructor of record must hold a regular faculty appointment at Rice. This instructor is responsible for submitting the final grade, in consultation with the student’s immediate supervisor, if appropriate.
• The course must have a written syllabus that meets published Rice Syllabus Standards (p. 91). In addition, the syllabus must include a description of anticipated activities and topical content.

• Credit hours assigned are subject to the same amount-of-work considerations as other courses. Credit hours will be awarded in accordance with the Rice credit hour guidelines (https://registrar.rice.edu/facstaff/contact_hours/) and fixed at the time of registration.

• All Academic Calendar (https://registrar.rice.edu/calendars/) (or Registrar) deadlines for registration, add/drop, completion of coursework, and grade submission must be met.

Academic Policies and Procedures

• Academic Calendar (https://registrar.rice.edu/calendars/)
• Admission (p. 55)
• All Graduate Students (p. 55)
• Doctoral Degrees (p. 65)
• Diploma Programs (p. 68)
• Non-Thesis Master’s Degrees (p. 68)
• Thesis Master’s Degrees (p. 68)

Admission

Graduate study is open to a limited number of extremely well-qualified students with a substantial background in their proposed field of study (this usually, though not always, means an undergraduate major in the field). Each department determines whether applicants have enough preparation to enter a given program, emphasizing the quality of their preparation rather than the particular academic program they completed or the credits they earned.

Admittance to a Rice University graduate-degree program, with the exception of those in the School of Music, requires a baccalaureate degree from a nationally accredited U.S. institution or an international institution officially recognized by that country’s Ministry of Education or its equivalent as determined by the Office of Graduate and Postdoctoral Studies. For the Shepherd School of Music, the equivalent to the baccalaureate degree will be determined by the school’s graduate committee.

Applicants for admission to graduate study should either contact the appropriate department for application forms and relevant information about the program or visit the department’s website for online application information. The Graduate Studies website (https://graduate.rice.edu/) also has links to the graduate departments’ websites.

Application Process

An application for graduate study should include the completed application form, the application fee, transcript(s), recommendations, and writing samples, if required. Some departments require scores on the aptitude portion of the Graduate Record Examination (GRE) or the Graduate Management Admission Test (GMAT) and an appropriate advanced test. The ETS school code for Rice is 6609; in addition, applicants should send their test scores directly to the admitting department. See individual departmental listings for specific requirement information.

To make sure scores are available when admission decisions normally are made, applicants should take the GRE by the December before the fall for which they are applying. Application deadlines vary by department and degree program. In general, these occur between December and February for fall semester admission, and departments may occasionally consider late applications. Some departments will also accept spring applications. See individual departmental websites for specific information regarding application deadlines.

Admission depends on students’ previous academic records, available test scores, and letters of reference from scholars under whom they have studied. Writing samples, portfolios, statements of purpose, and work experience may be evaluated as part of the admissions decision. In general, applicants should have at least a 3.00 (B) grade point average, or the equivalent, in undergraduate work. Applicants who are foreign nationals or whose native language is not English must take either the TOEFL or IELTS test and must score at least 90 on the iBT TOEFL or at least 600 on the paper-based TOEFL. For those students who choose to take the IELTS in lieu of TOEFL, the minimum score is 7. The TOEFL school code for Rice is 6609. The TOEFL and IELTS are not necessary for an international student who has received a degree from a university in which English is the official language of communication. Waiver of the TOEFL and IELTS test may be requested by the admitting department if the department deems that the student has sufficient English communication skills to be successful in their degree program. If a student does not meet the minimum English language requirement above, then a formal request must be submitted to the Office of Graduate and Postdoctoral Studies by the graduate program. Letters of endorsement should be addressed to the dean of graduate and postdoctoral studies.

Graduate students seeking to transfer to another graduate department at Rice may do so after being admitted to the new degree program and being released from their current department. A student is not eligible to return to any Rice graduate program following a dismissal. Students previously on probation must petition the dean of graduate and postdoctoral studies for admission into any graduate program, regardless of their current enrollment status.

Regulations and Procedures for All Graduate Students

Academic and Judicial Discipline

Academic Probation and Dismissal

Graduate students are placed on academic probationary status by the Office of Graduate and Postdoctoral Studies if their overall grade point average falls below 2.67, their semester GPA falls below 2.33, or they receive an unsatisfactory grade in research credit hours.

The period of probation extends to the end of the next semester in which the student is enrolled. If that probationary semester results in an overall grade point average below 2.67 or a semester grade point average below 2.33, the student may be dismissed without further warning. Additionally, graduate students with a cumulative GPA below 2.00 may be dismissed by the Office of Graduate and Postdoctoral Studies without a probationary period.

As a courtesy, students will be notified of their probationary status once final grades have been received and posted to their records.

S/U grades cannot be used to end probationary status for low cumulative GPA.

Departments or programs may identify and define in their General Announcements Requirements tab stricter standards than the minimum
GPA for coursework that satisfies their academic program requirements. A program can dismiss a student without a probationary semester by faculty vote.

**Deadlines**

Students must observe all deadlines listed in the Academic Calendar (https://registrar.rice.edu/calendars/) and the General Announcements.

**Dismissal**

The two most common grounds for dismissal of a graduate student are (1) inadequate academic progress and (2) a disciplinary violation. The latter is discussed in detail under Disciplinary Probation, Suspension and Expulsion (p. 56). The following relates to academic progress.

Graduate programs must provide students upon entry to the program with detailed requirements, deadlines, and other program policies. Students are then responsible for meeting program and university requirements in their program of education. A student who is failing to meet departmental or university requirements, such as failing to meet grade requirements, failing to pass required examinations by the required time, or failing to advance to candidacy or defend her or his thesis within the required time, is subject to dismissal without further warning.

When a student is judged not to be making adequate academic progress, he or she must be warned in writing of the possibility of dismissal and given clear information about what must be done within a specified time period to alleviate the problem. These expectations must be reasonable and consistent with expectations held for all students similarly situated in the program. If the student does not meet the stated requirements within the time frame specified, he or she will be dismissed by the graduate program. A student is not eligible to return to Rice following a dismissal.

It is difficult to give a precise and general definition of "adequate academic progress" for graduate students, due to the variation in requirements among different graduate programs. Nevertheless, some general principles do apply. For example, most graduate programs consist of two stages. The first stage, preceding candidacy, typically consists of explicit requirements and milestones, such as course requirements, exams, research projects, and the like. In this stage, adequate academic progress typically means compliance with the requirements and milestones of the program, as well as research progress when applicable. The second stage, post-candidacy, is often referred to as "all but dissertation" (ABD). In this stage, graduate students are expected to conduct research and write and defend their theses. As the second stage typically lacks explicit intermediate milestones, it is harder to assess academic progress during this stage. It is extremely important, therefore, for graduate programs to make their expectations explicit for post-candidacy graduate students.

Post-candidacy graduate students often enroll only in research courses. Such courses may offer standard letter grades or satisfactory/unsatisfactory (S/U) grades. Grading mode, however, must be uniform within a section of a research course. Thus, all students in such a section should receive letter grades or all should receive S/U grades.

Graduate programs must establish mechanisms for tracking, reviewing, and documenting academic progress of graduate students on an ongoing basis and must provide graduate students a written assessment of their academic progress at least annually. In some graduate programs, ongoing progress review is carried out by a student’s thesis committee, while in others it is carried out by a standing faculty committee. Although a student’s supervisor plays an important role in reviewing the student’s academic progress, the responsibility for conducting the review process lies with the program and requires the involvement of additional faculty members in the program. For graduate students who are primarily engaged in coursework, for example, professional master’s students, the transcript is an adequate form of written assessment.

Dismissal of a graduate student requires that the student be notified of his/her dismissal from the graduate program. Such a notice is distinct from any earlier warning, which lets the student know of the possibility of dismissal. All dismissal notices, as well as warnings of possible dismissal, must be in writing, with a copy sent to the Office of Graduate and Postdoctoral Studies. Email communication is considered to be "in writing". (Academic units should archive copies of all email communications pertaining to student dismissal.)

Because of the serious consequences of dismissal from a graduate program, dismissed students must receive a 15-day notice of the dismissal. Such a notice may precede the trigger for the dismissal. For example, a program can notify a student 15 days before an examination that failure to pass the examination with a certain minimal grade would result in dismissal. In general, dismissal should not take effect during a semester in which the student is enrolled. Dismissals that take effect during a semester are exceptional and must be approved by the dean of graduate and postdoctoral studies. A dismissal will be held in abeyance until the petition and appeal process is concluded, as students may petition for a dismissal to be revoked as described in the Dispute Resolution section (p. 83).

**Disciplinary Probation, Suspension and Expulsion**

The Code of Student Conduct (p. 82) applies to all Rice students and applies to conduct both on and off campus. The Office of Student Judicial Programs may sanction students, including implementing disciplinary probation or suspension or expulsion for violations of the Code of Student Conduct or the Honor Code. Students who have been expelled, who are serving a suspension, who are under investigation for disciplinary violations, or who have Code of Conduct or Honor Code proceedings pending against them may not receive their degree even if they have met all academic requirements for graduation. Students who are suspended or expelled must leave the university within the time frame specified by Student Judicial Programs, generally 48 hours of being informed of the decision, though in cases of unusual hardship, Student Judicial Programs may extend the deadline. Any tuition refund will be calculated from the official date of suspension or expulsion based on the refund schedule noted in the Academic Calendar (https://registrar.rice.edu/calendars/), published by the Office of the Registrar. A grade of "W" will be assigned to all enrolled courses regardless of when the suspension or expulsion began. Expelled students will have the expulsion noted on their transcript.

While on disciplinary probation or suspension, students may not run for or hold any elective or appointed office in any official Rice organization. Participation in student activities on and off campus and use of Rice facilities, including, but not limited to, the student center, the colleges, the playing field, the recreation center, and the computer labs, are limited to enrolled students.

Students seeking readmission after a suspension for Honor Code or Code of Conduct violations or other nonacademic action should submit a petition in writing to the Office of Student Judicial Programs by emailing SJP@rice.edu. That petition should include information on what the student did while away from Rice, including any schooling or employment; how the student met any requirements described by Rice at the time of separation; what the student did to address any
issues leading to the separation; and what the student learned from the separation. Once approved by Student Judicial Programs, the petition is forwarded to the dean of graduate and postdoctoral studies for final readmission approval and action.

**Termination of Financial Support**

Graduate students often receive financial support in the form of graduate stipend and tuition waivers. The termination of financial support to a graduate student, while not equivalent to dismissal, is a serious action that could deprive students of their financial ability to continue graduate studies. Consequently, the procedure to terminate a student’s financial support before the end of the financial-support commitment period should be analogous to those for dismissal as described above. Therefore, termination of financial support of a graduate student requires that the student be notified of the termination 15 days prior to the cancellation of support. Such a notice is distinct from any earlier warning, which lets the student know of the possibility of support termination. All termination of support notices, as well as warnings of possible termination, must be in writing, with a copy sent to the Office of Graduate and Postdoctoral Studies.

Active participation in required academic activities (for example, laboratory work in certain science and engineering programs) is a basic condition for continued financial support. Students who are absent from such required activities for contiguous two weeks without permission and without mitigating circumstances may be subject to termination of financial support. In addition, they may be judged not to be making adequate academic progress. Thus, if absences have to occur, they must be prearranged with the student’s supervisor, except for medical and family emergencies, in which cases timely notification is required. Graduate advisors and programs should be aware of unexplained student absences and must provide immediate written warnings when students are not present and carrying out required academic activities for more than one week.

When the source of a graduate stipend is an externally sponsored research grant, the principal investigator is responsible for certifying that compensation paid to those who are supported by the grant faithfully corresponds to actual effort in carrying out the sponsored research. This process is referred to as “effort certification.” The requirements above to give students warnings and notices before dismissal or termination of stipend are separate and independent of the effort-certification requirement. If a principal investigator determines that a graduate student is not contributing to the sponsored project that is the source of the student’s stipend, then the charge for the affected pay period must be reallocated to another fund by the program.

**Degree Revocation**

Rice University reserves the right to revoke any degrees granted. A degree awarded may be revoked if the university becomes aware that the degree should not have been granted, such as a degree that was obtained by violating the Honor Code or Code of Student Conduct or by deception, misrepresentation, falsification of records, academic misconduct, research misconduct, or if the work submitted in fulfillment of — and indispensable to — the requirements for the degree are determined to fail to meet the academic standards that were in effect at the time the degree was awarded. Notification of the date of revocation will appear on the student’s transcript, and the student will be asked to return the diploma. The Provost receives all recommendations for revocation of degrees and, after consideration and review, forwards to the President any recommendations deemed to be warranted. The Provost may also initiate and forward to the President his or her own recommendation for a degree revocation. The President will consider all recommendations forwarded by the Provost and effectuate those he or she determines to be warranted. Procedures governing degree revocations may be obtained from the offices of the Registrar, Provost, or President.

The university also reserves the right to withdraw a degree to correct an administrative error, such as an incorrectly listed degree, or in a situation where it was found that a student had not actually fulfilled all graduation requirements.

**Academic Regulations and Good Standing**

**Good Standing**

Graduate students must meet the minimum deadlines and course or grade requirements detailed on this page and the Grades page to remain in good standing and to graduate from the university. Graduate students must meet other requirements specifically mandated as essential for good standing by the graduate student handbook published by the relevant department or program. Failure to remain in good standing may result in probation, separation from the university, or dismissal.

**Concurrent Enrollment at Another Institution**

Doctoral and thesis master’s students must secure written permission from the Office of the Dean of Graduate and Postdoctoral Studies to seek concurrently a degree at another institution, regardless of the level or delivery method. Additional permission is not needed for students in interinstitutional dual degree programs listed in the General Announcements. Non-thesis graduate programs may also require the approval of the graduate program. Graduate students seeking two graduate degrees should refer to this section (p. 65) of the General Announcements. Undergraduates seeking graduate degrees should refer here (p. 17). Graduate students seeking multiple graduate degrees at Rice should review the section under ‘Second Degree Programs at Rice’.

**Minimum Credit Hours**

Students must register for at least three credit hours in a semester. Students in their final semester who require less than three credit hours to complete their degree, may register for less than 3 credits with permission from the dean of graduate and postdoctoral studies.

**Continuous Enrollment**

Students must maintain continuous program involvement and enrollment during fall and spring semesters unless granted an official leave of absence. See Leave, Interruptions of Study, and Withdrawals (p. 60) for more information.

**Full-Time Study**

Semester course load for full-time students on Rice’s three-semester Academic Calendar (https://registrar.rice.edu/calendars/) is nine credit hours or more as required by specific graduate programs for the fall,
spring, and summer semesters. Additional registration requirements and limitations can be found under 'Registration and Courses.'

Semester course load for full-time students on Rice's four-term Academic Calendar (https://registrar.rice.edu/calendars/) (e.g. the online MBA, MBA@Rice) is six credit hours or more, as required by specific graduate programs.

Graduate programs at Rice generally require full-time study. For information about dropping below full-time or changing to part-time status, see below.

**Part-Time Study**

Part-time students must register for at least three credit hours in a semester or term. All time boundary and degree requirements apply to part-time students. Students who wish to become part-time in the upcoming semester or term must obtain written permission from the graduate department before the semester or term begins. Students who wish to obtain part-time status after the semester or term has started must also obtain the approval of the Office of Graduate and Postdoctoral Studies. In order for students to receive the per credit hour, part-time tuition rate, they must obtain verification of part-time approval from the Office of the Registrar by the end of the second week of classes. Part-time students are not eligible to receive fellowships, assistantship aid, tuition scholarships, or reduced rate tuition from Rice. See also Financial Aid (p. 72). International students should consult the Office of International Students and Scholars about the possible impact on their visa status of dropping below full-time.

**Time to Degree (All Degrees)**

PhD and DMA students are required to complete their program, including thesis defense, within 10 years of initial enrollment in the degree program. All master’s students are required to complete their program, including thesis defense, within five years of initial enrollment. In both cases, students have a limit of six additional months from the date of defense to submit their theses to the Office of Graduate and Postdoctoral Studies. These time boundaries include any period in which the student was not enrolled or enrolled part-time, for whatever reason. Failure to meet any university time to degree deadline may result in the student not being able to continue in their degree program.

**Standard of Conduct**

Students are expected to live up to the high standards Rice sets for its community members, as described in the Code of Student Conduct (p. 82). Graduate students should be in compliance with the Code of Student Conduct at all times and not have holds from Student Judicial Programs or other offices.

**Research and Scholarly Activities**

Research and other scholarly activities of all students must conform to Rice University policies. It is recommended that students familiarize themselves with these policies before embarking on research or other scholarly activities. Particularly pertinent to students are policy 324 (Research Misconduct) (http://professor.rice.edu/uploadedFiles/Professor/Independent_Pages/Policies/Rice_University_Policy_324.pdf), policy 326 (Human Research Protection Policy) (http://professor.rice.edu/uploadedFiles/Professor/Independent_Pages/Policies/326.pdf), policy 332 (Patent and Software Policies) (https://policy.rice.edu/332/), and policy 334 (Copyright Policy) (https://policy.rice.edu/334/).

**Non-course Training**

Within their first semester of enrollment, graduate students are expected to complete some non-course training:

- **Orientation** – New graduate students are expected to attend all orientation events.
- **Preventing Sexual Harassment** – New graduate students are required to complete this online training.
- **Responsible Conduct of Research** – All graduate students are required to complete this online training. Students in the MBA and MLS programs are exempt from this training.
- **Lab Safety Training** - Lab Safety training is mandatory for all new students in the School of Engineering; in the School of Natural Science, with the exception of the Mathematics department; and any student outside those schools who will be working in a laboratory at Rice. This training is provided through the Office of Environmental Health and Safety (https://safety.rice.edu/).

**Applicable Academic Graduation Requirements**

The General Announcements (GA) is the official Rice curriculum. In the event that there is a discrepancy between the GA and any other websites or publications, the GA shall prevail as the authoritative source.

All graduate students must meet the minimum university requirements for the academic credential, in addition to any program specific requirements. The official certifier of the graduate degree, may petition the dean of graduate and postdoctoral studies, or the delegate to allow substitutions or waivers to the degree requirements when academically appropriate. Graduate programs may not independently allow substitutions or waivers to program specific degree requirements.

Students enrolled in graduate programs at Rice may decide whether to follow the graduation general and degree program requirements in effect when they first matriculated at Rice or those in effect when they graduate. If a student has been separated from the university due to a voluntary or involuntary withdrawal, students must graduate under the regulations in effect at the time of their last readmission or those in effect when they graduate unless granted an exception by the dean of graduate and postdoctoral studies. An archive of General Announcements is available online here (https://qa.rice.edu/archive/).

Graduate program degree requirements may vary from year to year during the period between a student’s matriculation and graduation. The graduate program may, at its discretion, make any of these variations available to a student for completion of the degree requirements. If a new academic credential is created during the student’s time at Rice, the new program will be available to the student as if the program appeared in the General Announcements at the time of matriculation.

**Application for Degree**

All students must complete and submit an Application for Degree Form available in ESTHER (https://esther.rice.edu/). This form is required for all students who plan to complete their degree requirements at the end of the fall or spring semester. A late fee will be assessed for applying after the deadline (please consult the semester-specific Academic Calendar (https://registrar.rice.edu/calendars/) for deadline).
Grades

See also Faculty Grading Guidelines (p. 90) and Syllabus Standards (p. 91).

Minimum GPA

Students must achieve an overall 2.67 GPA in courses required for their chosen program of graduate study. Each department or program can identify and define stricter standards than the institutional overall 2.67 GPA minimum. Where applicable, stricter GPA standards are communicated in the General Announcements Programs of Study section, in the Requirements tab.

In addition to the minimum graduation requirement, to remain in good standing, graduate students must maintain a minimum overall GPA of 2.67 and a minimum term GPA of 2.33. Academic probation is discussed in detail in that section (p. 55).

Pass/Fail Option

Graduate students may not take a course pass/fail within their graduate degree requirements. Courses outside of their degree requirements must be designated as pass/fail no later than the end of the 10th week of classes; however, a pass/fail course may later be converted to a graded course by submitting the proper online form with the Office of the Registrar by the end of the second week of the following semester.

Registration During Summer Sessions

Currently enrolled Rice students should register for summer courses online via ESTHER (https://esther.rice.edu/) as per normal registration processes and procedures. Rice students should be aware that the registration and payment deadlines do differ, depending on the summer session, and should familiarize themselves with the Academic Calendar (https://registrar.rice.edu/calendars/). Summer courses that do not generate enrollments sufficient to cover their costs may be canceled communicated in the General Announcements Programs of Study above. Similarly, conversions of summer Pass/Fail grades can only be done via paper form at the Office of the Registrar. Summer courses that do not generate enrollments sufficient to cover their costs may be canceled communicated in the General Announcements Programs of Study above. (See Grade Designations AUD above.)

Pass/Fail During Summer Sessions

Currently enrolled Rice students can designate a summer course as Pass/Fail during the summer sessions, but can do so only by visiting the Office of the Registrar in person and completing a Pass/Fail Designation form. Similarly, conversions of summer Pass/Fail grades can only be done via paper form at the Office of the Registrar. Students should adhere to the applicable Pass/Fail deadlines, as stated in the Academic Calendar (https://registrar.rice.edu/calendars/).

Satisfactory/Unsatisfactory

Satisfactory/unsatisfactory courses are those that do not use traditional grading procedures and instead assign a grade of S or U rather than a letter grade. Such courses or labs are designated by the instructor and are, in most cases, graduate level courses. With S/U courses, instructors report the S if the student successfully completes the course, or the U if they have not. Students should be aware that while a grade of S or U does not affect their grade point average, no credit will be awarded if a grade of U is received. Courses with a grade of S will count towards total credits earned. Visiting Post Baccalaureates cannot take courses on a satisfactory/unsatisfactory grading basis.

Audit

Students have the option of auditing courses. For auditing students, instructors report either the AUD or the NC grade symbol, the AUD if the student met the audit requirements of the class, or the NC if they have not. There are no credit hours associated with audited courses, and auditing a course does not affect a student’s GPA. Request to audit a class or to change from audit to credit or vice versa must be done by the dates and deadlines documented in the posted Academic Calendar (https://registrar.rice.edu/calendars/). (See Grade Designations AUD (p. 59) and NC (p. 59) below.)

Grade Symbols

Instructors are required to report a grade for all students whose names appear on the class roster. They grade their students using the following conventional symbols: A+, A, A-, B+, B, B-, C+, C, C-, D+, D, D-, F.

Grade Designations

Under certain circumstances, special designations accompany the student’s grade. These designations do not affect the grade point average. The special designations include the following:

AUD (“Audit”)

This designation is only used for students auditing the course, and specifically where the auditing student has met the audit requirements of the course as defined by the instructor. A grade designation of “NC” (No Credit) is given to students who do not meet the audit requirements. There are no credit hours associated with an AUD grade designation. (See Audit above.)

INC (“Incomplete”)

Instructors report this designation to the Office of the Registrar when a student fails to complete a course because of verified illness or other circumstances beyond the student's control that occur during the semester. Students must provide independent corroboration of their illness or circumstances, and they are expected to coordinate with the instructor prior to final grades being submitted. For an INC received in the fall semester, students must complete the work by the end of the first week of the spring semester or an earlier date as defined by the instructor, and instructors must submit a revised grade by the end of the second week. For an INC received in the spring or summer semester, students must complete the work before the start of the fall semester or an earlier date as defined by the instructor, and instructors must submit a revised grade by the end of the first week. If a grade is not submitted by the appropriate deadline, the INC will be automatically converted to a failing grade.

Students with an INC must be certain that tests, papers, and other materials affecting their grade or essential to completing a course requirement are delivered by hand to the appropriate professor or office according to the timeline previously stated, for the instructor to grade the documents and submit the final grade to the Office of the Registrar by the deadline. Loss or lateness because of mail service is not an acceptable excuse for failing to meet academic deadlines. A student who receives two or more INC in a semester may not enroll in the next semester for more than 14 semester hours. Students also should be aware that they may be placed on probation or suspension when the INC is changed to a grade, either by an instructor or by default.

NC (“No Credit”)

This designation signals that no credit was granted for the course. It is used in situations where a person auditing a course has not met the audit requirements of the course as defined by the instructor. (See Audit above.)
**NG ("No Grade")**
This designation signals that no credit was granted for the course. As a non-punitive grade, the NG is applied administratively and used in rare situations.

**OT ("Other")**
Instructors report this designation to the Office of the Registrar when a student fails to appear for the final examination after completing all the other work for the course. An OT received during a fall semester must be resolved and instructors must submit a revised grade by the end of the first week of the spring semester. An OT received during a spring semester must be resolved and instructors must submit a revised grade by the end of the fourth week after Commencement. OTs that are not submitted by the appropriate deadline, the OT will be automatically converted to a failing grade. Students should be aware that they may be placed on probation or suspension when the OT is changed to a grade, either by an instructor or by default.

**SA ("Study Away")**
This designation is used for students that participate in a course of study hosted at another institution, such as a Rice-sanctioned Study Abroad program, or an approved Inter-Institutional agreement. The grade of SA is awarded for the Rice placeholder course, carries no grade points and there are no credit hours earned for a course which receives a grade of SA. There is corresponding transfer credit that is articulated once an official transcript is received from the host school.

**W ("Official Withdrawal from University")**
Students who officially withdraw from the university after the designated drop deadline, the seventh week of classes, will receive a final grade of "W" for each course in which they were enrolled at the time of withdrawal.

Students who officially withdraw from the university before the drop deadline will not receive the grade of "W" for any courses in which they were enrolled for that semester. These courses will not be included on the official transcript.

**W ("Late Drop with Approval")**
A student may petition in writing the dean of graduate and postdoctoral studies to drop a course after the designated drop deadline. Students who receive approval from the dean of graduate and postdoctoral studies will receive a grade of "W" for that course. When requests for late drops are denied by the dean of graduate and postdoctoral studies, the Office of the Registrar records the submitted grade. Please see the Drop/Add (p. 63) section of the General Announcements.

If a student drops a class before the designated drop deadline for the semester, the course will not be included on his/her official transcript. Graduate students are reminded that the rule allowing new matriculants in their first semester at Rice to drop a class up until the last day of classes applies only to undergraduates.

**Grade Points and Grade Point Average Calculation**
To compute grade point average, letter grades are assigned numeric values as follows:

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Numeric Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>4.00</td>
</tr>
<tr>
<td>A</td>
<td>4.00</td>
</tr>
<tr>
<td>A-</td>
<td>3.67</td>
</tr>
<tr>
<td>B+</td>
<td>3.33</td>
</tr>
<tr>
<td>B</td>
<td>3.00</td>
</tr>
<tr>
<td>B-</td>
<td>2.67</td>
</tr>
<tr>
<td>C+</td>
<td>2.33</td>
</tr>
<tr>
<td>C</td>
<td>2.00</td>
</tr>
<tr>
<td>C-</td>
<td>1.67</td>
</tr>
<tr>
<td>D+</td>
<td>1.33</td>
</tr>
<tr>
<td>D</td>
<td>1.00</td>
</tr>
<tr>
<td>D-</td>
<td>0.67</td>
</tr>
<tr>
<td>F</td>
<td>0.00</td>
</tr>
</tbody>
</table>

1 Effective Academic Year 2018-2019, the A+ grade is now worth 4.00, not 4.33, in calculating the GPA.

For each course carrying standard letter grades, the credit hours attempted and the points for the grade earned are multiplied. The grade points for each course are added together, and the sum is divided by the total credit hours attempted. Grade point averages are noted each semester on the student’s official transcripts. Courses taken on a S/U or pass/fail basis are excluded from the grade point average calculation.

**Employment**
Students receiving a stipend may accept employment only with the approval of their graduate program. Students working for more than 20 hours per week are not normally eligible for full-time status.

**Leaves, Interruptions of Study, and Withdrawals**
There are two types of interruptions in study: short-term releases and separations. Both releases and separations may be either voluntary or involuntary. Separations are periods of nonenrollment and require specific reinstatement or readmission processes.

**Short-Term Medical and Parental Release**
There are two types of short-term releases: medical and parental. Short-term releases can be up to six weeks in length.

If a graduate student cannot fulfill the duties of his or her appointment due to a medical emergency or the adoption or birth of a child, the student may be temporarily released from their academic responsibilities.

Enrollment and stipend support may be continued for up to six weeks or until the appointment expires (whichever occurs first). A student may apply for short-term medical or parental release at any time during the semester. Complete guidelines for obtaining a medical or parental release are available at [https://graduate.rice.edu/leaves](https://graduate.rice.edu/leaves). Students taking a voluntary short-term release should make arrangements with their advisor and instructors to complete their academic responsibilities in a timely way.

The university may also insist on a student’s short-term medical release if, in the judgment of the dean of graduate and postdoctoral studies, or her/his designee, the student has a serious medical or psychological condition that the student cannot effectively address while enrolled or which is likely to be exacerbated severely by the Rice academic and/or living environment.

Students may not do degree work or work involving Rice faculty or facilities while on short-term medical release. Students returning from a
short-term medical release will be required to provide documentation that they are able to return to their studies.

Voluntary Separations
Voluntary separations include leaves of absence (generally one to two semesters in length) and withdrawals (medical and nonmedical). Students on a leave of absence are not required to petition for readmission. Withdrawn students are eligible to reapply. If students voluntarily withdraw for medical or psychological/psychiatric reasons, however, they must meet the readmission conditions for a medical or involuntary withdrawal.

Leave of Absence
A leave of absence allows a student to take time off from their studies and later resume study without having to petition for readmission to the university. Normally, students may take a leave of absence for no more than two consecutive semesters. The semesters that a student is on leave do not count against the time to candidacy or the time to defense. They do, however, count against time to degree.

A leave of absence is granted only by the Office of Graduate and Postdoctoral Studies on the recommendation of the department chair or program director and only to graduate students in good standing with the university. Students must obtain approval for a leave before the beginning of the academic semester in which the leave is taken. Leave requests, endorsed by the graduate program, must be received in the Office of Graduate and Postdoctoral Studies prior to the first day of classes (see https://graduate.rice.edu/leaves/).

Medical Leave of Absence
Students who take a leave of absence for medical/health issues must submit documentation of treatment and demonstration of medical stability from their treating healthcare provider prior to returning from leave.

Medical withdrawal and Readmission
Students who wish to seek readmission following a medical withdrawal must submit to the Office of Graduate and Postdoctoral Studies a written petition for readmission no later than June 1 for the fall semester and November 1 for the spring semester, and April 1 for the summer semester.

• This petition must include documentation of treatment provided and demonstration of medical stability (usually six months); students may also be required to interview with the director of the Rice Counseling Center or Student Health Services or their designees.
• The petition should include a letter to the Dean stating why the student feels they are ready to return to the University, actions they have undertaken in the interim that could support their return, and specific plans for their follow up treatment in Houston (if applicable).
• The petition also must include an academic plan devised in consultation with the student’s advisor, advising committee, or director of graduate studies (depending upon the graduate program’s advising structure) and approved by the department chair. Academic plan consultations should be initiated at least three weeks prior to the petition due date.

Students who wish to resume study after a voluntary or de facto withdrawal must petition for readmission to the university. Petitions must be submitted to the Office of Graduate and Postdoctoral Studies no later than August 1 for Fall, December 15 for Spring and April 1 for Summer readmissions. International students should apply earlier to ensure enough time to secure a new visa.

• The petition must include an academic plan devised in consultation with the student’s advisor, advising committee, or director of graduate studies (depending upon the graduate program’s advising structure). Academic plan consultations should be initiated at least 3 weeks prior to the petition due date.
• The petition should also include a statement, addressed to the dean of graduate and postdoctoral studies, as to why the student withdrew and would now like to be readmitted.
• Readmission requires the recommendation of the department chair or program director and the approval of the dean of graduate and postdoctoral studies. Therefore the petition should be reviewed by the department chair and a written statement of recommendation should be submitted with the petition or emailed directly to the graduate office (graduate@rice.edu).

The semesters that a student is not enrolled do not count against the time to candidacy or the time to defense. They do, however, count against the time to degree. Readmitted students must pay a readmission fee of $375.

Further information is available by contacting the Office of Graduate and Postdoctoral Studies.

Medical Withdrawal and Readmission
Graduate students may request a medical withdrawal from the university by applying in writing to the Office of Graduate and Postdoctoral Studies at any time during the semester, up until the last day of classes; the withdrawal does not take effect until approved in writing. Email communication is considered to be “in writing”.

Students considering taking time off for personal reasons related to their wellbeing and mental health are encouraged to contact the graduate affairs manager or the Student Wellbeing Office (http://wellbeing.rice.edu/) about the roadmap back to Rice. The Student Wellbeing Office serves as a liaison to the medical readmission process, during the separation process, as well as when students are ready to return.

Graduate students who wish to seek readmission following a medical withdrawal must submit to the Office of Graduate and Postdoctoral Studies a written petition for readmission no later than June 1 for the fall semester and November 1 for the spring semester, and April 1 for the summer semester.

• This petition must include documentation of treatment provided and demonstration of medical stability (usually six months); students may also be required to interview with the director of the Rice Counseling Center or Student Health Services or their designees.
• The petition should include a letter to the Dean stating why the student feels they are ready to return to the University, actions they have undertaken in the interim that could support their return, and specific plans for their follow up treatment in Houston (if applicable).
• The petition also must include an academic plan devised in consultation with the student’s advisor, advising committee, or director of graduate studies (depending upon the graduate program’s advising structure) and approved by the department chair. Academic plan consultations should be initiated at least three weeks prior to the petition due date.

Students who withdraw for psychological reasons within the last five weeks of a semester are strongly encouraged to focus on their wellbeing needs and will not be eligible to apply for immediate readmission the following semester. Students who withdraw for psychological reasons while enrolled during the summer session are not eligible to apply for immediate readmission in the fall.

The semesters that a student is not enrolled do not count against the time to candidacy or the time to defense. They do, however, count against the time to degree. Readmission requires the approval of the dean of graduate and postdoctoral studies, and readmitted students must pay a readmission fee of $375.
Further information is available by contacting the Office of Graduate and Postdoctoral Studies (graduate@rice.edu/contactus/).

### Involuntary Separation

Sometimes, the university will require a student to withdraw, which requires a specific readmission process. An involuntary separation may result from a disciplinary and/or a medical reason.

The university may insist on a student’s involuntary separation from the university if, in the judgment of the dean of graduate and postdoctoral studies or her/his designee, or, in the case of disciplinary action, of Student Judicial Programs, the student’s behavior includes, but is not limited to, the following:

- Poses a threat to the safety or welfare of him/herself or other members of the Rice community;
- Has a serious medical or a psychological condition that the student cannot effectively address while enrolled or that is likely to be severely exacerbated by the Rice academic and/or living environment;
- Demonstrates behavior that seriously interferes with the education of other members of the Rice community; behavior that violates the Rice Code of Student Conduct, the Rice Honor Code, the Rice Sexual Misconduct Policy, the Rice Weapons Policy; or other relevant policies, or behavior that otherwise requires disciplinary action;
- Is not able to continue functioning as a student.

An involuntary separation can be the result of an interim decision or a final decision. An interim decision is usually a summary process that may result in a temporary separation.

A final decision comes after a process that includes notification, opportunity to respond, and opportunity to appeal. It can result in a suspension (i.e. temporary separation) or in an expulsion (i.e. permanent separation), as well as other sanctions.

### Readmission Following Involuntary Separation

Following an involuntary separation, graduate students who wish to seek readmission must submit a written petition to the Office of Graduate and Postdoctoral Studies no later than June 1 for the fall semester, November 1 for the spring semester, and April 1 for summer semester.

Students taking time off due to an involuntary withdrawal are encouraged to contact the graduate affairs manager or the Student Wellbeing Office (wellbeing.rice.edu) about the roadmap back to Rice. The Student Wellbeing Office serves as a liaison to the readmission process, during the separation process, as well as when students are ready to return.

- The petition should include a letter to the graduate dean stating why the student feels they are ready to return to the university and actions they have undertaken in the interim that could support their return.
- Petitions must also include an academic plan devised in consultation with the student’s advisor, advising committee, or director of graduate studies (depending upon the graduate program’s advising structure) and approved by the department chair. Academic plan consultations should be initiated at least three weeks prior to the petition due date.
- Petitions for return following an involuntary medical withdrawal must include documentation of treatment provided and demonstration of medical stability (usually six months); students may be required to interview with the director of the Rice Counseling Center or Student Health Services or their designees.

- Students involuntarily separated from the university for violations of the Code of Student Conduct or other disciplinary reasons, including honor code violations, must also submit the petition to the Office of Student Judicial Programs and receive approval prior to returning to the university or for the award of a degree (See Academic and Judicial Discipline (p. 55)). Students should refer to their separation letter for any additional requirements.

Students who are involuntarily separated from the university for psychological reasons within the last 5 weeks of either fall, spring, or summer terms are not be eligible to apply for readmission for the following term.

The semesters that a student is not enrolled do not count against the time to candidacy or the time to defense. They do, however, count against the time to degree. Readmission requires the approval of the dean of graduate and postdoctoral studies, and readmitted students must pay a readmission fee of $375.

Further information is available by contacting the Office of Graduate and Postdoctoral Studies (graduate@rice.edu/contactus/).

### Resignation

A student may resign from the university by notifying the dean of graduate and postdoctoral studies in writing. Resignation means the student is withdrawing, is no longer a student at Rice, and will not return to Rice. A resignation becomes effective when accepted by the dean of graduate and postdoctoral studies. In general, if a student is under investigation for a potential Code of Student Conduct (p. 82) violation or has charges pending under the Code, disciplinary proceedings will terminate upon acceptance of the resignation by the dean of graduate and postdoctoral studies. However, this general rule does not apply if the resigning student has been charged with sexual assault, sexual harassment, dating violence, stalking or any other behavior that could result in expulsion. A student who resigns is not eligible to receive a degree from Rice, even if the student has otherwise met all of the requirements for the degree. A notation will appear on the resigned student's transcript indicating that the student is ineligible to reenroll unrelated to academic or financial reasons.

### Nonenrollment Restrictions

Students may not do degree work at Rice or work involving Rice faculty or facilities during any period of nonenrollment, except during the period following successful oral defense prior to submission of the final thesis. All separated students must return their student ID to the Office of Graduate and Postdoctoral Studies. All university keys must be returned to the appropriate offices. Participation in student activities on and off campus and use of Rice facilities, including, but not limited to, the student center, the playing fields, the recreation center, and the computer labs, are limited to enrolled students.

Separated students are expected to be away from Rice during the term of the separation. If the student is employed by Rice at the time of separation, he or she must relinquish such employment or petition the Office of Graduate and Postdoctoral Studies (graduate@rice.edu) for written permission to continue the on-campus employment; separated students may not begin employment with Rice during the separation. Noncompliance with these requirements may delay or prevent readmission.
Name Changes
To comply with a number of government agencies’ reporting requirements, the university must record the name of each student who is a U.S. citizen as the student’s name appears on his or her Social Security card. Students who need to change their names on Rice University records and who are U.S. citizens must notify the Office of the Registrar and present a Social Security card, marriage license, divorce decree or court order, and picture identification when submitting the form. After the change is implemented, the name on the Rice University transcript will read as printed on the supporting document(s).

Registration and Courses
See also Academic Regulations (p. 57).

Drop/Add
During the first two weeks of classes, students may change their registration, add or drop courses without penalty. After the second week, the following conditions apply for both adding and dropping courses and credits hours. Graduate students:

- May not add courses after the second week of classes, except in extenuating circumstances and with the approval of the Office of Graduate and Postdoctoral Studies (a $75 penalty fee per course will be assessed). The student’s request to add a course first must be supported and approved by the student’s advisor along with the course instructor and then forwarded to the dean of graduate and postdoctoral studies for consideration.
- May drop courses through the seventh week without penalty.
- May not drop courses after the end of the seventh week of classes, except in extenuating circumstances and with the final approval of the Office of Graduate and Postdoctoral Studies (a $75 penalty fee per course will be assessed). The student’s request to drop a course first must be supported and approved by the student’s advisor, the course instructor, and the director of graduate studies or the department chair. Afterward, it should be forwarded to the dean of graduate and postdoctoral studies for consideration. Students who receive approval to drop a course after the designated drop deadline will receive a grade of "W" for that course.

Course Numbering System
Courses numbered 100-499 are considered undergraduate level, with the 100-299 sequence classified as lower-level (freshman/sophomore) and the 300-499 sequence classified as upper-level (junior/senior). Courses numbered 500 and above are considered to be at the post-baccalaureate or graduate level. Graduate and undergraduate students may, with departmental approval, take certain courses outside their designated level.

Holds
Registration, official transcripts, degree verification, and other administrative processes may be impacted by a hold on a student account. Students may consult the website of the Office of the Registrar (https://registrar.rice.edu/students/holds/) to discover why a hold exists and how to resolve the issue. The Office of the Registrar cannot remove holds governed by another office or department.

Repeated Courses
Students may repeat courses previously taken, but the record of the first attempt (and grade) remains on the transcript, and both grades are included in term and cumulative grade point average calculations. In most cases, if students repeat courses previously passed, credit is awarded only once. For example, a student took HIST 571 and received a grade of B. The student then repeated HIST 571 and received a grade of A. Both grades—the A and B—appear on the transcript and are included in his/her GPA; however, he/she only receives three credits toward his/her degree. On the transcript, a repeated course is indicated by one of the following values:

- I – Included in GPA and earned hours
- A – Included in GPA, but excluded from earned hours
- E – Excluded from both GPA and earned hours

Some Rice University courses may be repeated for credit. They are specifically noted in the Course Offerings (https://courses.rice.edu) each semester. If a course may be repeated for credit, each grade appears on the permanent record and is included in the grade point average. If students repeat courses for which they have received either advanced placement or transfer credit, credit will not be counted. Nor can credit be received twice for students transferring courses that repeat previous enrollment at Rice.

Final Examinations in Graduate Courses
Graduate courses, especially those with significant undergraduate student enrollment, should follow the guidelines for undergraduate courses (see Final Examinations section) regarding scheduling of projects, papers, and finals during the last weeks of classes, reading periods, and final exam periods. However, instructors have the discretion to modify those guidelines as appropriate for their specific courses. Such modifications and the final schedule must be made clear at the beginning of the semester.
Transcript Policies
Rice University provides official hard-copy transcripts and electronic transcripts. Official transcripts are issued only at the request of the student. Official transcript requests should be made at least five working days before the desired date of issue. A $10 fee per transcript must be received before a transcript is issued.

Transcripts that have been presented for admission or evaluation of credit become a part of the student’s permanent record and are not reissued. Transcripts from other institutions, if needed, must be sent to Rice University directly from the original issuing institution.

Transfer Credit

Transfer Credit Guidelines
Courses taken at another accredited college or university are not automatically approved for transfer credit. Transfer credit is only granted with the approval of the student’s major department. Transfer credits are subject to the following restrictions:

- Students must have taken the course at a United States academic institution accredited by a regional accrediting agency, or at a foreign institution accredited by the appropriate agency, such as the government’s Ministry of Education.
- Official transcripts from the transfer credit institution must be sent directly from the institution’s registrar to the major department or hand-delivered in an official sealed envelope.
- All coursework must have earned a grade of at least a C- or the equivalent. Some departments or programs may set a higher standard. Students may not transfer courses taken pass/fail or on a similar basis at other institutions.
- Students seeking transfer credit must submit a Graduate Request for Transfer Credit form (https://registrar.rice.edu/sites/q/files/bxs751/f/Graduate%20Request%20for%20Transfer%20Credit%20ao11052014.pdf) to the department for approval.
- The major department must approve the credits and submit a copy of the transcript and the approved Graduate Request for Transfer Credit form to the Office of the Registrar.

The following types of non-traditional coursework will not transfer to Rice for credit: a.) life experience; courses offered by non-collegiate sponsors such as businesses and government agencies, and labor unions, even if evaluated by the American Council on Education (ACE); b.) equivalency examinations (e.g. CLEP); and c.) MOOCs (massive open online courses).

Grades earned for transfer credit are not entered on the Rice transcript, and transferred courses have no effect on a student’s Rice grade point average.

All transferable credits from schools utilizing a system other than the semester hour (such as quarter hours or ECTS credits) will be converted to semester hours. In accordance with university guidelines and based on the external transcript, the Office of the Registrar will determine appropriate transferable credit hours. In no instance will a course transfer in with credit greater than the semester hour equivalent originally earned for the coursework.

International Transfer Credit
Students seeking transfer credit for courses taken at institutions outside the United States must present a professional course-by-course evaluation of the foreign official transcript. The professional evaluation must verify that the foreign institution is equivalent to a regionally accredited U.S. academic institution and must include an explanation of credits earned (including U.S. semester hour equivalents), grade equivalents, and course levels. Two reliable services with course-by-course evaluations that include this required information are:

- SpanTran (https://www.spantran.com/)
- Education Credentials (https://www.ece.org/)

All professional evaluations should be obtained from one of these two recommended credential services and submitted to the major department. Payment for the professional evaluation is the responsibility of the student.

Coursework Taken While an Undergraduate at Rice
Graduate programs may consider counting courses taken by a student while an undergraduate at Rice as credit toward a graduate degree. The following guidelines must be followed:

- The courses must be chosen from those that normally satisfy requirements for the advanced degree
- No course can be used simultaneously to satisfy both an undergraduate and a graduate degree requirement
- Coursework taken as an undergraduate will not be converted to indicate a graduate level in the student’s academic history until after the bachelor’s degree is awarded
- Coursework taken as an undergraduate does not indicate the student’s matriculation term for the graduate program—the matriculation term will be the term the student officially enters the program as a graduate student after completing all undergraduate requirements
- Regardless of the number of graduate courses taken at the undergraduate level, a student must meet the residency requirement of the degree as a graduate student

Graduate programs may admit advanced undergraduates to a graduate program to seek concurrently the bachelor’s and graduate degrees. For additional information, please review the Undergraduate - Graduate Concurrent Enrollment section (p. 17) of the General Announcements.

Rice Undergraduates Entering a Graduate Degree Program
Advanced Rice undergraduate students who wish to enter a master’s degree program should apply for admission through the normal admissions procedures as they begin to pursue seriously the degree, regardless of their planned undergraduate degree conferral. While the application material requirements of official transcripts and test scores may be waived in these cases, the authority for the waiver rests with the graduate program. Letters of recommendation are still required for admission.

Graduate programs may count courses taken by the students while an undergraduate as credit towards the degree if the credit was not already counted towards the undergraduate degree.

For additional information, please review the Undergraduate - Graduate Concurrent Enrollment section (p. 17) of the General Announcements.

Transfer of Graduate Program
Graduate students at Rice are admitted into a specific graduate program. Admissions criteria are program specific; therefore, students who wish to transfer graduate programs must follow the guidelines listed below.
Transferring from Research/Thesis to a Professional/Non-Thesis Program

Students who wish to change from a thesis program to a professional/non-thesis degree program must petition their department in writing. Upon recommendation of the department and approval by the dean's office, the request is sent to the Office of Graduate and Postdoctoral Studies for consideration and final approval. If approved, students who received tuition waivers while enrolled in the thesis program may be expected to repay the tuition before their professional degrees are awarded.

Transferring from Non-Thesis to Research/Thesis Program Within the Department

Non-Thesis degree programs terminate when the degree is awarded. Students who wish to continue graduate study after completing a non-thesis degree program must apply for admission into the research/thesis degree program. Upon recommendation of the department, the request for admission is sent to the Office of Graduate and Postdoctoral Studies for consideration and final approval. Some students may become eligible for tuition waivers in subsequent semesters. Tuition waivers will not be awarded retroactively.

Transferring to Master's Program (Non-Thesis or Thesis) as a Result of Dismissal from Doctoral Program

A graduate program may offer a non-thesis or thesis master's opportunity to students who are being dismissed from a doctoral program. If the student accepts the master's opportunity, the graduate program would follow internal procedures and notify the Office of Graduate and Postdoctoral Studies of the change in degree program. Tuition will not be charged retroactively for courses already completed. If the student declines the master's opportunity, the student will be dismissed without a degree awarded. Students who are dismissed from a doctoral program are not eligible for admission to other doctoral programs at Rice.

Transferring Departments

Students in good standing and not on academic probation who wish to change their graduate program to a graduate program in another department must apply for admission to the new department's degree program, stating that they are currently a graduate student in another program at Rice. The application must be vetted through the regular admissions process. In addition to admission to the new department, applications for a transfer must also be approved by the dean of graduate and postdoctoral studies.

Second Degree Programs at Rice

Graduate students may enroll in a second degree program only with the approval of their home academic department. No course or credit hour may be used to satisfy the degree requirements of more than one degree. Graduate students seeking concurrent enrollment at another institution should review the section under 'Concurrent Enrollment at Another Institution.'

Veterans Information

Qualified veterans, dependents of deceased or disabled veterans whose death or disability is a direct result of their military service, or dependents in receipt of transferred benefits from a veteran may be eligible for VA educational benefits under one of the following programs while attending Rice University.

- Chapter 30: Montgomery G.I. Bill® - Active Duty/Discharged
- Chapter 31: Vocational Rehabilitation
- Chapter 32: Veterans Educational Assistance Program (VEAP)
- Chapter 33: Post 9/11 G.I. Bill®
- Chapter 35: Dependents Education Assistance
- Chapter 1606: Montgomery G.I. Bill® - Selected Reserve
- Chapter 1607: Reserve Education Assistance Program (REAP)

Rice University does not impose any penalty, including the assessment of late fees, the denial of access to classes, libraries, or other institutional facilities, or the requirement that a covered individual borrow additional funds, on any covered individual because of the individual's inability to meet his or her financial obligations to Rice University due to the delayed disbursement funding from VA under Chapter 31 or Chapter 33 (other than those that may be required by the particular aid program itself). Rice University may require additional payment or impose a fee for the amount that is the difference between the amount of the student's financial obligation and the amount of the VA education benefit disbursement. In some cases, the student may be required to submit a Free Application for Federal Student Aid (FAFSA).

If you qualify for state or federal education benefits through military service and payment to the school is delayed, you may be eligible for a 60 day deferment of tuition and fees to avoid late fees and/or being dropped from classes. The deferment request form is available here: https://www.tvc.texas.gov/wp-content/uploads/2017/09/HB-846-Form-Fillable.pdf. Submit the completed form to the Office of the Registrar.

At Rice University, veterans' benefits are managed through the Office of the Registrar. This office assists all veterans and their dependents who wish to receive Veterans Administration (VA) educational benefits.

Please see the Office of the Registrar's website (https://registrar.rice.edu/students/veterans/) regarding the documentation required to obtain educational allowances from the VA.

Veterans who are planning to attend the university should contact Rice University's Veterans Affairs Representative (registrar@rice.edu) at least two months before the date of entry. Such time is required to expedite the processing of paperwork for educational allowances from the VA.

For certification of benefits, students should have an enrollment of at least half time (6 credit hours for undergraduates).

For additional information regarding other veterans' educational programs, contact the Office of the Registrar at 713-348-4999 or registrar@rice.edu.

Regulations and Procedures for Doctoral Degrees

University Graduation Requirements for Doctoral Degrees

Candidates receive the PhD degree after successfully completing:

- A minimum of 90 graduate semester credit hours of study at the 500-level and above (including thesis credit hours).
- Doctoral students must complete at least four full fall and/or spring semesters in full-time study at Rice University.
- An original investigation that is formalized in an approved thesis.
• As final evidence of preparation for degree, a public oral examination prior to submitting the approved thesis to the Office of Graduate and Postdoctoral Studies.

Candidacy, Oral Examinations, and Thesis

Time Boundaries for Candidacy and Defense

Time To Candidacy
PhD and DMA students must be approved for candidacy before the beginning of the 9th semester of their enrollment at Rice.

Time to Defense
PhD and DMA students must defend their theses before the end of the 16th semester of their enrollment at Rice.

Time to Thesis Submission
Candidates who successfully pass the oral examination in defense of the thesis must submit the thesis to the Office of Graduate and Postdoctoral Studies no later than six months from the date of the examination. See Candidacy, Oral Examinations and Thesis (p. 67).

Time to Degree
PhD and DMA students are required to complete their program, including thesis defense, within 10 years of initial enrollment in the degree program. This time boundary includes any period in which the student was not enrolled or enrolled part-time, for whatever reason. Failure to meet any university time to degree deadline may result in the student not being able to continue in their degree program.

Approval of Candidacy
Candidacy marks a midpoint in the course of graduate education. Achieving candidacy for the PhD/DMA signals that a graduate student has:

1. completed required coursework,
2. passed required exams to demonstrate his/her comprehensive grasp of the subject area,
3. demonstrated the ability for clear oral and written communication, and
4. shown the ability to carry on scholarly work in his/her subject area.

Requirements for achieving candidacy for the doctoral degree are determined at the departmental (p. 93) level. The department is also authorized to grant waivers or substitutions of specific course requirements, but not to make exceptions to university requirements.

Students enrolled in research degree programs submit their petitions for candidacy for a doctoral degree through the department chair to the dean of graduate and postdoctoral studies. In the petition sent to the dean, the department chair identifies the student's thesis director, recommends a thesis committee, certifies that the applicant has fulfilled the departmental requirements, and provides a course transcript as evidence that work completed within the department is of high quality.

PhD/DMA students must be approved for candidacy before the beginning of the ninth semester of their enrollment at Rice. However, in order to qualify for a given commencement, they must meet the submission deadline for that commencement per the Academic Calendar (https://registrar.rice.edu/calendars/). This date falls at the end of October for December degree conferral and the end of February for May degree conferral.

Students who are unable to meet the university time boundary for candidacy may petition the dean of graduate and postdoctoral studies or his/her designee for an extension of time to candidacy. Students who exceed their time boundaries without an approved extension request will be charged a fee of $125 for reinstatement to good standing. Students who exceed their time boundaries and do not receive an extension to their time to candidacy are subject to immediate dismissal by the Office of Graduate and Postdoctoral Studies.

Thesis Committee
The thesis committee administers the oral examination for the student’s thesis defense and has final approval/disapproval authority and responsibility for the written thesis.

A thesis committee is composed of at least three members. Two, including the committee chair, must be members of the student’s department faculty; in doctoral thesis committees one member must have his or her primary appointment in another department within the university. At least three members of the committee must meet one of the following requirements:

• Tenured or tenure-track members of the Rice faculty
• Research faculty holding the rank of assistant research professor, associate research professor, or research professor
• Qualified individuals who have been certified as thesis committee members by the dean of graduate and postdoctoral studies

The composition of the thesis committee must always meet the guidelines mentioned above, with the following exceptions:

• Interdisciplinary programs (Applied Physics & SSPB) - The chair of the thesis committee is either the advisor or in the host department of the student, and is affiliated with the program. The second member of the committee is affiliated with the program. The third committee member of these programs must not be affiliated with either the student’s graduate program or the department where their advisor has their primary appointment. The formal structure of the thesis committee for the programs can be found in the program specific sections of the General Announcements and are regularly reviewed by the Office of Graduate and Postdoctoral Studies.

The thesis director must be a tenured or tenure-track member of the Rice University faculty or a research faculty holding the rank of assistant research professor, associate research professor, or research professor. Faculty whose primary appointment is at another institution may serve as thesis director if approved by the dean of graduate and postdoctoral studies. Emeritus professors may not accept new graduate students without the approval of the dean of graduate and postdoctoral studies and an appointment letter from the school dean.

The committee chair need not be the thesis director. The chair, however, must be either a tenured or tenure-track member of the major department or a research faculty member of the student’s major department. In addition to the three required members, additional members of the committee may be selected with the approval of the department chair.

In the event that a member of a students’ thesis committee leaves their position at Rice University, they may continue serve on the thesis committee if they continue to have the support of the department chair.
(or in the case of interdisciplinary programs, the graduate program director) to serve in this capacity.

Candidates are responsible for keeping the members of their committee informed about the nature and progress of their research. They also must establish a schedule for thesis completion and review. The members of the committee, in turn, should review the thesis in a timely manner, approving a preliminary form of the thesis before scheduling the oral examination.

**Announcement of Thesis Defense**

Oral examinations for the doctoral degree must be announced at least 14 days in advance. Oral examination announcements are to be submitted to the Office of Graduate and Postdoctoral Studies by entering the information into the Graduate Students Thesis Defense Announcement form at https://events.rice.edu/rgs.

**Oral Examination in Defense of Thesis**

The public oral defense of a thesis is intended to be an examination of a completed body of work and should be scheduled only when the thesis is essentially completed. Students may take the final oral examination in defense of their thesis only after the dean of graduate and postdoctoral studies approves their candidacy.

PhD and DMA students must defend their theses before the end of the 16th semester of their enrollment at Rice. Students who are unable to meet the university time boundary for thesis defense may petition the dean of graduate and postdoctoral studies or his/her designee for an extension of time to defense. Students who exceed their time boundaries without an approved extension request will be charged a fee of $125 for reinstatement to good standing. Students who exceed their time boundaries and do not receive an extension to their time to defense are subject to dismissal by the Office of Graduate and Postdoctoral Studies.

A candidate must be enrolled in the semester in which his or her oral examination is held. Students who defend during the summer must enroll in the summer session of classes. For the purpose of the oral defense only, enrollment in a semester is considered valid through the Friday of the first week of class of the following semester. Students passing the oral examination on or before the end of the first week of classes of any semester do not have to register for that or any subsequent semester even though they may be continuing to make minor revisions to the final copy of their thesis.

In addition to announcing the planned defense as described above, at least one copy of the thesis must be available in the departmental office not less than two calendar weeks prior to the date of the oral defense. Graduate programs may allow or require the thesis to be submitted and stored in an electronic format.

The length of the oral examination and the subject matter on which the candidate is questioned are left to the judgment of the thesis committee. The defense should be scheduled by the student after consultation with the thesis advisor, who agrees that the thesis is completed and ready to be defended. All oral thesis defenses must take place on the Rice University campus with the candidate and all thesis committee members in physical attendance. In exceptional cases, appeals to this requirement can be made in writing to the dean of graduate and postdoctoral studies.

Should a candidate fail, the committee chair may schedule a second examination. Students who fail a second time will be dismissed from the university.

Following their defense, students must submit a copy of their approval of candidacy form, signed by the thesis committee signifying successful defense of the thesis, to the Office of Graduate and Postdoctoral Studies within one week after the oral examination. Instructions to submit this form are located online at https://graduate.rice.edu/thesis. The original approval of candidacy form must be turned in when the thesis is submitted.

**Thesis Submission Regulations and Procedures**

The thesis is the principal record of a student's work for an advanced degree. Instructions for online thesis submission and guidelines for thesis formatting are available at https://graduate.rice.edu/thesis.

Candidates who successfully pass the oral examination in defense of the thesis must submit the thesis to the Office of Graduate and Postdoctoral Studies no later than six months from the date of the examination. If the thesis is not submitted by the end of the six-month period, the “pass” will be revoked and an additional oral defense will need to be scheduled. Applications for an extension without reexamination must be made by the candidate with the unanimous support of the thesis committee, endorsed by the department chair (or in the case of interdisciplinary programs, the graduate program director), and approved by the Office of Graduate and Postdoctoral Studies. Extensions of this six-month period for completion without reexamination will be granted only in rare circumstances. Approved petitions for extension without reexamination received after the six month time boundary expired will be charged a fee of $125 for reinstatement to good standing.

Students must have the original signatures of each member of their thesis committee on two title pages of their thesis. Students submitting a thesis for the PhD, DArch, or DMA must fill out a Survey of Earned Doctorates form and a ProQuest/University Microfilms International (UMI) publishing contract. Students must pay their thesis submission fee before submitting the thesis to the Office of Graduate and Postdoctoral Studies for degree approval.

All theses are permanently preserved in Rice's Institutional Repository and are available via https://scholarship.rice.edu/ shortly after the final submission of the thesis. At the time of thesis submission, a student may request an embargo of six months, one year, or two years; embargoes beyond this period are subject to the approval of the dean of graduate and postdoctoral studies.

Students have six months from the date of their defense to submit their thesis. However, in order to qualify for a given degree conferral, they must meet the submission deadline for that degree conferral per the Academic Calendar. This date falls on the last day of classes in the fall and spring semesters.

**Departmental Duties**

In most research degree programs, students must undertake a limited amount of teaching or perform other services as part of their training. Assigned duties should not entail more than 10 hours per week, averaged over the semester, or extend over more than eight semesters.

**Other Requirements**

There are other additional requirements, regulations and procedures for all graduate programs. They are found under Graduate Students > Academic Policies and Procedures > All Graduate Students, or can be obtained from the Graduate School website.
Regulations and Procedures for Diploma Programs

University Graduation Requirements for Diploma Programs

Diploma programs at Rice are post-master’s degree academic credential programs. At present there are two diploma programs: the Artist Diploma (p. 578) offered by the Shepherd School of Music, and the Diploma in Liberal Studies (p. 520) offered by the Glasscock School of Continuing Studies. Declared Diploma Candidates in these programs may be awarded this academic credential after completing:

- A minimum of 30 graduate semester credit hours of coursework taken at the 500-level or above.
- A minimum of 24 graduate semester credit hours must be taken at Rice University.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the diploma program.*
- A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University. Some diploma programs may require full-time residency or additional semesters of residency.
- All courses taken must be in the relevant field.

*Note: Departments or programs may identify and define in their program’s General Announcements Requirements tab stricter standards than the minimum GPA for coursework that satisfies their academic program requirements.

Other Requirements

There are other additional requirements, regulations and procedures for all graduate programs. They are found under Graduate Students > Academic Policies and Procedures > All Graduate Students, or can be accessed directly here (p. 55).

Regulations and Procedures for Non-Thesis Master's Graduate Degrees

University Graduation Requirements for Non-Thesis Master's Degrees

Students also may pursue a non-thesis master’s degree in certain departments. This degree would be based on alternative departmental requirements and would include, but not be limited to, the following:

- A minimum of 30 graduate semester credit hours of coursework taken at the 500-level or above.
- A minimum of 24 graduate semester credit hours must be taken at Rice University.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree.*
- A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University. Some graduate programs may require full-time residency or additional semesters of residency.
- All courses taken must be in the relevant field.

*Note: Departments or programs may identify and define in their program’s General Announcements Requirements tab stricter standards than the minimum GPA for coursework that satisfies their academic program requirements.

Time to Degree

All master’s students are required to complete their program within five years of initial enrollment. This time boundary includes any period in which the student was not enrolled or enrolled part time, for whatever reason. Failure to meet any university time to degree deadline may result in the student not being able to continue in their degree program.

Applicable Academic Graduation Requirements

Non-thesis master’s students must meet the minimum university requirement for the academic credential, in addition to any program specific requirements. The official certifier of the graduate or the relevant program curriculum committee, may petition the dean of graduate and postdoctoral studies, or the dean’s designee to allow substitutions or waivers to the degree requirements when academically appropriate. Graduate programs may not independently allow substitutions or waivers to program specific degree requirements.

Other Requirements

There are other additional requirements, regulations and procedures for all graduate programs. They are found under Graduate Students > Academic Policies and Procedures > All Graduate Students, or can be accessed directly here (p. 55).

Regulations and Procedures for Thesis Master's Graduate Degrees

University Graduation Requirements for Thesis Master's Degrees

Candidates receive a master’s degree after completing:

- A minimum of 30 graduate semester credit hours of coursework taken at the 500-level or above (including thesis credit hours).
- A minimum of 24 graduate semester credit hours must be taken at Rice University.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the thesis master’s degree.*
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- Original work reported in a thesis and a public oral examination, approved and submitted to the Office of Graduate and Postdoctoral Studies.

*Note: Departments or programs may identify and define in their program’s General Announcements Requirements tab stricter standards than the minimum GPA for coursework that satisfies their academic program requirements.
Candidacy, Oral Examinations, and Thesis

Time Boundaries for Candidacy and Defense

Time To Candidacy

MArch students must be approved for candidacy before October 31st prior to their juried defense. MMus students must be approved for candidacy before beginning the 4th semester of study. All other thesis master’s students must be approved for candidacy no later than the beginning of the 5th semester of their enrollment in the degree program at Rice. See Candidacy, Oral Examinations and Thesis (p. 69).

Time to Defense

Master’s students must defend the thesis no later than the 8th semester from the date of their enrollment in the degree program at Rice. See Candidacy, Oral Examinations and Thesis (p. 70).

Time to Thesis Submission

Candidates who successfully pass the oral examination in defense of the thesis must submit the thesis to the Office of Graduate and Postdoctoral Studies no later than six months from the date of the examination. See Candidacy, Oral Examinations and Thesis (p. 70).

Time to Degree

All master’s students are required to complete their program within five years of initial enrollment. This time boundary includes any period in which the student was not enrolled or enrolled part-time, for whatever reason. Failure to meet any university time to degree deadline may result in the student not being able to continue in their degree program.

Approval of Candidacy

Candidacy marks a midpoint in the course of graduate education. Achieving candidacy for the master’s degree signals that a graduate student has:

1. completed required coursework,
2. passed any required exams to demonstrate his/her comprehensive grasp of the subject area,
3. demonstrated the ability for clear oral and written communication, and
4. shown the ability to carry on scholarly work in his/her subject area.

Requirements for achieving candidacy for the master’s degree are determined at the departmental level. The department is also authorized to grant waivers or substitutions of specific course requirements, but not to make exceptions to university requirements.

Students enrolled in research degree programs submit their petitions for candidacy for a master’s degree through the department chair to the dean of graduate and postdoctoral studies. In the petition sent to the dean, the department chair identifies the student’s thesis director, recommends a thesis committee, certifies that the applicant has fulfilled the departmental requirements, and provides a course transcript as evidence that work completed within the department is of high quality.

Master’s candidacy students must be approved for candidacy before the beginning of the fifth semester of their enrollment at Rice. However, in order to qualify for a given commencement, they must meet the submission deadline for that commencement per the Academic Calendar (https://registrar.rice.edu/calendars/). This date falls at the end of October for December degree conferral and the end of February for May degree conferral.

Students who are unable to meet the university time boundary for candidacy may petition the dean of graduate and postdoctoral studies or his/her designee for an extension of time to candidacy. Students who exceed their time boundaries without an approved extension request will be charged a fee of $125 for reinstatement to good standing. Students who exceed their time boundaries and do not receive an extension to their time to candidacy are subject to immediate dismissal by the Office of Graduate and Postdoctoral Studies.

Thesis Committee

The thesis committee administers the oral examination for the student’s thesis defense and has final approval/disapproval authority and responsibility for the written thesis.

A thesis committee is composed of at least three members. Two, including the committee chair, must be members of the student’s department faculty. At least three members of the committee must meet one of the following requirements:

- Tenured or tenure-track members of the Rice faculty
- Research faculty holding the rank of assistant research professor, associate research professor, or research professor
- Qualified individuals who have been certified as thesis committee members by the dean of graduate and postdoctoral studies

The composition of the thesis committee must always meet the guidelines mentioned above, with the following exceptions:

- Interdisciplinary programs (Applied Physics & SSPB) - The chair of the thesis committee is either the advisor or in the host department of the student, and is affiliated with the program. The second member of the committee is affiliated with the program. The formal structure of the thesis committee for the programs can be found in the program specific sections of the General Announcements and are regularly reviewed by the Office of Graduate and Postdoctoral Studies.
- Master of Architecture - The committee chair must be a tenured or tenure-track faculty member. Other committee members can be tenured, tenure-track, or non-tenure track Rice faculty.

The thesis director must be a tenured or tenure-track member of the Rice University faculty or a research faculty holding the rank of assistant research professor, associate research professor, or research professor. Faculty whose primary appointment is at another institution may serve as thesis director if approved by the dean of graduate and postdoctoral studies. Emeritus professors may not accept new graduate students without the approval of the dean of graduate and postdoctoral studies and an appointment letter from the school dean.

The committee chair need not be the thesis director. The chair, however, must be either a tenured or tenure-track member of the major department or a research faculty member of the student’s major department. In addition to the three required members, additional members of the committee may be selected with the approval of the department chair.

In the event that a member of a students’ thesis committee leaves their position at Rice University, they may continue serve on the thesis committee if they continue to have the support of the department chair (or in the case of interdisciplinary programs, the graduate program director) to serve in this capacity.

Candidates are responsible for keeping the members of their committee informed about the nature and progress of their research. They also must
establish a schedule for thesis completion and review. The members of the committee, in turn, should review the thesis in a timely manner, approving a preliminary form of the thesis before scheduling the oral examination.

Announcement of Thesis Defense

Oral examinations for the master’s degree must be announced at least 7 days in advance. Oral examination announcements are to be submitted to the Office of Graduate and Postdoctoral Studies by entering the information into the Graduate Students Thesis Defense Announcement form at https://events.rice.edu/rgs.

Oral Examination in Defense of Thesis

The public oral defense of a thesis is intended to be an examination of a completed body of work and should be scheduled only when the thesis is essentially completed. Students may take the final oral examination in defense of their thesis only after the dean of graduate and postdoctoral studies approves their candidacy.

Master’s students must defend their theses before the end of the eighth semester of their enrollment at Rice. Students who are unable to meet the university time boundary for thesis defense may petition the dean of graduate and postdoctoral studies or his/her designee for an extension of time to defense. Students who exceed their time boundaries without an approved extension request will be charged a fee of $125 for reinstatement to good standing. Students who exceed their time boundaries and do not receive an extension to their time to defense are subject to dismissal by the Office of Graduate and Postdoctoral Studies.

A candidate must be enrolled in the semester in which his or her oral examination is held. Students who defend during the summer must enroll in the summer session of classes. For the purpose of the oral defense only, enrollment in a semester is considered valid through the Friday of the first week of class of the following semester. Students passing the oral examination on or before the end of the first week of classes of any semester do not have to register for that or any subsequent semester even though they may be continuing to make minor revisions to the final copy of their thesis.

In addition to announcing the planned defense as described above, at least one copy of the thesis must be available in the departmental office not less than two calendar weeks prior to the date of the oral defense. Graduate programs may allow or require the thesis to be submitted and stored in an electronic format.

The length of the oral examination and the subject matter on which the candidate is questioned are left to the judgment of the thesis committee. The defense should be scheduled by the student after consultation with the thesis advisor, who agrees that the thesis is completed and ready to be defended. All oral thesis defenses must take place on the Rice University campus with the candidate and all thesis committee members in physical attendance. In exceptional cases, appeals to this requirement can be made in writing to the dean of graduate and postdoctoral studies.

Should a candidate fail, the committee chair may schedule a second examination. Students who fail a second time will be dismissed from the university.

Following their defense, students must submit a copy of their approval of candidacy form, signed by the thesis committee signifying successful defense of the thesis, to the Office of Graduate and Postdoctoral Studies within one week after the oral examination. Instructions to submit this form are located online at https://graduate.rice.edu/thesis. The original approval of candidacy form must be turned in when the thesis is submitted.

Thesis Submission Regulations and Procedures

The thesis is the principal record of a student’s work for an advanced degree. Instructions for online thesis submission and guidelines for thesis formatting are available at https://graduate.rice.edu/thesis.

Candidates who successfully pass the oral examination in defense of the thesis must submit the thesis to the Office of Graduate and Postdoctoral Studies no later than six months from the date of the examination. If the thesis is not submitted by the end of the six-month period, the “pass” will be revoked and an additional oral defense will need to be scheduled. Applications for an extension without reexamination must be made by the candidate with the unanimous support of the thesis committee, endorsed by the department chair (or in the case of interdisciplinary programs, the graduate program director), and approved by the Office of Graduate and Postdoctoral Studies. Extensions of this six-month period for completion without reexamination will be granted only in rare circumstances. Approved petitions for extension without reexamination received after the six month time boundary expired will be charged a fee of $125 for reinstatement to good standing.

Students must have the original signatures of each member of their thesis committee on two title pages of their thesis. All students submitting theses must complete a ProQuest/University Microfilms International (UMI) publishing contract. Students must pay their thesis submission fee before submitting the thesis to the Office of Graduate and Postdoctoral Studies for degree approval.

All theses are permanently preserved in Rice’s Institutional Repository and are available via https://scholarship.rice.edu/ shortly after the final submission of the thesis. At the time of thesis submission, a student may request an embargo of six months, one year, or two years; embargos beyond this period are subject to the approval of the dean of graduate and postdoctoral studies.

Students have six months from the date of their defense to submit their thesis. However, in order to qualify for a given degree conferral, they must meet the submission deadline for that degree conferral per the Academic Calendar. This date falls on the last day of classes in the fall, spring, and summer semesters.

Departmental Duties

In most research degree programs, students must undertake a limited amount of teaching or perform other services as part of their training. Assigned duties should not entail more than 10 hours per week, averaged over the semester, or extend over more than eight semesters.

Other Requirements

There are other additional requirements, regulations and procedures for all graduate programs. They are found under Graduate Students > Academic Policies and Procedures > All Graduate Students, or can be accessed directly here (p. 55).

Student Services and Organizations

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- Disability Resource Center (p. 72)
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 Clubs and Organizations
Office of Student Activities
The Office of Student Activities, located in the Rice Student Center, oversees the activities of various campus-wide student organizations, student requests for facilities usage, and coordination of various leadership development programs.

In addition to managing the registration process, finances, and general advising for over 280 registered clubs at Rice University, Student Activities provides direct advising to the following organizations:

• Graduate Student Association (GSA) (https://gsa.rice.edu) - Graduate student government with many opportunities for graduate student involvement including a variety of social and professional development events and ways to volunteer
• Leadership Summit (https://studentcenter.rice.edu/summit) - Advanced student leadership development program

The Rice University clubs are divided into eleven genres: Academic/Honorary, Cultural/International, Environmentalism and Sustainability, Political, Recreational/Sport, Religious/Spiritual, Service, Social Justice, Social/Special Interest, STEM, and Visual/Performing Arts. The full list of registered clubs can be found online (https://studentcenter.rice.edu/club-listings). Student Activities also provides leadership development opportunities in the form of Lunch and Lead sessions, Base Camp workshops, Leadership Summit, and partnership events through graduate clubs and the GSA.

A large number of student organizations address special student interests, such as the Black Graduate Student Association, Indian Students at Rice, Chinese Students and Scholars Association, and the GSA. There are also numerous sport-related clubs such as sailing, rugby, volleyball, and soccer. Additionally, department level government organizations also provide involvement opportunities for graduate students.

Student Activities also recognizes a number of religious and spiritual organizations. These include, but are not limited to, Chi Alpha Christian Ministries, the Baptist Student Ministry, Catholic Student Association, Hillel, the Muslim Student Association, and the Boniuk Council for Interfaith. Many of these clubs are assisted by local clergy or staff and form the Joint Campus Ministers (https://studentcenter.rice.edu/student-activities/group/club-resources/joint-campus-ministries).

The Clubs Office is located in the basement of the Rice Student Center and provides computers, workspace, storage, and a color copier for club convenience.

For more information on the Office of Student Activities, please visit https://studentcenter.rice.edu/student-activities/.

Rice Student Volunteer Program
By heightening student awareness of community needs and generally raising social consciousness, the Rice Student Volunteer Program (RSVP) has organized volunteer projects for Rice students, faculty, and staff since 1985. Historically, the most popular event of each semester is Outreach Day, a Saturday when students volunteer with multiple nonprofit agencies throughout the Houston area, learning how to take thoughtful action to build a stronger, more just community. RSVP invites each student’s involvement as an officer, a committee member, a project organizer, or an interested participant in any RSVP event.

For more information on the Rice Student Volunteer Program, please visit https://www.rsvp.rice.edu/.

Intercollegiate Speech and Debate
Consistently ranked in the top 10 nationally, the George R. Brown Forensic Society sponsors competition in the categories of Individual Events, Lincoln–Douglas, and Parliamentary Debate. The society provides students with the chance to hone their public speaking skills and to qualify for competition both at the American Forensic Association National Individual Events Tournament and at the National Parliamentary Debate Championships. Recognizing the importance of developing strong communication skills, the society has an open admission policy, inviting students with little or no previous experience as well as those with extensive high school backgrounds to become members of one of the most successful teams at Rice.

For more information on speech and debate, please visit: https://debate.rice.edu/.

Office of Multicultural Affairs
The Office of Multicultural Affairs (OMA) has, as its primary mission, coordinating and implementing comprehensive educational, cultural, and social programs designed to emphasize inclusiveness, while promoting intercultural dialogue, awareness, and respect for diversity. Through advocacy, cultural programs, and education, OMA also helps students understand and appreciate racial, ethnic, gender, and other differences, while creating opportunities for students to challenge prejudice and expand their cultural knowledge and appreciation.

OMA utilizes its programming and support systems to provide an optimum developmental environment where all members of the University community may develop to the highest level of their potential in an atmosphere free from harassment and bias, thereby ensuring Rice’s standing as an intellectually and culturally vibrant community.

Cultural student clubs, such as the Black Student Association, the Hispanic Association for Cultural Enrichment at Rice, and the Rice Native American Student Association, meet regularly with OMA to discuss programming logistics and other issues. OMA also directly advises ADVANCE (Advancing Diversity and the Need for Cultural Exchange), a student club that hosts a weekly discussion on a topical issue, and organizes an annual cultural fair. Other programs for students under OMA include HARAMBE, (Swahili for ‘working together in unity’ or ‘let’s pull together’), a group that seeks to create a unifying event for entering African-American students, allowing them to build social and academic connections with peers, faculty, and staff, and FRESH, a group dedicated to forming relationships through education, scholarship, and heuristics at Rice.
For more information about the Office of Multicultural Affairs, please visit [https://oma.rice.edu/](https://oma.rice.edu/).

### Disability Resource Center

Located on the first floor of Allen Center, the Disability Resource Center coordinates campus services for individuals with documented disabilities. For academic accommodations, adaptive equipment, or disability-related housing needs, the Disability Resource Center is the campus resource for all students with disabilities. Information is maintained on scholarships, internships, and other programs specific to students with disabilities. Students can schedule an appointment with the director of the Disability Resource Center by calling 713-348-5841. For more information, see the Disability Resource Center website at [https://drc.rice.edu](https://drc.rice.edu).

### Section 504/ADA Coordinator

The director of affirmative action serves as the Section 504/ADA coordinator at Rice University. Concerns or complaints relative to disability issues should be directed to the [Office of Affirmative Action](https://eeopaa.rice.edu/) 205 Allen Center, 713-348-4930.

### Financial Aid

#### Fellowships, Scholarships, and Assistantships

A range of fellowships, scholarships, and assistantships are available at Rice. Most graduate students in degree programs requiring a thesis are supported by fellowships or research assistantships.

#### Rice Graduate Fellowships

Doctoral students with high academic records and strong qualifications receive support through Rice fellowships. In most cases, these fellowships provide a stipend plus tuition.

#### Research and Teaching Assistantships

Usually funded from grants and contracts, research assistantships are available in many graduate programs. Qualified students (usually second-year or later) receive these awards to provide assistance on faculty research projects, work that usually contributes to the student’s own thesis. In some departments, a limited number of teaching assistantships may be available to advanced students. In most cases, these assistantships provide a stipend plus tuition.

Fellowship, scholarship, and assistantship recipients are selected by the individual graduate programs, subject to the approval of the Office of Graduate and Postdoctoral Studies. Students should send their applications for such awards directly to the graduate program involved.

To receive Rice fellowships, graduate tuition scholarships, or assistantship aid, students must be engaged in full-time graduate study; part-time students and students who are not enrolled are not eligible for such aid.

Students receiving stipends from fellowships or assistantships may not accept any regular paid employment on or off campus without the explicit permission of the graduate program. Full-time students, whether receiving stipend support or not, may not accept paid employment in excess of 20 hours per week without the explicit permission of both the graduate program as well as the dean of graduate and postdoctoral studies.

Please see the Graduate and Postdoctoral Program website ([https://graduate.rice.edu/financialsupport](https://graduate.rice.edu/financialsupport)) for more information.

### Merit-Based Scholarships

Graduate students admitted to the Full-Time MBA and Master of Accounting (MAcc) programs as well as the Shepherd School of Music and the School of Architecture may be considered for limited merit-based scholarships. Assessment of eligibility occurs during the admission process; there is no separate application. Recipients are notified of merit scholarships at the time of admission or shortly after.

### Summer Assistance

Graduate students may register for summer research hours. Student accounts will be charged based on the summer rates listed on the [Tuition & Fees](https://cashier.rice.edu/tuition_fees/rates) page of the Cashier’s website. A waiver will be applied to cover the cost of the research hours.

However, with limited exception, tuition is charged for all other courses offered in the summer semester. As with fall and spring, the Office of the Registrar manages the summer course schedule, and any questions on course offerings should be directed to that office. Tuition waivers are not available for summer classes, even for students who receive full tuition waivers during the fall and spring semesters.

Graduate students are eligible to apply for federal, state, and private educational loans if they are registered during the summer semester.

### Loans

In addition to fellowships, scholarships, and assistantships, the [Office of Financial Aid](https://financialaid.rice.edu) offers assistance in the form of loans. Interested students must file a [Free Application for Federal Student Aid](https://fafsa.ed.gov) (FAFSA). If selected for federal verification, students may also be required to submit copies of income tax transcripts and W-2’s. The priority deadline to apply is May 15.

To be eligible for loans, graduate students must maintain satisfactory academic progress as defined by their graduate program. Should a graduate student fail to make satisfactory academic progress, the student’s aid eligibility will be suspended. Graduate students who enroll for less than half-time in a semester or term will not be eligible for financial aid. Half-time is 4.5 hours for students in programs that use Rice’s three-semester [Academic Calendar](https://registrar.rice.edu/calendars). Half-time is 3 hours for students in programs that use the four-quadmester [Academic Calendar](https://registrar.rice.edu/calendars) (e.g. MBA@Rice).

Loans cannot exceed the student’s cost of education, as determined by Rice, minus other resources. Loans may be adjusted or canceled due to changes in eligibility or other resources.

A summary listing of student consumer information is available through the [Office of Financial Aid](https://financialaid.rice.edu/consumer-information).

### Federal Student Loans

These are loans made to students attending the university at least half-time. Federal Direct Unsubsidized Loans and PLUS Loans are available to degree-seeking students meeting Federal Student Aid eligibility requirements regardless of need. Loan eligibility is subject to annual and lifetime borrowing limits; Federal Direct PLUS Loans require a
satisfactory credit check. In addition, loans cannot exceed the student’s cost of education, as determined by Rice, minus other resources.

**Loan Counseling**

Students who are recipients of federal student loans will be required to complete online loan entrance counseling before funds will be credited to student accounts. Students also will be required to complete online exit counseling at the completion of a program of study, enrollment of less than half-time, or withdrawal from Rice. Failure to complete online exit counseling will result in a transcript hold.

**Private Loan Programs**

Private loans are available to graduate and MBA students. These loans are not based on need but do require credit approval from the lender and cannot exceed the student’s cost of education, as determined by Rice, minus other resources.

**Disbursements**

Financial aid awards during the academic year occur in two equal disbursements (Fall and Spring) for on campus programs and in three equal disbursements (quadrimester 1, 2, and 3) for MBA@Rice. The scheduled disbursements are credited to the student’s account each term by the third day of class or upon completion of financial aid requirements, whichever is later. Missing requirements may be reviewed through the financial aid tab in Esther. Additional disbursement information is available on the Office of Financial Aid (https://financialaid.rice.edu/) website.

**Special Loan Programs**

A Gulf Oil Corporation Foundation Loan Fund and the Benjamin S. Lindsey and Veola Noble Lindsey Memorial Loan Fund are available to help students working toward a degree meet their educational expenses. The funds are limited, between $500 to $2000. Interested students may contact the Office of Financial Aid (https://financialaid.rice.edu/).

The Mary Lyn and Niles Moseley Loan Fund and the Professor John A. S. Adams, Sr., Memorial Graduate Student Loan Fund

These funds provide financial assistance, in the form of loans, to graduate students at Rice University, with the exception of Jones School master’s and Liberal Studies students. Students wishing to apply for such a loan should obtain an application from the Office of Student Financial Services. Guidelines for the program are:

- Individual loans are made for an amount not to exceed $2,000.
- Loans are made for a period of up to one year and, upon request, may be renewable annually.
- The interest rate applicable to these loans is determined by the university.
- Graduate students must be enrolled on a full-time basis to be eligible to apply for a loan and must maintain full enrollment during the full term of the loan.
- Upon completion, applications are submitted to the Office of Graduate and Postdoctoral Studies (https://gps.rice.edu/) for approval.
- Loans are available during the full course of the academic year.
- Loans must be repaid in full before graduation.
- Registration, transcripts, and diplomas will be held for students and former students who are in arrears on these loans.

For more information, visit https://graduate.rice.edu/moseleyadams (https://graduate.rice.edu/moseleyadams/).

**Emergency Loan Fund**

Established through gifts from the Graduate Wives Club of 1972–73, the Graduate Student Association, and various faculty members, this fund makes available emergency loans to help graduate students at Rice with short-term needs. Loans are limited to $500 and must be repaid within 90 days. In lieu of interest, a charge of 2% of the principal loan is assessed to maintain the fund.

**Student On Campus Employment**

Opportunities for employment are available to students during the academic year. Students are eligible to work under either the Federal Work-Study Program or the Rice Work Program. Students interested in employment should access the Office of Financial Aid (https://financialaid.rice.edu/) webpage.

**Deferred Payment Plan**

Rice offers a deferred payment plan to finance students’ educational costs. This plan divides each semester’s charge over four installments. Details are available to eligible students each semester at the time of billing. Students arrange for deferred payment through the Cashier’s Office (https://cashier.rice.edu/).

**Satisfactory Academic Progress**

Federal regulations (CRF § 668.34) require that graduate students demonstrate satisfactory academic progress toward completion of their degree to continue to receive federal and state financial aid. In addition to meeting the standard for receiving financial aid, students must also meet the academic standards of Rice University.

Satisfactory academic progress is comprised of three areas as required by federal regulations. A student must complete their degree within a specified period that does not exceed 150% of the published length of the program, demonstrate they are making progress towards the completion of their degree by successfully completing 67% percent of all attempted courses, and maintain at least the minimum cumulative GPA requirement for the program in which they are enrolled. This regulation applies to each financial aid applicant, whether a previous recipient or not.

Credits counted in the maximum time are all attempted credits (even when not a financial aid recipient). Attempted credits include:

- Earned credits – Passed (A+ through D-), Satisfactory (S)
- Repeated courses
- Withdrawal
- Failures – Failed (F), Unsatisfactory (U)
- Incomplete
- All accepted transfer credits toward the degree program

If a student fails to meet the satisfactory academic progress standards by the end of the academic year, the student will be placed on Financial Aid Suspension and will not be eligible for aid until the satisfactory academic progress standards are met.

**Appeal**

Students are allowed to appeal their Financial Aid Suspension in cases of the death of a relative, an injury or illness of the student, or other
special circumstances. Students must submit a letter discussing why the student failed to make satisfactory academic progress, and what has changed in the student’s situation that will allow the student to demonstrate satisfactory academic progress at the next evaluation. Supporting documentation (doctor’s letter or academic plan) must accompany the appeal letter and must be submitted to the Office of Financial Aid (https://financialaid.rice.edu/) prior to the beginning of the subsequent term. The Appeals Committee will review appeals on a case-by-case basis.

If an appeal is approved by the Appeals Committee, the student will be placed on financial aid probation and may receive financial aid for one probationary semester. At the end of the probationary semester, the student must meet the satisfactory academic progress standards or meet the requirements of an approved academic plan developed by the student’s department or program.

Financial Aid after Academic Suspension
Students who have been suspended by the university for academic reasons need to be aware that if they are readmitted, they may not be eligible for financial aid based on their prior academic performance. Students who are petitioning for readmission are advised to contact the Office of Financial Aid (https://financialaid.rice.edu/) to determine their aid eligibility.

Return of Title IV Funds
Students who receive federal funds as part of their aid packages and do not complete the academic term may be subject to returning a portion of those funds. Contact the Office of Financial Aid (https://financialaid.rice.edu/) for information about policies and procedures regarding the return of Title IV funds.

Other Fellowships, Honors, and Prizes
Provisions are made for a variety of fellowships, scholarships, and prizes available to graduates of this and other universities. Memorial fellowships that have been founded and endowed by gift or bequest on the part of friends of Rice University provide stipends enabling the holders to devote their time to study and research in their chosen fields. There also are several industrial fellowships maintained by companies interested in the development of technical fields and the training of competent scientists, engineers, and business executives.

Persons desiring consideration for appointment as fellows should consult with the graduate program in which they wish to do research. However, not all fellowships are available every year.

Graduate Student Government
Graduate Student Association
All full-time students in graduate programs are members of the Graduate Student Association (GSA). The mission of the GSA is to enrich the graduate student experience and to represent, support, and promote graduate student interests and values. An integral and essential part of the Rice community, the GSA provides programs and services aiding in recruitment and retention of graduate students, represents graduate student interests to the University administration, and builds a strong sense of community both on and off campus.

The GSA represents all graduate students and is comprised of two branches: the Council and the Executive. The Council consists of representatives from all departments who serve as the voting body for the graduate students. The Executive is led by the president, internal vice president, external vice president, secretary, and treasurer, and these positions are elected by the Council. Graduate students also participate in university affairs through their representatives on many standing and ad hoc university committees, such as the Graduate Council, the Research Council, and various department committees.

One function of the GSA is to promote academic, professional, and personal development of graduate students. The association accomplishes this by supporting professional development opportunities, alumni networking, and well-being programs for students. Another function of the GSA is to encourage social interaction among graduate students from different departments and cultures. To that end, the association organizes a variety of social activities, including picnics, intramural sports, and volunteer opportunities, that are open to all members of the graduate student body. For more information on the Graduate Student Association, see https://gsa.rice.edu/.

School and Department Graduate Student Associations
A second strata of graduate student governance on campus are the specific GSAs of schools and departments who represent particular concerns and interests of students to the deans, to the chairs, and to the larger GSA. Each school and/or department is encouraged to develop its own governing structure to advocate for graduate concerns and initiatives at Rice.

Graduate Student Life
Housing for Graduate Students
Graduate students have two different housing facilities: Rice Graduate Apartments and Rice Village Apartments. Both properties are within walking distance from the campus, and also provide easy transportation to and from campus and all shopping needs on the weekend through a shuttle service. They also provide social activities and events to help students take a break from their studies. Each community is unique in its own way and provides a broad living environment. For all property information, please visit http://campushousing.rice.edu/graduate-housing/.

Rice Graduate Apartments is a garden style complex located just north of campus on Bissonnet. The community includes quick and easy access to campus, study rooms, laundry facilities, bike rooms, two courtyards, and recreational areas. Electronically controlled access gates for pedestrian and vehicular paths are provided. ADA accessible units are available to students requesting reasonable accommodations. Each apartment is furnished with a bed, desk, desk chair, night stand, chest of drawers, and a bookshelf. In addition, each unit includes basic cable, water, and Wi-Fi internet. Housing is assigned through a lottery, with a high placement rate given to incoming graduate students. For further information, visit the website above, call 713-348-GRAD (4723), or email gradapts@rice.edu.

The Rice Village Apartments is a four-story contemporary style community located on Shakespeare Street within a short walk of the Village. It offers four ADA accessible units for students requesting reasonable accommodations, and also offers family housing. Each unit offers appliances equipped with Energy Star efficiency to conserve energy and protect the environment. In addition, it is furnished with a dresser, nightstand, desk, chair, and bed. Basic cable, Wi-Fi Internet, and water also are included. The laundry facility has a system that can email
alert you when your laundry is done. Other amenities include common areas, study rooms, a recreational area, bike room, and a community herb garden. Controlled security access is provided by a keyless front door using either a biometric fingerprint or a key fob system. Housing is assigned through a lottery, with a high placement rate given to incoming graduate students. For more information, call 713-348-4050, or email rvapts@rice.edu.

Rice Student Center

The Student Center provides services and developmental opportunities to build community and enrich the Rice experience through facilities, events, student run businesses, and student activities. It houses a variety of retail and dining operations including the campus store, Sammy’s, 4.Taco, and Ambassador Cafe. The Graduate Student Lounge, Multicultural Center, and the Clubs offices are all located in the basement with other student life offices throughout the building, including meeting rooms for departments, clubs, and organizations. Visitors can also make use of an ATM located outside the store and ask questions of the Information Desk staff located near the circle drive. Students and visitors alike can enjoy a beverage of their choice and fellowship with their peers at the Rice Coffeehouse (http://coffeehouse.rice.edu/), purchase a late night snack from The Hoot (http://thehoot.rice.edu/), or visit the new Rice Bikes (http://bikes.rice.edu/) location in the Housing and Dining Garage located on the inner loop to rent a bicycle or get repairs.

For more information on the Student Center, visit http://studentcenter.rice.edu.

For information regarding services and resources for graduate students, please visit https://graduate.rice.edu/lifeatrice (https://graduate.rice.edu/lifeatrice/).

Health, Counseling and Wellbeing

Health and Wellness Support Services Fee

By paying an annual Health and Wellness Support Services Fee, all students gain access to the Student Health Services (https://health.rice.edu/), Rice Counseling Center (https://wellbeing.rice.edu/) and the Student Wellbeing Office (https://wellbeing.rice.edu/). Detailed information on the care and services each provide is available from these centers. The Health and Wellness Support Services Fee is a required fee for all enrolled students, except those in ‘away’ status. See Away Status (p. 77) for more information.

Student Health Services

Student Health Services, an outpatient medical clinic, is located in the Morton L. Rich Health Center. The clinic is staffed by primary care physicians, nurses, and ancillary support staff. More information can be found at https://health.rice.edu (https://health.rice.edu/).

Clinic hours are from 8:00 a.m. to 5:00 p.m., Monday through Friday, during fall and spring semesters. For after-hours and weekend medical care, students may choose among a number of local clinics and hospitals (guidance on self-care as well as local healthcare options can be found on the website). The clinic is open full-time from the first day of Orientation Week until the day before commencement. It is closed during Thanksgiving and the winter recess. The clinic also is open for reduced hours during the summer months. Visits to the clinic are covered by the services fee, however, students must pay for all medical care outside the clinic’s purview, including blood tests, x-rays, and outside physician consultations. Should such medical care be necessary, students are urged to review their insurance coverage and pick the best available option.

Care at the clinic is arranged through appointment at 713-348-4966. In emergencies, students should call the Rice University Police Department (https://rupd.rice.edu/) at 713-348-6000.

The Student Health Service provides the following:

• Medical care for illness and injury with referrals to specialists when needed
• Maintenance of health records for all students
• Immunizations and other preventive services
• General information for all students
• Contraceptive counseling and routine Pap smears
• Physical examinations

Confidentiality for Health Services

The Student Health Service physician–patient relationship is a confidential one. Medical records will be released only on receipt of written authorization from the student or as required by law or when the patient poses a significant risk to herself or himself or another person. Physicians with Student Health Services are considered confidential employees under Title IX, meaning that should a student wish to speak about domestic or sexual violence or stalking with a physician, his/her information is confidential and will not be released without their expressed written consent. The only exception to this is for students under the age of 18.

Health Insurance

All registered students are required to maintain health insurance coverage while enrolled at Rice University with the exception of visiting post baccalaureates, auditor, and students enrolled in the part-time Masters of Liberal Studies program through the Glasscock School of Continuing Studies.

Students are required to either enroll in the Rice student health insurance plan administered by Aetna Student Health, or complete an online waiver application demonstrating comparable insurance coverage (https://studenthealthinsurance.rice.edu/about/waiver-requirements/). Every eligible student will have the insurance premium fee placed on their account until they have actively enrolled in insurance coverage or submitted a waiver. The student’s tuition bill will be updated based on successful completion of enrollment or the waiver application. Insurance and waiver applications, as well as specific dates for enrolling, frequently asked questions, and more can be found on the Rice Student Insurance website: https://studenthealthinsurance.rice.edu

The fall student insurance open enrollment period will begin on July 9, 2019 and end on August 30, 2019. The spring student insurance open enrollment period will begin on December 2, 2019 and end on January 17, 2020. Please note, however, that students have until August 30, 2019 (Fall) or January 17, 2020 (Spring) to remove the student insurance charge by submitting a successful waiver application. All students who have not taken action to enroll in or waive coverage by the open enrollment deadlines will be automatically enrolled in the student insurance annual plan. The premium amount will not be prorated. Once enrolled in coverage, students are unable to cancel coverage for any reason. Please note the automatic enrollment process does require additional processing time. You may have to pay out of pocket.
for medical services until your enrollment has been processed. Once processed, you will be able to file a claim for reimbursement.

For questions concerning the Rice plan, please contact studentinsurance@rice.edu or call (713) 348-5544.

NOTE: Students may enroll in an annual plan or by semester only. If you waive coverage in the fall open enrollment period, you are still expected to have insurance coverage for the spring. If you enroll in the fall semester plan, you may enroll or submit a waiver for the spring semester plan. If you are auto-enrolled in the fall, you will be enrolled in the annual plan and will not be able to waive spring coverage. If you experience a qualifying life event (https://studenthealthinsurance.rice.edu/about/qualifying-life-events/) and need to enroll in coverage mid-year, please email studentinsurance@rice.edu.

International students that have an F1 or J1 visa are subject to the Rice University International Student Health Insurance Policy. For more information on the policy, please visit the OISS website (https://oiss.rice.edu/). Here students will find detailed information concerning the approved alternative insurance option through Student Assurance Services (SAS), as well as application and rate information.

Wellbeing and Counseling Center Services

Center Contact Information

The Wellbeing and Counseling Center provides confidential counseling treatment as well as wellbeing case management services and Title IX support for graduate and undergraduate students. The Center also provides mental health and wellbeing related education for the student body. The Wellbeing and Counseling Center is located in the Barbara and David Gibbs Recreation and Wellness Center. The Center is open Monday - Friday from 9:00a.m. to 5:00p.m. Walk-ins are available during business hours. For appointments contact the Wellbeing and Counseling Center at 713-348-3311 (24/7) or visit https://wellbeing.rice.edu/ for more information. In emergencies, students should call the Rice University Police Department (https://rupd.rice.edu/) at 713-348-6000.

Rice Counseling Center

The Rice Counseling Center addresses students’ psychological needs with various programs and services. Services are confidential. Student information is not released to anyone without the student’s written consent. There are no costs for Counseling Center services.

Typically, students who use the counseling services bring with them very common concerns: roommate problems, breakup of a relationship, academic and/or interpersonal anxiety, family problems, difficulties adjusting to Rice, or confusion about personal goals, values, and identity. Counselors are equipped to handle a variety of issues, including substance use, eating concerns, sexual assault and relationship violence, depression, and the coming-out process. Rice Counseling Center offers both individual and group counseling, as well as educational workshops and programs.

When students need long term or specialized counseling or treatment, counselors refer them to an outside provider. The students, or their health insurance, must pick up these costs. All students who have paid the Health and Wellness Support Services Fee are eligible for initial assessment sessions, consultations, crisis intervention, and educational programming. Individual or group counseling may also be available, if appropriate.

Students who have worked with a mental health professional prior to enrolling at Rice are encouraged to make contact with the Rice Counseling Center prior to coming to Rice. This will allow the student to make arrangements for a continued care plan. This plan may involve working with the Rice Counseling Center or working with the center to find a suitable off-campus provider.

The Rice Counseling Center can be contacted at 713-348-3311 or at https://wellbeing.rice.edu/. The Rice Counseling Center provides the following services:

- Psychological crisis intervention, on a walk-in emergency basis during regular office hours, or by phone at any time, 24 hours a day, by calling 713-348-3311. This includes after hours and weekends.
- Initial intake to assess needs and assignment to an appropriate level of care
- Short-term individual and couples counseling
- Group therapy and support groups
- Medication consultations with the center’s psychiatrist for students in counseling at the center
- Other consultations (e.g., how to make a referral or how to respond to a friend in distress)
- Educational programming (e.g., various presentations on mental health issues)

Confidentiality for Counseling

Rice Counseling Center services are confidential, information about a student is not released without the student’s written consent. Before entering a therapeutic relationship with a counselor, students may review and discuss confidentiality with their counselor, ask all necessary questions, and be certain they understand how confidentiality will be applied in their case. As detailed in RCC’s treatment agreements, state law does not extend confidentiality to several circumstances, including where:

1. there is risk of imminent harm to the student or others;
2. the counselor has reason to believe that a child or an elderly or handicapped person is, or is in danger of, being abused or neglected;
3. a court order is issued to release information; or
4. the counselor suspects that the student has been the victim of sexual exploitation by a former health care provider during the course of treatment with that provider.

In addition, RCC sometimes provides de-identified information to administrative officials who are in a need-to-know capacity. In some cases the terms of the treatment engagement with RCC may require a student to share assessments, diagnoses, or treatment plans from non-Rice treating professionals with Rice counselors.

Therapists with Rice Counseling Services are considered “confidential” employees under Title IX, meaning that should a student wish to speak about domestic or sexual violence or stalking with their therapist, their information is confidential and will not be released without his or her written consent. The only exception to this is for students under the age of 18.

Student Wellbeing Office

The Student Wellbeing Office provides wellbeing advising and case management services to support students who have experienced wellbeing challenges that may be impacting their personal or academic goals and overall success at Rice. Wellbeing advisors connect students
Office of Sexual Violence Prevention and Title IX Support

Rice encourages any student who has experienced an incident of sexual, relationship, or another form of interpersonal violence, harassment, or gender discrimination to seek support. There are many options available both on and off campus for all students, regardless of whether the perpetrator was a fellow student, a staff or faculty member, or someone unaffiliated with the university. Students have access to a Title IX resource navigator who will assist the student in determining the best path for them. Furthermore, students who have been accused of committing interpersonal violence or harassment can also seek support (http://safe.rice.edu) under Title IX.

Students should be aware when seeking support (http://safe.rice.edu/) on campus that most employees are deemed ‘responsible,’ and thus are required by Title IX to disclose all incidents of non-consensual interpersonal behaviors to Title IX professionals on campus who can act to support that student and meet their needs. Rice prioritizes student privacy and safety, and only shares disclosed information on a need-to-know basis.

The therapists at the Rice Counseling Center and the doctors at Student Health Services are ‘confidential’ employees, meaning that Rice will not be informed about the incident if a student discloses it to one of these staff members.

For more information, including how to reach out to Title IX Support, please visit https://safe.rice.edu (https://safe.rice.edu/) or email titleixsupport@rice.edu.

Tuition, Fees and Expenses

Tuition and fees for all graduate students for academic year 2019-2020:

<table>
<thead>
<tr>
<th>Tuition &amp; Fees</th>
<th>Per Credit</th>
<th>Semester / Annual</th>
<th>Reduced¹</th>
<th>Reduced²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition for Graduate Programs: (unless enrolled in a program having specific pricing, per below.)</td>
<td>$2,685</td>
<td>$24,165 / $48,330 / $1,342.50</td>
<td>$2,685</td>
<td></td>
</tr>
</tbody>
</table>

The School of Architecture

| Master of Architecture | $1,798 | $16,180 / $32,360 / $999 | $1,798 |
| Architecture Option 3 Extension – Minimum 3 credits | $1,798 | – | – |
| Architecture Preceptor | $350 | $700 |

The George R. Brown School of Engineering

| Engineering Professional Master’s (except as listed below) | $2,667 | $24,000 | $48,000 |
| Master of Computer Science-Online | $2,133 | – | – |

The School of Humanities

| Master of Arts in the field of Religion | $10,000 | $20,000 |
| The Shepherd School of Music | $1,603 | $14,425 / $28,850 / $802 |

The Wiess School of Natural Sciences

| Professional Science Master’s - Entering Fall 2019 - 2 year rate | $2,111 | $19,000 | $38,000 |
| Wiess Internship | $300 | – |

The School of Social Sciences

| Master of Energy Economics | $29,000 | $58,000 |
| Master of Human-Computer Interaction & Human Factors | $17,500 | $35,000 |
| Master of Arts in Global Affairs - entering Fall 2019 | $2,056 | $18,500 | $37,000 |

Required Fees

| Graduate Student Association | $22 | $44 |
| Student Organization Fee | $4 | $8 |
| Honor Council | $1 | $2 |
| Health and Wellness Support Services Fee (no spouses) | $279 | $558 |
| Humanities Graduate Student Association Fee (School of Humanities Students only) | $2.50 | $5 |
| Health Insurance - Student Premium only (unless waiver has been approved)² | | |
| Fall: $980 | $2,482 |
| Spring: $1,052 |

¹ Reduced Tuition

After 10 semesters of full-time study in one doctoral degree program (excluding the summer semesters), continuing students may be eligible for a reduced tuition rate. A semester of full-time study is defined as a fall or spring semester in which at least 9 hours of credit are earned. Students in the Shepherd School of Music and the School of Architecture are eligible for reduced rate tuition after six semesters of full-time study.

² Health Insurance

All students, full-time or part-time—including those on away status—must carry health insurance. For further information, visit the Health Insurance (https://ga.rice.edu/graduate-students/student-services-organizations/health-counseling-wellbeing/) section or visit https://studenthealthinsurance.rice.edu/current-rates (https://studenthealthinsurance.rice.edu/current-rates/).

Part-Time Students

Part-time enrollment refers to enrollment of less than 9 credits during a semester. Students seeking part-time enrollment must obtain approval from the Office of Graduate and Post-Doctoral Studies. Part-time enrollment tuition is calculated on the per-credit rate. Students are also assessed a one-time per semester part-time enrollment fee. Students not approved for part-time enrollment will be assessed the full-time enrollment tuition charge.
Programs offered by the Jones Graduate School of Business

PhD in Business

<table>
<thead>
<tr>
<th>Tuition and Fees</th>
<th>Semester / Reduced¹</th>
<th>Annual / Reduced¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entering Fall 2019 and continuing</td>
<td>$24,165 / $1,342.50</td>
<td>$48,330 / $2,685</td>
</tr>
</tbody>
</table>

Required Fees

<table>
<thead>
<tr>
<th>Required Fees</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate Student Association Fee</td>
<td>$22</td>
<td>$44</td>
</tr>
<tr>
<td>Student Organization Fund</td>
<td>$4</td>
<td>$8</td>
</tr>
<tr>
<td>Honor Council Fee</td>
<td>$1</td>
<td>$2</td>
</tr>
<tr>
<td>Health and Wellness Support Services Fee (no spouses)</td>
<td>$279</td>
<td>$558</td>
</tr>
<tr>
<td>Health Insurance - Student Premium only (unless waiver has been approved)²</td>
<td>Fall: $980, Spring: $1,502</td>
<td>$2,482</td>
</tr>
</tbody>
</table>

¹ Reduced Tuition
After 10 semesters of full-time study in one doctoral degree program (excluding the summer semesters), continuing students may be eligible for a reduced tuition rate. A semester of full-time study is defined as a fall or spring semester in which at least 9 hours of credit are earned.

² Health Insurance
All students, full-time or part-time—including those on away status—must carry health insurance. For further information, visit the Health Insurance (https://ga.rice.edu/graduate-students/student-services-organizations/health-counseling-wellbeing/) section or visit https://studenthealthinsurance.rice.edu/current-rates (https://studenthealthinsurance.rice.edu/current-rates/).

Master of Accounting (MAcc) Degree

<table>
<thead>
<tr>
<th>Tuition and Fees</th>
<th>Semester</th>
<th>Annual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entering Fall 2019 and continuing</td>
<td>$27,250</td>
<td>$54,500</td>
</tr>
</tbody>
</table>

Required Fees

<table>
<thead>
<tr>
<th>Required Fees</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate Student Association Fee</td>
<td>$22</td>
<td>$44</td>
</tr>
<tr>
<td>Student Organization Fee</td>
<td>$4</td>
<td>$8</td>
</tr>
<tr>
<td>Honor Council Fee</td>
<td>$1</td>
<td>$2</td>
</tr>
<tr>
<td>Health and Wellness Support Services Fee (no spouses)</td>
<td>$279</td>
<td>$558</td>
</tr>
<tr>
<td>Health Insurance - Student Premium only (unless waiver has been approved)²</td>
<td>Fall: $980, Spring: $1,502</td>
<td>$2,482</td>
</tr>
</tbody>
</table>

¹ Health Insurance
All students, full-time or part-time—including those on away status—must carry health insurance. For further information, visit the Health Insurance (https://ga.rice.edu/graduate-students/student-services-organizations/health-counseling-wellbeing/) section or visit https://studenthealthinsurance.rice.edu/current-rates (https://studenthealthinsurance.rice.edu/current-rates/).

Full-Time MBA Degree

<table>
<thead>
<tr>
<th>Tuition and Fees</th>
<th>Semester</th>
<th>Annual</th>
<th>2-Year Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entering Fall 2019 and continuing</td>
<td>$29,875</td>
<td>$59,750</td>
<td>$119,500¹</td>
</tr>
</tbody>
</table>

Required Fees

<table>
<thead>
<tr>
<th>Required Fees</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate Student Association Fee</td>
<td>$22</td>
<td>$44</td>
</tr>
<tr>
<td>Student Organization Fee</td>
<td>$4</td>
<td>$8</td>
</tr>
<tr>
<td>Honor Council Fee</td>
<td>$1</td>
<td>$2</td>
</tr>
<tr>
<td>Health and Wellness Support Services Fee (no spouses)</td>
<td>$279</td>
<td>$558</td>
</tr>
<tr>
<td>MBA Materials Fee</td>
<td>$1,250</td>
<td>$2,500</td>
</tr>
<tr>
<td>FT MBA Activity Fee</td>
<td>$150</td>
<td>$300</td>
</tr>
<tr>
<td>Health Insurance - Student Premium only (unless waiver has been approved)²</td>
<td>Fall: $980, Spring: $1,502</td>
<td>$2,482</td>
</tr>
</tbody>
</table>

¹ Program tuition assessment based on 60 credits. Tuition not assessed for enrolled credits exceeding 60.

² Health Insurance
All students, full-time or part-time—including those on away status—must carry health insurance. For further information, visit the Health Insurance (https://ga.rice.edu/graduate-students/student-services-organizations/health-counseling-wellbeing/) section or visit https://studenthealthinsurance.rice.edu/current-rates (https://studenthealthinsurance.rice.edu/current-rates/).

Executive MBA Degree

<table>
<thead>
<tr>
<th>Tuition and Fees</th>
<th>Semester</th>
<th>Annual</th>
<th>2-Year Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entering Fall 2019 - 2 year rate</td>
<td>$32,250</td>
<td>$64,500</td>
<td>$129,000¹</td>
</tr>
</tbody>
</table>

Required Fees

<table>
<thead>
<tr>
<th>Required Fees</th>
<th></th>
<th></th>
</tr>
</thead>
</table>
| Program tuition assessment based on 54 credits. Tuition not assessed for enrolled credits exceeding 54.
**MBA for Professionals — Evenings**

<table>
<thead>
<tr>
<th>Tuition and Fees</th>
<th>Semester</th>
<th>Annual</th>
<th>2-Year Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entering Fall 2019 - 2 year rate</td>
<td>$26,937.50</td>
<td>$53,875</td>
<td>$107,750&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

**Required Fees**

- MBA for Professionals Activity Fee
  - $50
  - $100

<sup>1</sup> Program tuition assessment based on 54 credits. Tuition not assessed for enrolled credits exceeding 54.

**MBA for Professionals — Weekends**

<table>
<thead>
<tr>
<th>Tuition and Fees</th>
<th>Semester</th>
<th>Annual</th>
<th>2-Year Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entering Fall 2019 - 2 year rate</td>
<td>$28,187.50</td>
<td>$56,375</td>
<td>$112,750&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

**Required Fees**

- MBA for Professionals Activity Fee
  - $50
  - $100

<sup>1</sup> Program tuition assessment based on 54 credits. Tuition not assessed for enrolled credits exceeding 54.

**MBA for Professionals — Evening Extended**

<table>
<thead>
<tr>
<th>Tuition and Fees</th>
<th>Semester</th>
<th>Annual</th>
<th>2-Year Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entered Fall 2015</td>
<td>$1,769 per credit&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entered Fall 2016</td>
<td>$1,825 per credit&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entered Fall 2017</td>
<td>$1,880 per credit&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entered Fall 2018</td>
<td>$1,935.19 per credit&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entering Fall 2019</td>
<td>$1,995.37 per credit&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Required Fees**

<sup>1</sup> Program tuition assessment based on 54 credits. Tuition not assessed for enrolled credits exceeding 54.

**MBA@Rice (online)**

<table>
<thead>
<tr>
<th>Tuition</th>
<th>Per Credit</th>
<th>2-Year Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entered Fall 2018</td>
<td>$1,935.19</td>
<td>$104,500</td>
</tr>
<tr>
<td>Entering Fall 2019</td>
<td>$1,995.37</td>
<td>$107,750</td>
</tr>
</tbody>
</table>

**Programs offered by the Glasscock School of Continuing Studies**

<table>
<thead>
<tr>
<th>Tuition and Fees</th>
<th>Per Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master of Arts in Teaching (MAT) degree program</td>
<td></td>
</tr>
<tr>
<td>Tuition</td>
<td>$2,900</td>
</tr>
<tr>
<td>Reduced Tuition - Alumni &amp; Employees</td>
<td>$2,610</td>
</tr>
<tr>
<td>Audited Courses</td>
<td>$850</td>
</tr>
<tr>
<td>Master in Liberal Studies (MLS) degree program</td>
<td></td>
</tr>
<tr>
<td>Tuition</td>
<td>$3,000</td>
</tr>
</tbody>
</table>

**Reduced Tuition - Alumni & Employees**

- Audited Courses $900

**Diploma in Liberal Studies (DLS) program**

| Tuition | $3,100 |
| Reduced Tuition - Alumni & Employees | $2,790 |
| Audited Courses | $950 |

**Required Fees for all programs<sup>1</sup>**

- Semester
  - Student Activity Fee $48
  - Graduate Student Association Fee $22
- Annual
  - Student Activity Fee $144
  - Graduate Student Association Fee $44

<sup>1</sup> Health Insurance

All students, full-time or part-time—including those on away status—must carry health insurance. For further information, visit the Health Insurance [section](https://ga.rice.edu/graduate-students/student-services-organizations/health-counseling-wellbeing/) or visit [https://studenthealthinsurance.rice.edu/current-rates](https://studenthealthinsurance.rice.edu/current-rates/).

**Rates for Students Studying Abroad**

<table>
<thead>
<tr>
<th>Tuition and Fees</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sponsoring Institution Agreement - Tuition Paid at Rice</td>
<td></td>
</tr>
<tr>
<td>Rice University Tuition</td>
<td>$24,165</td>
</tr>
<tr>
<td>Required Fees</td>
<td></td>
</tr>
<tr>
<td>Student Activity Fee</td>
<td>$22</td>
</tr>
<tr>
<td>Sponsoring Institution Agreement - Tuition Paid at Sponsoring Institution</td>
<td></td>
</tr>
<tr>
<td>Rice University Tuition</td>
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</tr>
<tr>
<td>Required Fees</td>
<td></td>
</tr>
<tr>
<td>Enrollment Continuance Fee</td>
<td>$456</td>
</tr>
<tr>
<td>Student Activity Fee</td>
<td>$22</td>
</tr>
</tbody>
</table>

**Course Fees**

Courses with additional charges are provided on the Course Schedule [section](https://courses.rice.edu/admweb/swkscat.main). In some cases the associated charges may be in lieu of Rice tuition and/or required fees.

**Additional Fees**

The following charges are separate from the regular fees. Charges due to late registration or course changes made after the deadline are described in the Registration [section](https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/).

- Audit Fee: Rice Alumni (per course) $510
- Audit Fee: Visitors (per course) $1,025
- Application Fee $85
### Billing Information

Electronic billing (E-Bill) is the official mechanism for student billing at Rice University. E-Bills are generated monthly. Fall and Spring E-Bills are generated on the 1st of each month, having a due date of the 10th.

Fall semester charges are due in full by August 10. Spring semester charges are due in full by January 10. Payment Plans are available for students who wish to pay installments over the course of the semester. Accounts not enrolled in a payment plan or paid in full by the term due dates are subject to Late Payment Fees.

Summer E-Bills are generated on the 1st for Summer months, having a due date on the 10th. Charges are due by the due date on the E-Bill notice. Payment Plans are not available for the Summer semester.

### Late Payments

Student accounts not paid in full (or whose payment plan is not current) by the billing due date will be subject to a 1.5% late fee. Late fees are calculated based on the amount past due. Students experiencing difficulty with paying their balance should contact the Cashier's Office (https://cashier.rice.edu/home/) promptly to discuss payment options.

### Delinquent Accounts

Rice University reserves the right to block or cancel the registration of any student who fails to pay, when due, any indebtedness to the institution.

Academic credits, transcripts, and diplomas will be withheld until all financial obligations are paid in full.

### Refunds

#### Tuition and Fee Reversal for Withdrawals and Drops

##### University Withdrawals

Students officially withdrawing from all courses or dropping one or more course(s) are eligible for a 100% reversal of tuition and fees through the deadlines listed on the Academic Calendar (https://registrar.rice.edu/calendars/) by semester.

Students officially withdrawing from all courses after the 100% reversal of tuition and fee deadline are eligible for a partial reversal of tuition. Fees are not reversed. Consult the Academic Calendar (https://registrar.rice.edu/calendars/) for specific tuition refund prorations based on the date of withdrawal.

##### Dropped Courses

Students withdrawing from one or more individual course(s) after the 100% tuition reversal period will not be eligible for a refund and will remain liable for payment of full tuition and fee charges though certain exceptions may apply, outlined in the Registration Drop/Add section (https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/). Non-attendance does not constitute an official course drop or withdrawal. All charges due to Rice University must be paid before refunds or adjustments will be permitted.

In cases of academic or disciplinary suspension, eligibility for tuition refunds and adjustments will depend on the conditions of the suspension and will be entirely at the option of the institution. Should unforeseen circumstances beyond the reasonable control of Rice University result in curtailing classes, closing residence facilities, or otherwise withdrawing services that are a normal function of the institution, refunds of any nature will be at the discretion of university administration.

##### Financial Aid

In addition to the university’s reversal schedule and in accordance with the Higher Education Amendments of 1992, if a student completely withdraws from the university and has utilized Federal Title IV funds (e.g. Federal Pell Grant, Federal Supplemental Educational Opportunity Grant [SEOG], Academic Competitiveness Grant, National SMART Grant, Federal Perkins Loan, Federal Direct Stafford Student Loan, Federal Direct PLUS, Federal Direct Graduate PLUS) during the semester in which they withdraw, the university will observe the federally mandated process in determining what, if any amount of money must be returned to the federal program(s).

The calculation of the return of funds may result in the student owing a balance to the university and/or the Department of Education.

#### Refund of Credit Balances

Student account credits resulting from excess Federal Financial Aid payments, scholarship payments, and loan payments are automatically refunded by the Cashier's Office; however, there may be certain circumstances where credits on student accounts occur that may not be automatically refunded. Reversed charges, over payments, tuition...
waivers, and other varying factors may lead to a credit balance on a student account.

For those credits not automatically refunded, students may request disbursement of the credit balance through email to cashier@rice.edu.

Refund Delivery
Refunds are issued daily to students that are enrolled in Electronic Refunds (https://cashier.rice.edu/general-refund-information/). For students not enrolled in Electronic Refunds (https://cashier.rice.edu/general-refund-information/), refund checks are issued weekly and are mailed directly from JP Morgan Chase to the student mailing address on record.

Student Financial Responsibility Agreement
Before enrollment for a new semester can occur, students must consent to a Student Financial Responsibility Agreement (https://cashier.rice.edu/student-financial-responsibility-agreement/).

Rights and Responsibilities
See also Faculty Grading Guidelines (p. 90).

Graduate students are entitled to at least one formal progress review (p. 90) with written feedback per year.

- Access to Student Records (p. 81)
- Code of Student Conduct (p. 82)
- Dispute Resolution (p. 83)
- Honor System (p. 84)
- Student Responsibility (p. 84)

Access to Student Records

Notification of Rights under the Family Educational Rights and Privacy Act (FERPA)
The Family Educational Rights and Privacy Act ('FERPA') is a federal law that protects the privacy of, and limits access to, student education records. The law affords students the following rights with respect to their education records:

1. the right to inspect and review the student's education records within 45 days after the date Rice University ('Rice') receives a request for access;
2. the right to seek amendment of the student's education records that the student believes are inaccurate, misleading, or otherwise in violation of the student's privacy rights under FERPA;
3. the right to provide written consent to disclosures of personally identifiable information ('PII', as defined by law) contained in the student's education records, except to the extent FERPA authorizes disclosure without consent;
4. the right to file a complaint with the U.S. Department of Education concerning alleged failures by Rice to comply with the requirements of FERPA. The name and address of the federal office that administers FERPA is:

    Family Policy Compliance Office

U.S. Department of Education
400 Maryland Ave., S.W.
Washington, DC 20202

Inspect and Review Records
A student should make written request to any offices that maintain student education records, identifying the record(s) the student wishes to inspect. Though not exhaustive, as a guide for students, this is a list of the primary offices that maintain student education records: Office of the Registrar, Office of the Dean of Undergraduates, Office of Graduate and Postdoctoral Studies, Office of Student Judicial Programs, Office of Admission, Office of Financial Aid, Center for Career Development, Office of Student Activities, Office of Academic Advising, Office of International Students and Scholars, Cashier's Office, and departmental offices. The appropriate Rice official will make arrangements for access and notify the student of the time and place where the records may be inspected. If the records are not maintained by the Rice official to whom the request is submitted, that Rice official will advise the student of the correct official to whom the request should be addressed.

Amendment of Records
Any questions, problems, or written requests for amendment of records should be submitted to the Office of the Registrar. A student requesting to amend a record should clearly identify the part of the record the student wants changed and specify why it should be changed. If Rice decides not to amend the record as requested, Rice will notify the student in writing of the decision and of the student's right to a hearing regarding the request for amendment. Additional information regarding the hearing procedures will be provided to the student when the student is notified of the right to a hearing.

Disclosure of Information
As permitted by FERPA, Rice reserves the right to publish or release the following directory information without prior consent:

1. Name; permanent, local, mailing, and campus address; residential college affiliation; telephone and mobile number(s); campus email address(es); and Net ID
2. Date and place of birth
3. Classification, degrees or programs, and majors and minors
4. Participation in officially recognized activities and sports
5. Weight and height of members of athletic teams
6. Dates of attendance, degrees, honors, and awards received
7. The most recent previous educational agency or institution attended by the student
8. Photograph

Students who would like Rice to withhold this directory information may do so by logging in to ESTHER, clicking Personal Information, clicking Release or Withhold Directory Information, and indicating that the information should be withheld. Thereafter, Rice will withhold access to, and release of, the student's directory information until further written instruction is received from the student. For more information regarding FERPA, please visit the U.S. Department of Education’s website (https://www2.ed.gov/policy/gen/guid/fpco/ferpa/).

FERPA permits the disclosure of PII from students’ education records, without consent of the student, if the disclosure meets certain conditions found in 34 C.F.R. §99.31 of the FERPA regulations. Except for disclosures to school officials, disclosures related to some judicial orders or lawfully issued subpoenas, disclosures of directory information,
and disclosures to the student, Section 99.32 of the FERPA regulations requires the institution to record the disclosure. Eligible students have a right to inspect and review the record of disclosures. A postsecondary institution may disclose PII from the education records without obtaining prior written consent of the student—

- To other school officials, within Rice whom Rice has determined have legitimate educational interests and require this information in order to perform instructional, supervisory, advisory, administrative, or other duties for Rice. These school officials include faculty, research personnel, staff (including law enforcement unit personnel and health staff), trustees, or students serving on official committees (such as disciplinary or grievance committees) or assisting another school official. A school official has a legitimate educational interest if the official needs to review an educational record in order to fulfill his or her professional responsibility to Rice. This includes contractors, consultants, auditors, attorneys, collection agents, volunteers, or other parties to whom Rice has outsourced institutional services or functions, provided that the conditions listed in §§99.31(a)(1)(i)(B)(7) - (a)(1)(i)(B)(3) are met. (§99.31(a)(1))
- To officials of another school where the student seeks or intends to enroll, or where the student is already enrolled if the disclosure is for purposes related to the student's enrollment or transfer, subject to the requirements of §99.34. (§99.31(a)(2))
- To authorized representatives of the U.S. Comptroller General, the U.S. Attorney General, the U.S. Secretary of Education, or State and local educational authorities, such as a State postsecondary authority that is responsible for supervising the university's State-supported education programs. Disclosures under this provision may be made, subject to the requirements of §99.35, in connection with an audit or evaluation of Federal- or State-supported education programs, or for the enforcement of, or compliance with, Federal legal requirements that relate to those programs. These entities may make further disclosures of PII to outside entities that are designated by them as their authorized representatives to conduct any audit, evaluation, or enforcement or compliance activity on their behalf. (§§99.31(a)(3) and 99.35)
- In connection with financial aid for which the student has applied or which the student has received, if the information is necessary to determine eligibility for the aid, determine the amount of the aid, determine the conditions of the aid, or enforce the terms and conditions of the aid. (§99.31(a)(4))
- To organizations conducting studies for, or on behalf of, the school, in order to: (a) develop, validate, or administer predictive tests; (b) administer student aid programs; or (c) improve instruction. (§99.31(a)(5))
- To accrediting organizations to carry out their accrediting functions. (§99.31(a)(7))
- To parents of an eligible student if the student is a dependent for IRS tax purposes, though Rice limits such information to financial details of the student's enrollment. (§99.31(a)(8))
- To comply with a judicial order or lawfully issued subpoena. (§99.31(a)(9))
- To appropriate officials in connection with a health or safety emergency, subject to §99.36. (§99.31(a)(10))
- Information the school has designated as "directory information" above and pursuant to §99.37. (§99.31(a)(11))
- To a victim of an alleged perpetrator of a crime of violence or a non-forcible sex offense, subject to the requirements of §99.39. The disclosure may only include the final results of the disciplinary proceeding with respect to that alleged crime or offense, regardless of the finding. (§99.31(a)(13))
- To the general public, the final results of a disciplinary proceeding, subject to the requirements of §99.39, if the school determines the student is an alleged perpetrator of a crime of violence or non-forcible sex offense and the student has committed a violation of the school's rules or policies with respect to the allegation made against him or her. (§99.31(a)(14))
- To parents of a student regarding the student's violation of any Federal, State, or local law, or of any rule or policy of the school, governing the use or possession of alcohol or a controlled substance if the school determines the student committed a disciplinary violation and the student is under the age of 21. (§99.31(a)(15))

For further information regarding Rice's policy on student education records, please contact the Office of the Registrar.

Rice University
Office of the Registrar–MS 57
6100 Main Street
Houston, TX 77005-1892
Email: registrar@rice.edu

Rice University Privacy Notice
Additionally, you may also wish to consult privacy rights and practices discussed at https://privacy.rice.edu/ and https://privacy.rice.edu/GDPR (https://privacy.rice.edu/GDPR/).

Code of Student Conduct

The Office of Student Judicial Programs oversees the judicial system, enforces the Code of Student Conduct (which governs the administration of student order and discipline), and may participate in Title IX investigations. The Code of Student Conduct applies to all students, including: undergraduate, graduate, and those enrolled in professional and Continuing Studies programs, visiting students (including online students), visiting post baccalaureates, second degree students, and auditors. For students who attend class on campus, the Code of Student Conduct applies from the time they arrive on campus for orientation or other activities related to their student status. For online students, the Code of Student Conduct applies from the time they begin engaging with the university as a student, including participating in any activities related to their student status. Organizations also are subject to this Code. All enrolled students also are subject to Rice University policies and rules.

Alleged violations of university policies or rules are handled in accordance with the Code of Student Conduct. Students may appeal decisions as described in the Code of Student Conduct. Rice retains ultimate authority in all matters of discipline and over all actions that affect its educational function or the safety and wellbeing of members of the university community. The Code is not intended to—and does not—confer any contractual rights on any individuals involved. Procedures for students who are entirely online students may differ.

The Code of Student Conduct can be found at https://sjp.rice.edu (https://sjp.rice.edu/code-of-student-conduct/).

After Rice's grievance process has been exhausted and documented, students may also pursue an external complaints process (p. 1768).
Dispute Resolution

Petitions and Appeals
Graduate students may petition for exceptions to academic requirements, regulations, and judgments. A course requirement is an example of an academic requirement. Allowed time to degree is an example of an academic regulation. Course grades and dismissals from programs are examples of academic judgments. If a petition is denied, one level of appeal is allowed.

Petitions
Petitions should include the circumstances that may qualify the student for an exception as well any supporting documentation or endorsements. In general, petitions will be handled at the lowest appropriate level.

- A petition regarding requirements, regulations, or judgments of a graduate program will be handled at that level, that is, by the program. Such petitions need to follow procedures established by these programs.
- A petition regarding University requirements, regulations, or judgment must be submitted to the Office of Graduate and Postdoctoral Studies; such a petition must be accompanied by a recommendation from the program.
- When the program’s recommendation is negative, or when the petition requests a major exception—for example, an extension of allowed time to degree by more than 1/2 semester—the Office of Graduate and Postdoctoral Studies may also obtain the recommendation of the school overseeing the program (when relevant) and the Graduate Council with regard to such petitions.

Petitions for exceptions to academic requirements, regulations, and judgments should be viewed as unusual, rather than typical. Extensions of various time limits, such as time to candidacy or time to defense, will not be granted routinely. See Candidacy, Oral Examinations and Thesis (p. 65). Students requesting such extensions have to document the unusual circumstances justifying their request, demonstrate their academic progress towards the goal, and provide a concrete plan for meeting the goal within the requested extension.

Petitions regarding academic decisions must be submitted in writing within 15 days from the time that the student knew or should reasonably have known of the decision being petitioned, or within 15 days after an informal effort to resolve the situation has not been successful.

Petitions seeking exceptions to academic requirements or regulations should be submitted in writing at least 30 days before the requirement or regulation takes effect. For example, a petition to extend allowed time to degree should be submitted at least 30 days before the deadline in effect. Late petitions may be dismissed, except for unusual situations when a delay is found justifiable by the unit receiving the petition. Petitions must be acknowledged in writing immediately upon their receipt by the receiving unit. Email communication is considered to be “in writing.”

Appeals
If a petition is denied, a student (or other parties affected by the decision) is allowed only one level of appeal. In general, the appeal process will be resolved at the lowest level possible.

- When the petition is decided at the graduate program or department level, the appeal must be submitted to the Office of Graduate and Postdoctoral Studies.
- When the petition is decided at a school level, the appeal must be handled by the Office of Graduate and Postdoctoral Studies.
- When the petition is decided by the Office of Graduate and Postdoctoral Studies, the appellant may submit an appeal to the Provost.

An appeal must be submitted within 15 days from receipt of the decision that is being appealed. Late appeals will be dismissed, except for unusual situations when a delay is justified. Appeals must be acknowledged in writing immediately upon their receipt by the receiving unit. Email communication is considered to be “in writing.”

Guidelines Regarding Petitions and Appeals

- Grounds for a petition/appeal could be procedural errors by academic or administrative personnel or special circumstances found to be mitigating by the unit receiving the petition/appeal. Disagreement over evaluation of academic quality will not be considered as an appropriate basis for petitions/appeals unless the evaluation is found to be patently unreasonable by the unit receiving the petition/appeal.
- All petitions and appeals should indicate the requirement, regulation, or judgment that is the subject of the petition/appeal, the specific exception requested, and the grounds for the request.
- Additionally, an appeal must indicate why the decision involving the earlier petition was incorrectly decided.

Petitions involving a violation of University policy or improper conduct by University personnel will be handled as grievances (see Grievances below).

Petitions and appeals should be resolved within 30 days of their submission. When such resolution cannot be achieved within 30 days, students will be informed of the delay before the 30 days are over. A resolution of the petition or appeal must be achieved within 60 days. A lack of resolution of a petition within 60 days is an acceptable cause for an appeal.

An academic program directly managing graduate students must establish a standing Petitions, Appeals, and Grievances Committee. A petition concerning a graduate program regulation by a student will be handled by a committee consisting of at least three faculty members. The committee must be independent of the cause for the petition. Members of a student’s thesis committee must not participate in the handling of a petition by the student. (The department chair or dean may appoint ad-hoc members to the committee to ensure independence of the committee.) The committee will conduct an investigation of the circumstances and reach a decision regarding the petition. Their written report to the graduate director, and the chair (or dean) will describe the circumstances, the decision, and the rationale for the decision. The graduate director or chair (or dean) will convey the final decision to the student and include the committee report. (Redaction from the report is allowed to protect the privacy of other students.) In case of decisions by the faculty members of a graduate program acting as a committee of the whole, petitions will also be considered by the Petitions, Appeals, and Grievances Committee, which will reconsider the decision in view of the information provided in the petition. This committee may choose to bring the matter back for consideration by the faculty members of the academic program, acting as a committee of the whole. Petitions regarding University requirements, regulations, or judgments submitted to the Office of Graduate and Postdoctoral Studies may be handled by the
Grievances
Grievances are different from petitions and appeals. Petitions and appeals involve exceptions to academic requirements, regulations, and judgments. A grievance is a complaint regarding inappropriate conduct by other students, faculty members, or staff. Inappropriate conduct encompasses both inappropriate personal conduct, such as sexual harassment, as well as inappropriate official conduct, such as violation of University policies. Specific policies exist to address grievances based on discrimination or sexual harassment and these policies must be followed in situations involving these issues. Grievances against another student may be raised with the director of student judicial programs and addressed under the Code of Student Conduct. In other cases, a student may present a grievance in writing at the lowest appropriate level, typically the graduate program or school. If a satisfactory resolution is not obtained at that level, the student may appeal the outcome of the grievance by presenting the problem at the next administrative level: the Office of Graduate and Postdoctoral Studies, followed by the provost, or president. Grievances against non-faculty staff members may also be brought to the employee relations director in Rice’s Human Resources office (https://people.rice.edu/).

The procedures for handling grievances are analogous to those for handling petitions and appeals. Students submitting grievances must so indicate in their submissions.

Problem Resolution
It is the responsibility of the graduate program to provide an appropriate educational environment for all graduate students. During the course of graduate studies, problems that do not fall under the category of grievances, described above, may arise in the relationship between a graduate student and his/her program or his/her advisor. Students should attempt to resolve such problems by informing the appropriate faculty members and working together to resolve the problem. When attempts to resolve the problem informally are unsuccessful, the following problem-resolution procedure will be used:

1. The student will submit the problem in writing to the graduate program chair, who will then attempt to resolve it.
2. If the student remains unsatisfied, the problem will be presented to a committee of the program for resolution. This committee will be a standing committee and not the student’s own thesis committee. Both the student and the program chair will submit a written record of their views to this committee.
3. If the student remains unsatisfied, the problem will be referred to the Office of Graduate and Postdoctoral Studies. A written report of proceedings at stage 2 will be presented to the dean of graduate and postdoctoral studies, along with all other written materials generated during the investigation. The dean may, at her or his discretion, handle these in a similar manner by enlisting the assistance of a subcommittee of the Graduate Council, which will submit its report to the chair of the Council and to the dean of graduate and postdoctoral studies. The decision of dean of graduate and postdoctoral studies is considered final.

The time frame for handling problem resolution is similar to that for handling petitions, appeals, and grievances. Students may seek guidance on any of these procedures through discussions with the Office of Graduate and Postdoctoral Studies (http://graduate.rice.edu/).

After Rice’s grievance process has been exhausted and documented, students may also pursue an external complaints process (p. 1768).

Honor System
Students take all written examinations and complete any specifically designated assignments under the honor system. By committing themselves to the honor system, all students accept responsibility for assuring the integrity of the examinations and assignments conducted under it. The Graduate Honor Council (GHC) is responsible for investigating reported violations and for conducting a hearing when the facts warrant. The Office of Student Judicial Programs, which reviews the results of the investigations and hearings, considers the GHC’s recommendations when issuing penalties. Procedures for accusations arising out of summer classes or Rice Online classes may differ.

The Honor Code and other related information and resources are located at the homepage of the Graduate Honor Council: https://gradhonor.rice.edu/.

Student Responsibility
The university expects all Rice students to exercise personal responsibility over their actions. Their behavior should reflect a respect for the law and for their contractual obligations, a consideration for the rights of others, and shared standards of considerate and ethical behavior.

Students are responsible for knowing and following all information, policies, and procedures listed in this General Announcements. Questions should be directed to the appropriate office or administrator.

Rice utilizes e-mail as an official form of communication and sends correspondence to a student’s Rice email address. Students should frequently check and maintain their Rice email inbox. Failure to do so
does not relieve students of the responsibility to act or respond in a timely manner to official notices sent via email.

Rice encourages self-discipline, recognizing that effective student government, including judicial processes, and the integrity of the honor system depend on the willingness of all students to meet community standards of conduct.

The university, however, reserves the right to insist on the withdrawal of any student whose conduct it judges to be clearly detrimental to the best interests of either the student or the university. The appropriate authorities take such action only after careful consideration.

No individual or group may use the name of the university or one of its colleges without prior approval of the university or the college.

**Teaching Assistant Responsibility**

Individuals appointed as teaching assistants must abide by the policies stated below.

**TA Policy**

Teaching assistants are graduate students who help faculty with the delivery of courses. Services provided by teaching assistants include, but are not limited to, grading, monitoring, leading labs and/or discussion sessions, offering office hour assistance to students, and performing clerical tasks associated with course instruction.

Teaching assistants are supervised by the course instructor of record and are subject to established departmental policy.

Although they are not members of the faculty, teaching assistants are expected to conform to the same standards of conduct in the performance of their academic duties as are members of the faculty and shall respect the rights and opinions of students and uphold the academic standards of the University.

Teaching assistants are subject to the guidelines stated in the University Amorous Relationship Policy (https://professor.rice.edu/uploadedFiles/Professor/Faculty_Senate/CORRECTED%20Clean%20copy%20post%20Senate%20mtg%2012-3-2014.pdf) as well as the Family Educational Rights and Privacy Act (FERPA) (https://registrar.rice.edu/ferpa/).

When serving in the role of a teaching assistant, graduate students are considered responsible employees under the University Title IX Policy (https://safe.rice.edu/). As a responsible employee of Rice University, once a teaching assistant knows about any incident of sexual assault, harassment, relationship violence, stalking, or another non-consensual interpersonal behavior, Rice Title IX personnel need to know so they can act to support the student and keep our community safe. You can gain access to the Title IX Resource Navigator, Student Wellbeing, and the Rice Counseling Center by calling 713-348-3311. If a student wants to make a report through the university, wants Title IX accommodations without making a report, or isn't sure what to do, also call 713-348-3311 or extension 3311 on campus.

If the student wants to make a report through the legal system or is considering making a report, or needs immediate assistance, call the Rice University Police Department (RUPD) 713-348-6000 or extension 6000 on campus.
NON-TRADITIONAL STUDENTS

- Auditors (p. 86)
- Rice Learners (p. 86)
- Second Bachelor’s Degree for Rice Alumni (p. 86)
- Visiting Students (non-degree) (p. 87)

Auditors

Any interested person may audit one or more courses at Rice by securing permission of the instructor and by registering as an auditor with the Office of the Registrar. Detailed instructions to apply as an auditor can be found on the Office of the Registrar’s website (https://registrar.rice.edu/students/visiting/).

Upon completion, the audited course will appear on the student’s transcript with a grade of either “AUD” or “NC” (see Grade Symbols (p. 24)). Instructors report the AUD if the student met the audit requirements of the class, or the NC if they have not. There are no credit hours associated with audited courses, and auditing a course does not affect a student’s GPA.

During the fall and spring semesters, and/or during the summer sessions, an audit fee of $1,025 per course per semester is charged for the privilege of auditing (see Cashier’s website (https://cashier.rice.edu/)). Rice alumni may audit a course at a reduced rate, $510 per course per semester.

A request to audit a class or to change from audit to credit or vice versa must be done by the deadlines as posted in the Academic Calendar (https://registrar.rice.edu/calendars/) for the applicable semester.

Current enrolled Rice students will find more information regarding auditing in the undergraduate (p. 11) and graduate (p. 49) sections.

Please note that financial assistance is not available for auditing students.

Rice Learners

Non-Credit Educational Opportunities at Rice

Rice University offers a number of opportunities for persons, or learners, to access various educational programs and materials. While not degree-granting, many of these programs or courses lead to certificates, continuing education credits, and other rewarding professional development opportunities.

Continuing Studies (at the Glasscock School of Continuing Studies)

The Glasscock School of Continuing Studies offers hundreds of non-credit course offerings throughout the year in a variety of areas of study. Choose from coursework focusing on non-credit preK-12 education, philanthropy, professional studies, arts & design, humanities & social sciences, science, technology & health, foreign languages and much more. In addition, the Glasscock school offers several for-credit academic programs.

For additional information, please see the Glasscock School’s website: https://glasscock.rice.edu/.

Executive Education (at the Jones Graduate School of Business)

The Jones Graduate School of Business offers open enrollment, customized, and specialty non-credit programs to help learners and their organizations to take charge of their personal and professional development. These executive education programs and courses are deliberately designed to maximize learning and transfer of knowledge by incorporating assessments, lecture, case studies, group activity, simulations, and coaching. All are taught by world-class business school faculty who are prolific researchers in their areas of expertise, and have won numerous prestigious teaching awards. Additionally, executive education faculty leverage their consulting experience and the professional experience of classroom participants to co-create a rich learning environment.

For additional information, please see the Jones School’s website: https://business.rice.edu/about-executive-education/.

Rice Online Learning

Rice Online Learning develops innovative non-credit and for-credit courseware to improve educational and professional outcomes for learners of all ages, around the world. Rice Online Learning is dedicated to providing broad access to top quality Rice University education while enhancing the curriculum and student experience on the Rice campus, and is committed to advancing the research frontiers in technology for education. Rice Online Learning’s objectives are organized by around three goals:

1. Improve the quality of education at Rice University
2. Expand Rice University’s reach and reputation
3. Generate resources to support Rice University’s core mission

For additional information, please see Rice Online Learning’s website: http://online.rice.edu/.

Second Bachelor’s Degree for Rice Alumni

Rice alumni with a Rice bachelor’s degree have the option of earning a second four-year bachelor’s degree at Rice in a different discipline. In addition to being in a different discipline, the second degree must also be a different bachelor’s degree from the one already held; for example, the holder of a BA degree may pursue coursework leading to a BS or BMus degree.

Rice alumni with a Rice bachelor’s degree desiring to earn a different four-year bachelor’s degree must:

- Be accepted for the major by the major department
- Fulfill all requirements for the second degree
- Complete at least 30 additional semester hours at Rice (must include two full-time fall and/or spring semesters) upon their return to Rice and beyond their first bachelor’s degree (these hours are applied to the second bachelor’s degree)

The entire undergraduate record for these students continues cumulatively. Those seeking admission to this program should complete the Second Four-Year Bachelor’s Degree Application available on the Office of the Registrar (https://registrar.rice.edu/online_forms/) website.
This application should include a written statement specifying the proposed major and course program for the second degree, a supporting letter from the chair of the major department, and an explanation of the student’s reasons for returning to Rice for a second degree. This letter of application and paperwork should be submitted to the Office of the Registrar no later than August 1 for the fall semester and November 1 for the spring semester.

Eligible students considering this option should note that coursework completed at Rice as visiting students can only be applied to the second degree with the approval of the major department for that degree. Additionally, coursework completed at Rice as Visiting Post Baccalaureates can only be applied to the second degree with the approval of the major department for that degree and the dean of graduate and postdoctoral studies.

Financial Aid
Students seeking information about financial aid available to participants in the second four-year bachelor’s degree program should contact the Office of Financial Aid (https://financialaid.rice.edu/).

Second Four-Year Bachelor’s Degree for Current Rice Undergraduates
Currently enrolled undergraduates who have not yet completed their first bachelor’s degree and desire to concurrently earn a second four-year bachelor’s degree, also known as a dual degree, should reference the Dual-Degree Requirements on the undergraduate Graduation Requirements (p. 26) page.

Visiting Students (non-degree)
Inter-Institutional Graduate Students
A number of inter-institutional graduate student enrollment agreements have been established enabling graduate students from one institution to take graduate-level courses at other participating institutions. The institutions currently participating in inter-institutional agreements include Rice University, Baylor College of Medicine, Texas A&M Health Science Center, University of Houston, University of Texas Health Science Center at Houston, and the University of Texas Medical Branch at Galveston. The number of credits allowed per term/semester and the course offerings may vary depending on the policy of the host school.

Registration Rules and Guidelines
The following registration rules and guidelines apply to graduate students (at participating inter-institutional institutions) seeking to be Rice University visiting students under an inter-institutional agreement:

- The student must be registered full-time (9 credit hours) between the student’s home institution and the host institution during the semester they register for courses.
- Requested class must not be offered by the home institution during the requested term/semester.
- Requested class must be necessary for completion of graduate degree at the home institution.
- The student may take up to a total of 12 credit hours at Rice University through the inter-institutional agreement.
- Tuition and fees are paid to the home institution.
- All paperwork with the appropriate approval signatures must be completed.

- Foreign students taking inter-institutional courses must submit additional paperwork (e.g., passport, I-94 arrival/departure card, and Check-In Sheet (https://registrar.rice.edu/sites/g/files/bxs751/f/Inter-Inst%20Grad%20CHECK-IN%20SHEET.pdf)).
- For a comprehensive list of Registration Deadlines (including Add, Drop, Variable Credit deadlines etc.), please consult the semester-specific Rice University Academic Calendar (https://registrar.rice.edu/calendars/).

Please Note:
- Inter-institutional graduate students may not take a course Pass/Fail.
- Due to the structure of the summer sessions at Rice University, this inter-institutional registration arrangement is not available to non-Rice students during the summer sessions.

For more information, including the enrollment process under an inter-institutional agreement, please see the Office of the Registrar’s website: https://registrar.rice.edu/students/inter_institutional (https://registrar.rice.edu/students/inter_institutional/).

Online-Distance Education
A complete list of all of Rice University’s online course offerings, both for-credit and non-credit offerings, can be found at Rice Online (http://online.rice.edu/).

Rice Online for-credit Courses
Each academic year Rice offers a number of courses online. These courses use the online method of instruction, indicating that the majority of the class time instruction is occurring when and where students and instructors are not in the same place. These online course offerings can be found in the official Rice Course Schedule (https://courses.rice.edu/admweb/swkscat.main) by querying by method of instruction.

Visiting students seeking to register for a Rice Online for-credit course should follow the application procedures documented on the Office of the Registrar web site noted here (https://registrar.rice.edu/students/visiting/). Upon admission and registration of a Rice Online for-credit course, all students, including non-degree-seeking visiting students, must abide by and support the Honor System at Rice University. Prior to the first day of classes, affirmation and acknowledgement of the Honor Code (https://honor.rice.edu/) will be required of all visiting students enrolled (for credit or for audit) in any for-credit Rice course.

State Authorizations
The State Authorization Reciprocity Agreement (SARA) is a national initiative to provide more access to online courses while maintaining compliance standards with state regulatory agencies. SARA allows institutions to provide online courses outside of their own state borders by seeking and maintaining state approvals via a streamlined process. On June 19, 2017, the National Council for State Authorization Reciprocity Agreements (NC-SARA) approved institutional participation for Rice University.

For information regarding student complaints, please see Rice University Policy 701, Written Student Complaints, or NC-SARA at: https://nc-sara.org/content/sara-and-students (https://nc-sara.org/content/sara-and-students/).
### Rice Faculty and Staff Members

**Fall and Spring Semesters**

With the appropriate authorizations, benefits-eligible employees of Rice may take one course per semester, either for-credit or audit. (See important note below regarding eligible courses.) Please see University Policy #409 (https://policy.rice.edu/409/) and/or #432 (https://policy.rice.edu/432/) for complete details about benefits eligibility. Employees must meet a six-month probationary period before using this benefit.

The registration period is the first two weeks of the semester. The following registration rules and guidelines apply to Rice benefits-eligible employees during the fall and spring semesters:

- Complete a Tuition Waiver Application Form (https://people.blogs.rice.edu/hr-forms/tuition-waiver/)
- Get an authorizing signature of the employee's supervisor, the course instructor, and Human Resources.
- Complete a Visiting Student Application (https://riceuniversity.co1.qualtrics.com/SE/?SID=SV_1TSPXGibWGVvN7/) and either upload the Tuition Waiver Application form to the application or bring it to the Office of the Registrar.
- Course registration is limited by availability, and priority is given to enrolled, degree-seeking students.

Retirees, spouses and domestic partners of benefits-eligible employees are also able to audit one course per semester. Spouses and domestic partners should follow the same registration procedures as benefits-eligible employees.

**Please Note:** All graduate courses in the Jones Graduate School of Business, all courses offering individual instruction in the School of Architecture, all undergraduate and graduate courses offering individual instruction including musical performance or composition in the Shepherd School of Music, and Glasscock School of Continuing Studies are excluded from this program.

### Summer Sessions

The tuition waiver or audit benefit is not available to Rice benefits-eligible employees during the Summer Sessions; however, with the appropriate authorizations, benefits-eligible employees of Rice may take courses offered during Rice's Summer Sessions (https://registrar.rice.edu/students/summersessions/) and apply for tuition reimbursement. Please see University Policy #432 (https://policy.rice.edu/432/).

The following registration rules and guidelines apply to Rice benefits-eligible employees during the Summer Sessions:

- Adhere to the deadlines to apply as a visiting student (https://registrar.rice.edu/students/summersessions/#enroll_nonrice), depending on the session in which enrollment is requested.
- Application for tuition reimbursement (https://people.blogs.rice.edu/hr-forms/tuition-reimbursement-form/) This needs to be signed by the employee's supervisor and turned into Human Resources before the start date of the course.
- Visiting Student Application (https://riceuniversity.co1.qualtrics.com/SE/?SID=SV_1TSPXGibWGVvN7/)

Course registration is limited by availability, and priority is given to degree-seeking students.

### Summer Sessions for Visiting Students

Rice's Summer Sessions offer for-credit courses to Rice students, visiting undergraduates, visiting auditors, and visiting post baccalaureates. Students can choose to take courses in combined summer sessions. Current Rice students follow the same registration policies and procedures that are in place for the fall and spring semesters.

### Resources

- For a schedule of summer sessions, please refer to the Academic Calendar (https://registrar.rice.edu/calendars/).
- For course offerings, please refer to https://courses.rice.edu.
- For information related to the Summer Sessions, please see https://registrar.rice.edu/students/summersessions/.

### Application Process for Visiting Students

To apply, students will need to submit the following materials to the Rice University Office of the Registrar. Applicants will be notified as soon as possible of acceptance or non-acceptance:

- Visiting Student Application and Application Fee
- Official college transcript from all colleges or universities attended
- Official final high school transcript (waived if attended a college/university in the previous Spring semester) All transcripts must be mailed in and will not be accepted by fax or email.
- Official ACT/SAT scores (visiting high school students only)
- Dean of Students Recommendation Form (https://registrar.rice.edu/sites/g/files/bxs751/f/Dean_s_Recommendation_Letter.pdf) (visiting high school and visiting undergraduates from other institutions)
- Release and Hold Harmless Agreement (required if under the age of 18)
- Proof of Meningococcal Vaccination Record or Waiver (required if under the age of 22)

### Guidelines

- Tuition is due in full at registration before the beginning of classes.
- Enrollment in courses during the summer sessions carries no implications for regular admission to Rice.
- Visiting students may not take courses on a pass/fail basis.

It is essential that students follow the deadlines listed on the summer website at https://registrar.rice.edu/students/summersessions/ and the Academic Calendar (https://registrar.rice.edu/calendars/). Students may apply after the deadline (but before the start of classes) by paying a late fee. Course offerings are at the discretion of Rice and may be canceled at any time for any reason.

### Visiting Post Baccalaureates

The visiting post baccalaureate (VPB) program at Rice allows a visiting student who has an undergraduate or graduate degree from an accredited college or university to take courses at Rice for credit but not in a specific degree program. Students interested in taking courses, but not for credit, should audit the courses. (See Auditors (p. 86).)
VPB Applicants must have a 3.00 (B) or better grade average in the previous undergraduate or graduate program. Registration requires the permission of the course instructor or department chair and approval by the dean of graduate and postdoctoral studies. Visiting Post Baccalaureates cannot take courses on a pass/fail basis. Visiting Post Baccalaureates must receive at least a B for all classes taken or they will not be allowed to remain in the program.

A student may not use courses taken under this arrangement to fulfill the requirements for a Rice degree unless and until the student has been accepted into a degree program by an academic department. A former Visiting Post Baccalaureate student may request that his or her department allow up to three courses taken as Visiting Post Baccalaureates to count toward the graduate degree. Once approved by the department, the student must also obtain the approval of the dean of graduate and postdoctoral studies.

Applications for Visiting Post Baccalaureate Program
Applications are available on the Visiting Student page (https://registrar.rice.edu/students/visiting/vpb/) of the Office of the Registrar website. Official transcripts from all colleges and universities the student has attended should be mailed or securely emailed directly by the institutions to the Office of the Registrar. A student who was previously a Visiting Post Baccalaureate must complete a new application (without transcripts) for each semester. All application materials are due by the workday nearest to August 1 for fall semester courses and January 1 for spring semester courses.

Individuals applying as Visiting Post Baccalaureates for the summer term should apply to enroll in Rice’s Summer Sessions (https://registrar.rice.edu/students/summersessions/).

Tuition and Fees for Visiting Post Baccalaureate Program
Tuition and fee information can be found on the Cashier’s Website (https://cashier.rice.edu/). If a class fills with Rice degree-seeking students, instructors may drop Visiting Post Baccalaureates up to the end of the second week of class. In that case, the tuition (less the nonrefundable application fee) will be refunded. If a Visiting Post Baccalaureate withdraws, drops, or adds classes, the same rules regarding grades, refunds, and applicable fees apply as for degree-seeking graduate students. There is no refund for dropping a class after the second week as long as the student stays enrolled in at least one other class. Pro-rated refunds for complete withdrawals are according to the deadlines listed on the Academic Calendar (https://registrar.rice.edu/calendars/). Please visit the Summer Sessions for Visiting Students (https://registrar.rice.edu/students/summersessions/) page for information pertaining to summer sessions.

Please Note: Financial assistance is not available for Visiting Post Baccalaureate students.

Visiting Researchers
Visiting researchers are undergraduate students who are enrolled in a degree-seeking program at another institution and, at the invitation by a Rice faculty member or department, engage in experiential research-specific learning. Such research is meant to assist the faculty with research efforts or to gain research experience which the student might apply toward degree requirements at his or her home institution.

Visiting researchers should first work with the academic department to apply for the specific research program. International visiting researchers and departments must also work with the Office of International Students and Scholars (https://oiss.rice.edu/vsugresearch/) to obtain the necessary pre-certifications, if applicable.

For more information, see the Office of the Registrar’s website: https://registrar.rice.edu/students/visiting/researcher/.

Visiting Undergraduate Students
A student who wishes to spend a semester or a year at Rice taking courses for credit to be applied toward his or her undergraduate degree at another school may apply for admission as a visiting student through the Office of Admission (https://admissions.rice.edu/). The student’s application should be accompanied by the $75 application fee, an official high school transcript, an official transcript of college work to date, an SAT or ACT score, and recommendations from the dean of students and a faculty member who has taught the student within the past academic year. Visiting student applications are available on the Admission website (https://futureowls.rice.edu/futureowls/Visiting_Student.asp) and should be submitted by March 15 for the fall semester.

Visiting students are assigned membership to one of the residential colleges during their stay and are charged the same fees as other undergraduates. In classes where enrollment is limited because of space or other considerations, candidates for Rice degrees have priority over visiting students for registration.

Visiting students may apply to transfer to Rice only after having left Rice for at least one semester.

Please Note: Financial assistance is not available for visiting students.
Faculty Grading Guidelines

The Committee on Examinations and Standing has drawn up the following guidelines on grading. Additional information is available in both the undergraduate (p. 11) and graduate (p. 49) student sections under the heading of 'Grades.'

- The evaluation of the student’s performance in a course and a decision on the appropriate grade is the responsibility of the designated instructor or instructors in the course.
- No student should be given an extension of time or opportunities to improve a grade that are not available to all members of the class, except for verified illness or justified absence from campus. No course assignments may be due between the last day of classes and the first day of the final examination period.
- Students in independent study courses are not to be allowed an extension beyond the time when grades are due. Faculty are to submit grades at the end of the semester for such students based on work completed during the semester. The instructor directing the independent study assumes responsibility with the student for ensuring that the work undertaken is appropriate to the span of a semester and for determining the degree credit to be received.
- The basis for grading and the expectations on all written assignments or tests should be clearly explained to the class in advance, preferably in writing at the beginning of the semester. The instructor should explain clearly which assignments or homework are covered by the honor system and which are not. To prevent allegations of plagiarism on written assignments, students should be warned that all direct and indirect quotations from other sources should be properly acknowledged. The instructor should explain the extent to which the student’s paper is expected to be independent of the references and clearly distinguishable from them.
- Instructors should be willing to give any student an explanation of his or her grade as consistent with the grading for the rest of the class. For this reason, the committee urges the faculty to preserve all examinations and written material not returned to students, as well as grade records, for at least the following semester so that students may, if they wish, review with their instructor the basis for the grade received.
- Instructors may not change a semester grade after the grade has been submitted to the Office of the Registrar, except when there is a clerical error in calculating the grade. This is a long-standing university rule of which the faculty are reminded by the Office of the Registrar at the end of each semester. It is designed, in part, to protect the faculty from student pressure for grade changes. All other grade changes, including retroactive change to withdrawal, incomplete, or other, must be approved by the Committee on Examinations and Standing on the basis of a written petition from the student and on information from the instructor.
- There is no university requirement that a final examination be given in a course. It is university policy that final examinations that cover more than the material since the last examination, that are the only exam in the course, or that are comprehensive of the entire course may be given only during the final examination period.

The chair of the Committee on Examinations and Standing, the Office of the Dean of Undergraduates, or the dean of graduate and postdoctoral studies will be glad to advise any faculty member faced with exceptional circumstances that may justify special consideration. Students may petition the committee or, for graduate students, their department chair concerning the application of these guidelines. Suspected or possible violations of the honor system should be submitted to the Honor Council.

Academic Progress Reviews for Graduate Students

Graduate programs must establish mechanisms for tracking, reviewing, and documenting academic progress of graduate students on an ongoing basis and must provide graduate students a written assessment of their academic progress at least annually. In some graduate programs this ongoing progress review is carried out by a student’s thesis committee, while in others it is carried out by a standing faculty committee. Although a student’s supervisor plays an important role in reviewing the student’s academic progress, the responsibility for conducting the review process lies with the program and requires the involvement of additional faculty members in the program. For graduate students who are primarily engaged in coursework, for example, professional master’s students, the transcript is an adequate form of written assessment.

Non-Traditional Coursework

Courses tailored for individual students provide a valuable opportunity for them to pursue an academic or professional interest under the supervision of a Rice faculty member. Such courses are typically titled as independent study or research, directed reading, or internships. Although the organization of these courses is quite variable, they are subject to the same basic requirements as other course offerings. In particular:

- The subject matter and intellectual level of the course must be appropriate for Rice.
- The instructor of record must hold a regular faculty appointment at Rice. This instructor is responsible for submitting the final grade, in consultation with the student’s immediate supervisor, if appropriate.
• The course must have a written syllabus that meets published Rice Syllabus Standards (p. 91). In addition, the syllabus must include a description of anticipated activities and topical content.

• Credit hours assigned are subject to the same amount-of-work considerations as other courses. Credit hours will be awarded in accordance with the Rice credit hour guidelines (https://registrar.rice.edu/facstaff/contact_hours/) and fixed at the time of registration.

• All Registrar deadlines for registration, add/drop, completion of course work, and grade submission must be met.

Syllabus Standards

Faculty members and course instructors are required to provide a course syllabus to students on or before the first day of class. The syllabus should be uploaded into ESTHER, and may additionally be distributed in hard copy and/or on Canvas. For archiving purposes, updated versions of the course syllabus can be uploaded into ESTHER through the end of the semester. Each syllabus must include the following instructions:

1. Instructor’s name, office number, and email address
2. Office hours or a statement of either an “open-door” policy or hours by appointment
3. Overall course objectives and expected learning outcomes
4. Grade policies
5. Absence policies
6. List of required texts
7. Special materials required for the class, if any
8. Number of required examinations and papers
9. Statement of expectations regarding course work and the Rice Honor Code
10. A statement encouraging any student with a disability that requires accommodation to contact both the course instructor and Disability Resource Center
11. It is permissible to include a statement indicating that the information contained in the course syllabus, other than the absence policies, may be subject to change with reasonable advance notice, as deemed appropriate by the instructor.

The Center for Teaching Excellence (https://cte.rice.edu/) provides a syllabus outline (https://cte.rice.edu/syllabus/) that aids in meeting the above requirements.
PROGRAMS OF STUDY


The General Announcements (GA) is the official Rice curriculum. In the event that there is a discrepancy between the GA and any other websites or publications, the GA shall prevail as the authoritative source.

- Accounting (p. 100)
- African Studies (p. 104)
- Air Force Science (p. 107)
- Ancient Mediterranean Civilizations (p. 108)
- Anthropology (p. 112)
- Applied Physics (p. 117)
- Architecture (p. 121)
- Art History (p. 132)
- Asian Studies (p. 143)
- Bioengineering (p. 146)
- BioSciences (p. 156)
- Bioscience and Health Policy (p. 184)
- Business (p. 188)
- Chemical and Biomolecular Engineering (p. 274)
- Chemical Physics (p. 286)
- Chemistry (p. 288)
- Cinema and Media Studies (p. 296)
- Civic Leadership (p. 298)
- Civil and Environmental Engineering (p. 302)
- Classical Studies (p. 324)
- Classical and European Studies (p. 327)
- Cognitive Sciences (p. 328)
- College Courses (p. 333)
- Computational and Applied Mathematics (p. 334)
- Computational Science and Engineering (p. 342)
- Computer Science (p. 346)
- Critical and Cultural Theory (p. 360)
- Data Science (p. 362)
- Earth, Environmental, and Planetary Sciences (p. 364)
- Economics (p. 374)
- Education (p. 381)

- Electrical and Computer Engineering (p. 389)
- Energy and Water Sustainability (p. 404)
- Energy Economics (p. 406)
- Engineering Design (p. 409)
- Engineering Leadership (p. 411)
- English (p. 413)
- Environmental Analysis (p. 424)
- Environmental Science (p. 429)
- Environmental Studies (p. 442)
- European Studies (p. 445)
- Financial Computation and Modeling (p. 449)
- French Studies (p. 451)
- German Studies (p. 454)
- Global Affairs (p. 456)
- Global Health Technologies (p. 459)
- Gnosticism, Esotericism and Mysticism (p. 463)
- History (p. 465)
- Human-Computer Interaction and Human Factors (p. 478)
- Humanities Research Center (p. 480)
- Industrial Engineering (p. 481)
- Jewish Studies (p. 485)
- Kinesiology (p. 489)
- Languages and Intercultural Communication (p. 494)
- Latin American Studies (p. 515)
- Liberal Studies (p. 519)
- Lifetime Physical Activity Program (p. 524)
- Linguistics (p. 524)
- Managerial Studies (p. 529)
- Materials Science and NanoEngineering (p. 531)
- Mathematical Economic Analysis (p. 544)
- Mathematics (p. 547)
- Mechanical Engineering (p. 553)
- Medical Humanities (p. 564)
- Medieval and Early Modern Studies (p. 568)
- Military Science (p. 573)
- Museums and Cultural Heritage (p. 575)
- Music (p. 578)
- Naval Science (p. 747)
- Neuroscience (p. 748)
- Philosophy (p. 754)
- Physics and Astronomy (p. 758)
- Political Science (p. 772)
- Politics, Law and Social Thought (p. 776)
- Poverty, Justice and Human Capabilities (p. 779)
- Program in Writing and Communication (p. 785)
- Psychological Sciences (p. 785)
- Religion (p. 797)
- Science Teaching (p. 806)
- Social Policy Analysis (p. 808)
- Sociology (p. 812)
- Space Studies (p. 817)
- Spanish, Portuguese and Latin American Studies (p. 822)
Departments and Programs

The General Announcements (GA) is the official Rice curriculum. In the event that there is a discrepancy between the GA and any other websites or publications, the GA shall prevail as the authoritative source.

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<p>| Applied Physics  | Applied Physics | NS | - | MS*, PhD (p. 118) |
| Architecture     | Architecture    | AR | BA (p. 124) | -        |
| Art History      | Art History     | HU | BA (p. 133) | MA*, PhD (p. 141) |
| Asian Studies    | Asian Studies   | HU | BA (p. 144) | -        |
| Astronomy        | Physics and Astronomy | NS | BA (p. 759) | -        |
| Astrophysics     | Physics and Astronomy | NS | BS (p. 762) | -        |
| Bassoon Performance | Music     | MU | BMus (p. 612) | AD (p. 581), MMus (p. 683) |
| Department and Program                          | Department/Program          | BS (p. 161), BA (p. 164), MS (p. 178), BS (p. 169), Minor (p. 181), MS*, PhD |  | BA (p. 164) -  |  | BA (p. 210) - |  |  |  |
|-----------------------------------------------|----------------------------|---------------------------------------------------------------------------|  |  |  |  |  |  |  |  |
| Biochemistry and Cell Biology                 | Biosciences                | NS (<a href="https://ga.rice.edu/programs-study/departments-programs/natural-sciences/">https://ga.rice.edu/programs-study/departments-programs/natural-sciences/</a>) |  |  |  |  |  |  |  |  |
| Bioengineering                                | Bioengineering             | EN (<a href="https://ga.rice.edu/programs-study/departments-programs/engineering/">https://ga.rice.edu/programs-study/departments-programs/engineering/</a>) |  |  |  |  |  |  |  |  |
| Biological Sciences                           | Biosciences                | NS (<a href="https://ga.rice.edu/programs-study/departments-programs/natural-sciences/">https://ga.rice.edu/programs-study/departments-programs/natural-sciences/</a>) |  |  |  |  |  |  |  |  |
| Bioscience and Health Policy                  | Biosciences                | NS (<a href="https://ga.rice.edu/programs-study/departments-programs/natural-sciences/">https://ga.rice.edu/programs-study/departments-programs/natural-sciences/</a>) |  |  |  |  |  |  |  |  |
| Business                                      | Business                   | JS (<a href="https://ga.rice.edu/programs-study/departments-programs/business/">https://ga.rice.edu/programs-study/departments-programs/business/</a>) |  |  |  |  |  |  |  |  |
| Cello Performance                             | Music                      | MU (<a href="https://ga.rice.edu/programs-study/departments-programs/music/">https://ga.rice.edu/programs-study/departments-programs/music/</a>) |  |  |  |  |  |  |  |  |
| Chemical Engineering                          | Chemical and Biomedical Engineering | EN (<a href="https://ga.rice.edu/programs-study/departments-programs/engineering/">https://ga.rice.edu/programs-study/departments-programs/engineering/</a>) |  |  |  |  |  |  |  |  |
| Chemical Physics                              | Chemical Physics           | NS (<a href="https://ga.rice.edu/programs-study/departments-programs/natural-sciences/">https://ga.rice.edu/programs-study/departments-programs/natural-sciences/</a>) |  |  |  |  |  |  |  |  |
| Chemistry                                    | Chemistry                  | NS (<a href="https://ga.rice.edu/programs-study/departments-programs/natural-sciences/">https://ga.rice.edu/programs-study/departments-programs/natural-sciences/</a>) |  |  |  |  |  |  |  |  |
| Cinema and Media Studies                      | Cinema and Media Studies   | HU (<a href="https://ga.rice.edu/programs-study/departments-programs/humanities/">https://ga.rice.edu/programs-study/departments-programs/humanities/</a>) |  |  |  |  |  |  |  |  |
| Civic Leadership                              | Center for Civic Leadership| UG (<a href="https://ga.rice.edu/programs-study/departments-programs/interdisciplinary">https://ga.rice.edu/programs-study/departments-programs/interdisciplinary</a>) |  |  |  |  |  |  |  |  |
| Civil Engineering                             | Civil and Environmental Engineering | EN (<a href="https://ga.rice.edu/programs-study/departments-programs/engineering/">https://ga.rice.edu/programs-study/departments-programs/engineering/</a>) |  |  |  |  |  |  |  |  |
| Civil and Environmental Engineering           | Civil and Environmental Engineering | BA (p. 210) - |  |  |  |  |  |  |  |  |
| Clarinet Performance                          | Music                      | MU (<a href="https://ga.rice.edu/programs-study/departments-programs/music/">https://ga.rice.edu/programs-study/departments-programs/music/</a>) |  |  |  |  |  |  |  |  |
| Classical Studies                             | Classical Studies          | HU (<a href="https://ga.rice.edu/programs-study/departments-programs/humanities/">https://ga.rice.edu/programs-study/departments-programs/humanities/</a>) |  |  |  |  |  |  |  |  |
| Cognitive Sciences                            | Cognitive Sciences         | SS (<a href="https://ga.rice.edu/programs-study/departments-programs/social-sciences/">https://ga.rice.edu/programs-study/departments-programs/social-sciences/</a>) |  |  |  |  |  |  |  |  |</p>
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Accounting

Systems, Synthetic, and Physical Biology

Teaching and Learning Center for Teaching Excellence

Trombone Performance Music

Trumpet Performance Music

Tuba Performance Music

Viola Performance Music

Violin Performance Music

Visual and Dramatic Arts

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The Master of Accounting degree, offered by the Jones Graduate School of Business, is designed to enable students with a top-tier non-accounting undergraduate education to complete the educational requirements for becoming a certified public accountant. Certified public accountants conduct independent audits and provide accounting, tax, and consulting services. The program prepares students to enter careers in public accounting, corporate accounting, management accounting, governmental accounting, financial analysis, and law enforcement.

Graduates of the program will excel in analytics, critical thinking, ethics, judgment, and communications, built on outstanding technical accounting skills. An understanding of global capital markets and macroeconomic forces will complement graduates’ accounting expertise, along with proficiency in corporate finance, risk and valuation.

Accounting does not currently offer an academic program at the undergraduate level.

Master's Program

- Master of Accounting (MAcc) Degree (p. 102)

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Peter Rodriguez

Deputy Dean of Academic Affairs

Jefferson D. Fleming

Vocal Performance Music

MU (https://ga.rice.edu/programs-study/departments-programs/music/)

BMus (p. 654)

DMA (p. 681), MMus (p. 744)

Music

MU (https://ga.rice.edu/programs-study/departments-programs/music/)

BMus (p. 644)

AD (p. 602), MMus (p. 729)

* Although students are not normally admitted to this degree program, graduate students may earn this degree as they work towards the PhD.

† This program is currently inactive and is not accepting applications for admission.
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Michelle ‘Mikki’ R. Hebl
David M. Lane
Frederick L. Oswald

Visiting Assistant Professor
Constance Elise Porter

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: MACC

Department Description and Code
• Management: MGMT
Master of Accounting (MAcc) Degree

Program Learning Outcomes for the MAcc Degree

Upon completing the MAcc degree, students will be able to:

1. Demonstrate technical proficiency in the major aspects of public accounting.
2. Demonstrate financial valuation expertise.
3. Demonstrate strong written and verbal business communication skills.
4. Demonstrate a sound knowledge of public policy and corporate governance.
5. Demonstrate a critical and analytical approach to problem solving.

Requirements for the MAcc Degree

The MAcc degree is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MAcc degree must complete:

- A minimum of 17 courses (36 credit hours) to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of 2 semesters of full-time graduate study at Rice University.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master's degree with a minimum grade of C (2.00 grade points) in each course.

MAcc coursework is comprised of 24 credit hours of accounting coursework, 9 credit hours of business coursework, and 3 credit hours of ethics coursework.

The MAcc degree program has a lockstep curriculum that students typically complete during contiguous fall and spring semesters. With approval from the MAcc program director, a student may take up to four semesters to complete the program. This approval would be granted for internship opportunities and other commitments. In such instances, the program must be completed in contiguous fall and spring semesters, and the student must begin the program in a fall semester. Students requesting the three-semester program option or the four-semester program option must explain in their application the reason for requesting the extended program option, given the academic goals of the program. Students approved for the three- or four-semester program option must agree to follow the specific course sequence as required by the program director to ensure a meaningful pedagogic experience.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/degeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MACC 511</td>
<td>ISSUES IN FINANCIAL REPORTING II</td>
<td>3</td>
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<tr>
<td>MACC 512</td>
<td>FINANCIAL STATEMENT ANALYSIS AND VALUATION</td>
<td>3</td>
</tr>
<tr>
<td>MACC 513</td>
<td>ISSUES IN FINANCIAL REPORTING III</td>
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</tr>
<tr>
<td>MACC 514</td>
<td>FAIR VALUE ACCOUNTING</td>
<td>1.5</td>
</tr>
<tr>
<td>MACC 531</td>
<td>ADVANCED MANAGEMENT ACCOUNTING</td>
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</tr>
<tr>
<td>MACC 541</td>
<td>ACCOUNTING CONTROL SYSTEMS</td>
<td>1.5</td>
</tr>
<tr>
<td>MACC 542</td>
<td>ADVANCED AUDITING</td>
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</tr>
<tr>
<td>MACC 571</td>
<td>FEDERAL TAXATION I</td>
<td>3</td>
</tr>
<tr>
<td>MACC 572</td>
<td>FEDERAL TAXATION II</td>
<td>1.5</td>
</tr>
<tr>
<td>MACC 581</td>
<td>GOVERNMENT AND NOT-FOR-PROFIT ACCOUNTING</td>
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</table>

Ethics Coursework

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<thead>
<tr>
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<tbody>
<tr>
<td>MACC 501</td>
<td>ACCOUNTING ETHICS AND PROFESSIONALISM</td>
<td>3</td>
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<tr>
<td>MACC 591</td>
<td>ACCOUNTING THEORY</td>
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</table>

Business Coursework

<table>
<thead>
<tr>
<th>Code</th>
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<tr>
<td>MACC 502</td>
<td>BUSINESS LAW FOR ACCOUNTANTS</td>
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</tr>
<tr>
<td>MACC 503</td>
<td>ACCOUNTING AND AUDITING REGULATION</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Total Credit Hours 36

Footnotes and Additional Information

1 MACC 503 and MACC 506 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade. As S/U courses, they do not apply to the requirement of a minimum grade of C (2.00 grade points) in each required course.
Under special circumstances and with the permission of the MAcc program director, students may additionally take MACC 500 (Internship in Accounting) and/or MACC 599 (Independent Study). Neither of those courses, however, would substitute for any of the required MAcc coursework. MACC 500 is for students performing an accounting internship immediately before or during the MAcc program. MACC 599 may be taken in the summer, fall, or spring semesters in addition to the required curriculum. Consult the MAcc program director for more information.

Proposed Plan-of-Study

The following plan-of-study represents the current lockstep two-semester sequence in which students pursuing the MAcc degree complete the required coursework. Substitution of courses may be made on a rare, exception basis with permission of the program director.

As noted above, in some instances students may apply for, and be permitted to, pursue the MAcc degree on the three- or four-semester program option. In those instances, students must agree to follow a specific course sequence as required by the program director. Please contact the program director for details.

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td><strong>First Year</strong></td>
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</tr>
<tr>
<td><strong>1st Semester</strong></td>
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</tr>
<tr>
<td>MACC 501 ACCOUNTING ETHICS AND PROFESSIONALISM</td>
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</tr>
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<td>MACC 511 ISSUES IN FINANCIAL REPORTING II</td>
<td>3</td>
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<tr>
<td>MACC 512 FINANCIAL STATEMENT ANALYSIS AND VALUATION</td>
<td>3</td>
</tr>
<tr>
<td>MACC 571 FEDERAL TAXATION I</td>
<td>3</td>
</tr>
<tr>
<td><strong>Fall Semester I</strong></td>
<td></td>
</tr>
<tr>
<td>MACC 504 FINANCIAL FUTURES AND OPTIONS</td>
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</tr>
<tr>
<td>MACC 506 JUDGMENT AND DECISION MAKING FOR ACCOUNTANTS</td>
<td>1.5</td>
</tr>
<tr>
<td><strong>Fall Semester II</strong></td>
<td></td>
</tr>
<tr>
<td>MACC 514 FAIR VALUE ACCOUNTING</td>
<td>1.5</td>
</tr>
<tr>
<td>MACC 581 GOVERNMENT AND NOT-FOR-PROFIT ACCOUNTING</td>
<td>1.5</td>
</tr>
<tr>
<td><strong>Total Credit Hours</strong></td>
<td>18</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2nd Semester</strong></td>
<td></td>
</tr>
<tr>
<td>MACC 502 BUSINESS LAW FOR ACCOUNTANTS</td>
<td>3</td>
</tr>
<tr>
<td>MACC 513 ISSUES IN FINANCIAL REPORTING III</td>
<td>3</td>
</tr>
<tr>
<td>MACC 591 ACCOUNTING THEORY</td>
<td>3</td>
</tr>
<tr>
<td><strong>Spring Semester I</strong></td>
<td></td>
</tr>
<tr>
<td>MACC 503 ACCOUNTING AND AUDITING REGULATION</td>
<td>1.5</td>
</tr>
<tr>
<td>MACC 531 ADVANCED MANAGEMENT ACCOUNTING</td>
<td>1.5</td>
</tr>
<tr>
<td>MACC 572 FEDERAL TAXATION II</td>
<td>1.5</td>
</tr>
<tr>
<td><strong>Spring Semester II</strong></td>
<td></td>
</tr>
<tr>
<td>MACC 541 ACCOUNTING CONTROL SYSTEMS</td>
<td>1.5</td>
</tr>
<tr>
<td>MACC 542 ADVANCED AUDITING</td>
<td>1.5</td>
</tr>
<tr>
<td>MACC 562 ACCOUNTING AND DATA ANALYTICS</td>
<td>1.5</td>
</tr>
<tr>
<td><strong>Total Credit Hours</strong></td>
<td>18</td>
</tr>
</tbody>
</table>

Policies for the MAcc Degree

Admission Requirements

For general university requirements, see Graduate Degrees (p. 49). Criteria for evaluating participants include: completion of (or plans for completion of) required undergraduate prerequisite courses, academic and professional accomplishments, GMAT or GRE test score, an interview, and, possibly, an admissions assessment examination. Current Rice students and Rice alumni are exempted from the test score requirement, although they may provide a GMAT or GRE score at their discretion. Applicants with exceptional undergraduate academic records are eligible to apply for a standardized test score requirement waiver.

Rice Undergraduates

Students who are on track to fulfill the requirements of the Rice business minor prior to completing their undergraduate degree are eligible for admission to the program. Non-business minors are also eligible for admission if specific prerequisite courses will be completed before undergraduate graduation; the MAcc program director will consult prospective applicants to determine what prerequisite classes are needed. All MAcc applicants, regardless of being a business minor, need to have completed the introductory financial accounting course (BUSI 305), the first intermediate financial accounting course (BUSI 405), and the auditing course (BUSI 440) prior to beginning the MAcc program. Students potentially interested in the MAcc program are encouraged to take BUSI 305 in their sophomore year. Rice undergraduates can apply and gain conditional admission to the MAcc program as early as the fall semester of their junior year and as late as the spring semester of their senior year. Conditionally admitted students who lack any of the prerequisite accounting courses must take appropriate classes to correct their deficiency.

Non-Rice Undergraduates

Students should apply in the fall semester of their senior year. Admitted students who lack the prerequisite accounting course work must take summer pre-term classes.

Academic and Professional Standards

Students must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the MAcc program, all students agree to be governed by the standards and procedures for dismissal or disciplinary action stated below.

Academic Standards

A minimum overall grade point average of 2.67 (B-) is required for graduation. All courses taken towards the MAcc degree are counted in the overall grade point average calculation.

Students with an overall grade point average lower than 2.67 at the end of any semester will be notified of dismissal. A student who has been notified of dismissal may appeal to the Academic Standards Committee of the Jones Graduate School of Business. The committee will decide, based on the circumstances of the appeal, whether the student:

1. may resume studies on probation,
2. is to be suspended for one semester or an academic year, or
3. is to be dismissed from the MAcc program.

Students are removed from probation only upon achieving an overall grade point average of at least 2.67 at the end of the following semester of work.
Students proposing to return after a period of academic suspension must apply to the Academic Standards Committee and receive permission to be readmitted. If permitted to return, the student will pay the current rate of tuition, based upon the class of students s/he is joining.

Only grades of C (2.00 grade points) and above are counted for credit toward graduation. If a student receives a grade below a C (2.00 grade points) in a course, s/he must meet with the program director to determine remediation. Any plans for remediation must be approved by the Academic Standards Committee.

Professional Standards
Masters students are held to the high standards of professional conduct expected of managers—standards substantially exceeding those expected of them simply as students. Students may be dismissed or suspended for failure to meet professional standards, as defined in the University Code of Conduct (p. 82). The dean may place a student on disciplinary probation for unacceptable conduct, giving oral and written notice that future misconduct will lead to filing specific charges. (This probationary notice, however, is not required as a precondition for filing specific charges.)

Guidelines for Appealing Academic Dismissal
The Process
A student who wishes to appeal a dismissal should address the following issues in a letter to the Academic Standards Committee. The student must send the letter to the chair of the Academic Standards Committee.

1. What circumstances led to your academic performance last semester and to what degree were those circumstances beyond your control?
2. If your performance in a particular course(s) last semester was below par, describe any circumstances specific to that course that explain your performance.
3. Do you expect the circumstances that created the problems for you last semester to change next semester? If so, how?

Students may include any additional information they deem relevant in the appeal letter.

Timing
If the student intends to appeal, the letter to the committee must be filed within one week after receiving a dismissal letter. If a student plans to appeal, he/she should continue to attend classes. It is important to keep up with studies during the appeal process. If the appeal is accepted, the student may continue progress towards the completion of their degree.

Appeals
Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.

Confidentiality
The Family Educational Rights and Privacy Act of 1974 and amendments govern the records of actions related to appeals.

Grade Appeal Process
Once a course grade has been assigned by an instructor, it is generally considered final and is rarely changed for any reason other than calculation or transcription errors. The procedure below outlines the process by which a student may appeal a course grade.

1. The student should first pursue any grading question with the instructor following the formal or informal process the instructor has outlined for the course.
2. If the matter is not resolved in step 1 above, the student must file a written appeal to the instructor and send a copy to the senior associate dean of degree programs. This written appeal must be filed no later than two weeks after the final grade for a course was assigned.
3. The instructor must schedule a meeting with the student within two weeks of receiving the written appeal to further discuss the appeal with the student. Notice of the appeal time and date will be provided by the instructor to the senior associate dean of degree programs.
4. If step 3 does not resolve the issue to the satisfaction of both parties, the student may appeal to the Academic Standards Committee by sending a written notice describing the grounds for the appeal within two weeks of the date of the scheduled meeting in step 3.
5. The Academic Standards Committee will seek out information on the appeal from the instructor and the student and, at its discretion, hold a hearing to further consider the matter. The decision of the Academic Standards Committee will be rendered within 4 weeks of receiving a written notice of appeal (step 4).
6. Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.
7. In the event that the protested grade is necessary for the student to graduate, an accelerated schedule will be followed.

The Family Educational Rights and Privacy Act of 1974 and amendments govern records of these actions.

Additional Information
For additional information, please see the Accounting website: https://business.rice.edu/academic-program/master-accounting-macc.

Opportunities for the MAcc Degree
Additional Information
For additional information, please see the Accounting website: https://business.rice.edu/academic-program/master-accounting-macc.

African Studies
Contact Information
African Studies
https://africanstudies.rice.edu
326 Humanities Building
713-348-4947

Daniel Domingues Da Silva
Program Co-Director
domingues@rice.edu

Kerry R. Ward
Program Co-Director
kward@rice.edu
African Studies is a broad-ranging field that is committed to an interdisciplinary approach to the study of African peoples and their complex histories, cultures, and languages. Drawn from the Schools of Social Science and Humanities, African Studies at Rice University has strengths in archaeological and anthropological research, historical studies, African religions and theology, African arts, and global health technologies. These foci provide a unique opportunity for students broadly interested in historical, cultural, African diaspora studies, and contemporary issues and will attract students preparing for career fields related to their interest in Africa, including academia (potential applicants to graduate school, Fulbright, or other competitive scholarships), development, diplomacy, business and finance, governance, global health, law, and others.

The African Studies minor at Rice benefits undergraduate students by providing a course of study to explore the richness and complexity of the continent and its place in issues of wider global concern and import. The required interdisciplinary course(s) allow students to traverse departments and schools, creating links between diverse intellectual trajectories. Through study in the African Studies minor, students have the opportunity to appreciate the relationship contemporary Africa has with the large African Diaspora, and to understand not only the place of Africa in global histories and networks, but the crucial role that it has played in them.

**Minor**
- Minor in African Studies (p. 105)

African Studies does not currently offer an academic program at the graduate level.

**Co-Directors**
Daniel Domingues Da Silva
Kerry R. Ward

**Advisors**
Jeffrey B. Fleisher
Daniel Domingues Da Silva

**Professors**
Elias K. Bongmba
Susan Keech McIntosh

**Associate Professors**
Alexander X. Byrd
Jacqueline Couti
Jeffrey B. Fleisher
Kerry R. Ward

**Assistant Professor**
Daniel Domingues Da Silva

**Steering Committee**
Elias K. Bongmba
Alexander X. Byrd
Daniel Domingues Da Silva
Jeffrey B. Fleisher
Susan Keech McIntosh

Kerry R. Ward

**Description and Code Legend**

*Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:*

**Course Catalog/Schedule**
- Course offerings/subject codes: Courses from various subjects may apply towards this program

**Program Description and Code**
- African Studies: AFST

**Undergraduate Minor Description and Code**
- Minor in African Studies: AFST

**CIP Code and Description**
- AFST Minor: CIP Code/Title: 05.0101 - African Studies

Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: [https://nces.ed.gov/ipeds/cipcode/](https://nces.ed.gov/ipeds/cipcode/)

**Minor in African Studies**

**Program Learning Outcomes for the Minor in African Studies**

Upon completing the minor in African Studies, students will be able to:

1. Demonstrate the ability to complicate and challenge their understanding of African history, culture, and politics by critically examining the diversity of Africans' own historical and contemporary perspectives.

2. Understand topics in African Studies in their interdisciplinary contexts, including being able to make connections between African religions, cultures, and politics as well as understand reasons for changes to these relationships across historical time.

3. Identify and explain key theoretical developments in African Studies, in addition to being able to identify and apply interdisciplinary methodologies to topics in African Studies.

4. Demonstrate the ability to read critically and evaluate a variety of sources on African religious thought, customs, and spirituality and critically apply their insights from these sources.

**Requirements for the Minor in African Studies**

Students pursuing the minor in African Studies must complete:

- A minimum of 6 courses (18 credit hours) to satisfy minor requirements.
- A minimum of 3 courses (9 credit hours) taken at the 300-level or above.
- A maximum of 3 courses (9 credit hours) from study abroad or transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor, or where applicable,
the Program Director. (Course substitutions must be formally applied
and entered into Degree Works by the minor’s Official Certifier (https://
registrar.rice.edu/facstaff/degreeworks/officialcertifier/)). Students
and their academic advisors should identify and clearly document the
courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
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</table>

Minor Requirements

Core Requirement

Select 1 course from the following:

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 312 / MDEM 311</td>
<td>AFRICAN PREHISTORY</td>
<td>3</td>
</tr>
<tr>
<td>HIST 222</td>
<td>HISTORY OF EARLY AFRICA</td>
<td></td>
</tr>
<tr>
<td>RELI 111</td>
<td>INTRODUCTION TO AFRICAN RELIGIONS</td>
<td></td>
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</table>

Elective Requirements

Select 3-5 courses from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 312 / MDEM 311</td>
<td>AFRICAN PREHISTORY ¹</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 364</td>
<td>AFRICAN ARCHAEOLOGY FIELD TECHNIQUES</td>
<td></td>
</tr>
<tr>
<td>ANTH 370</td>
<td>ARCHAEOLOGICAL LABORATORY TECHNIQUES AND ANALYSIS</td>
<td></td>
</tr>
<tr>
<td>ANTH 463</td>
<td>WEST AFRICAN PREHISTORY</td>
<td></td>
</tr>
<tr>
<td>HIST 188</td>
<td>THE ATLANTIC WORLD: ORIGINS TO THE AGE OF REVOLUTION</td>
<td></td>
</tr>
<tr>
<td>HIST 222</td>
<td>HISTORY OF EARLY AFRICA ¹</td>
<td></td>
</tr>
<tr>
<td>HIST 229</td>
<td>HISTORY OF SOUTH AFRICA</td>
<td></td>
</tr>
<tr>
<td>HIST 301</td>
<td>FIGHTING THE ATLANTIC SLAVE TRADE</td>
<td></td>
</tr>
<tr>
<td>HIST 343</td>
<td>HISTORY OF AFRICA IN THE MUSEUM</td>
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</tr>
<tr>
<td>RELI 111</td>
<td>INTRODUCTION TO AFRICAN RELIGIONS ¹</td>
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<tr>
<td>RELI 113</td>
<td>INTRODUCTION TO CHRISTIANITY IN AFRICA</td>
<td></td>
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<td>RELI 338</td>
<td>THE CHURCH OF AFRICA</td>
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<td>RELI 340</td>
<td>THEOLOGY IN AFRICA</td>
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<td>RELI 342 / ANTH 343</td>
<td>NEW RELIGIOUS MOVEMENTS IN AFRICA</td>
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<td>RELI 348</td>
<td>CHRISTIANITY AND ISLAM IN AFRICA</td>
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<tr>
<td>RELI 423 / ANTH 423</td>
<td>AFRICAN MYTHS AND RITUALS</td>
<td></td>
</tr>
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<td>RELI 424</td>
<td>RELIGION AND POLITICS IN AFRICA</td>
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<tr>
<td>RELI 426</td>
<td>RELIGION AND LITERATURE IN AFRICA</td>
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</tr>
</tbody>
</table>

25% African Content ²

Select up to 2 courses from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 346 / ARCH 310 / COMP 316 / HART 316</td>
<td>VIRTUAL RECONSTRUCTION OF HISTORICAL CITIES</td>
<td>0-6</td>
</tr>
<tr>
<td>ENGL 379</td>
<td>THIRD WORLD LITERATURE</td>
<td></td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1. All courses listed in the Core Requirement also fulfill the 100%
African Content requirement. Any course not chosen to fulfill the
Core Requirement may be chosen to fulfill the 100% African Content
requirement.

2. The Elective Requirements (100% African Content and/or 25% African
Content coursework) must be taken from at least 3 of the following 6
subject codes: Anthropology (ANTH), English (ENGL), French (FREN),
Art History (HART), History (HIST), Religion (RELI).

3. Students must select at least 3 courses (9 credit hours) and may
select up to 5 courses (15 credit hours) from the 100% African
Content coursework, in addition to the Core Requirement.

4. Students may select up to 2 courses (6 credit hours) from the 25%
African Content coursework, or they may select additional 100%
African Content coursework to reach the 6 total required courses (18
credit hours) for the minor.

Policies for the Minor in African Studies

Program Restrictions and Exclusions

Students pursuing the minor in African Studies should be aware of the
following program restriction:

• As noted in Majors, Minors, and Certificates (p. 11), i.) students
may declare their intent to pursue a minor only after they have first
declared a major, and ii.) students may not major and minor in the
same subject.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer
Credit (p. 33). Some departments and programs have additional
restrictions on transfer credit. The Office of Academic Advising
maintains the university’s official list of transfer credit advisors on their
website: https://oaa.rice.edu. Students are encouraged to meet with their
academic program’s transfer credit advisor when considering transfer
credit possibilities.

Program Transfer Credit Guidelines

Students pursuing the minor in African Studies should be aware of the
following program-specific transfer credit guidelines:

• No more than 3 courses (9 credit hours) of transfer credit from
U.S. or international universities of similar standing as Rice may
apply towards the minor.

• No more than 2 courses (6 credit hours) of transfer credit
in African languages may be applied to the minor. This may
include courses on African languages or other individualized
study in African languages with advisor approval. ‘African
languages’ does not include the languages of European colonial
powers or Arabic. Other languages spoken on the continent,
including Afrikaans, will be accepted.
• Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

Distribution Credit Information
The determination of distribution eligibility is done as part of the new course creation process ([https://registrar.rice.edu/facstaff/courseprocess/](https://registrar.rice.edu/facstaff/courseprocess/)). As part of an annual roll call ([https://registrar.rice.edu/facstaff/distribution_credit/](https://registrar.rice.edu/facstaff/distribution_credit/)) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean's Offices of each of the academic schools.

Faculty and leadership in the academic schools are responsible for ensuring that the courses identified as distribution-eligible meet the criteria as set in the General Announcements (p. 26). Students are responsible for ensuring that they meet graduation requirements (p. 26) by completing coursework designated as distribution at the time of course registration.

Additional Information
For additional information, please see the African Studies website: [https://africanstudies.rice.edu/](https://africanstudies.rice.edu/)

Opportunities for the Minor in African Studies

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Additional Information
For additional information, please see the African Studies website: [https://africanstudies.rice.edu/](https://africanstudies.rice.edu/)

See [https://humanities.rice.edu/student-life](https://humanities.rice.edu/student-life) for tables of fellowships, prizes, and internships/practica that may be relevant to this minor.

Air Force Science
The Air Force Reserve Officer Training Corps (ROTC) program prepares men and women of character, commitment, and courage to assume leadership positions as commissioned officers in the active duty United States Air Force. On completion of the curriculum, students will have a thorough understanding of the core values, leadership, teamwork, and other requirements to be an effective officer in the world's greatest Air Force.

For additional information regarding Air Force Science, please see the program's website, at: [https://www.uh.edu/class/airforce/](https://www.uh.edu/class/airforce/)

Air Force Science is not a free-standing degree program; in addition to fulfilling the ROTC curriculum, candidates are required to successfully complete the degree program to which they have been admitted. Upon successful completion of both the Air Force Sciences curriculum and the conferral of their Rice undergraduate degree, the student will become an active duty commissioned officer in the United States Air Force.

Four-Year Program
The General Military Course (GMC) is the first half of the four-year ROTC program and is taken during the freshman and sophomore years. This program allows the student to experience Air Force ROTC without obligation (unless the student is on an Air Force ROTC scholarship).

Each semester of the GMC consists of one classroom hour of instruction as well as Leadership Laboratory each week.

During the first two years, the student will learn about the Air Force and the historical development of aerospace power.

During the summer preceding the junior year, the student will compete for the opportunity to attend a four-week Field Training Unit. Successful completion of field training is mandatory for entrance into the Professional Officer Course (POC), the junior and senior years of the four-year program.

As a junior, the student will study the core values, leadership, teamwork, and management tools required to become an effective Air Force officer.

During the senior year, students study the national security policy process and regional and cultural studies, participate in a war-game, and complete final requirements for commissioning as second lieutenants.

Leadership Laboratory
As an Air Force ROTC cadet, each student is required to attend an additional two-hour class known as Leadership Laboratory.

Although not part of the academic class requirement, it is an essential element of officer training. Leadership Laboratory is an intensive military training program in which students gain invaluable leadership and managerial experience while learning about the Air Force way of life. Students have numerous opportunities to hear guest speakers and panel discussions, participate in field trips, and experience practical leadership exercises.

AFROTC Scholarship Opportunities
In-College Scholarship Program (ICSP) is a highly competitive scholarship program aimed primarily at college freshmen and sophomores in any major (students with a bachelor's degree can compete to earn a master's degree). The ICSP awards cover tuition capped at either $18,000 per year plus $900 per year for books or $9,000 per year plus $900 per year for books.

The Express Scholarship Program is operated on a fully qualified basis: those who meet the qualifications are awarded the scholarship. Though the list of eligible college majors differs from year to year, the express scholarship covers full tuition per year and $900 for books. Currently, majors that qualify include: Electrical and Computer Engineering, and Strategic foreign languages. For the most up-to-date information, visit [https://www.afrotc.com/](https://www.afrotc.com/).

ROTC scholarship students incur a military obligation. For additional information on AFROTC scholarship opportunities, please visit the AFROTC website at [https://www.afrotc.com/](https://www.afrotc.com/) or call 1-800-4AFROTC.

Stipend
All AFROTC scholarship recipients and POC cadets receive a non-taxable monthly stipend. The annual stipend amount ranges from $2,000 per year to $4,000 per year depending on the recipient's enrollment year.
Field Training (FT)
Cadets completing the General Military Course attend four weeks of field training (FT) during the summer at Maxwell AFB, Alabama. Those who have not completed the GMC attend an extended FT Unit. This rigorous program of leadership training, physical conditioning and academics assesses the cadet's potential to be an Air Force officer.

Cadets also receive survival and firearms training and career information. Cadets receive travel pay and daily pay for FT.

Flight Orientation Program
All cadets can volunteer to participate in a joint Air Force ROTC/Civil Air Patrol flight orientation program. This consists of eight flights, four in the front seat of a small passenger aircraft and four additional flights in the back seat as an observer. A soaring program also is available in which cadets get four sorties in gliders. In addition, an abbreviated flying ground school course is taught in the ROTC classrooms using FAA textbooks. The flight program and ground school course are both free for all cadets.

Physical Fitness Training
Cadets meet twice per week at the University of Houston Alumni Center to perform physical fitness training. The training is mandatory and emphasizes push-ups, sit-ups, and running in order to pass the USAF physical fitness test.

Professional Development Training (PDT)
Cadets are eligible to compete to attend PDT during the summer months.

PDT consists of several programs, including:
- Tours of nearby active duty Air Force bases
- Soaring and free-fall parachuting at the United States Air Force Academy
- (USAFA)
- Cultural and Foreign Language Immersion
- Hands-on research at Air Force laboratories
- Shadowing a Air Force officer in Operation Air Force
- Internships at NASA and other government organizations

Cadets receive travel pay and daily pay for the majority of these programs.

For more information contact the Unit Admissions Officer at 713-743-4932/3704 or visit the University of Houston Air Force website at https://www.uh.edu/class/airforce/.

Summary
The mission of producing Air Force second lieutenants of character, commitment, and courage is more important than ever.

See AFSC in the Rice Course Schedule (these are taught at the University of Houston).

Air Force Science does not currently offer an academic program at the graduate level.

Commander and Professor
Lt. Colonel Lynn Bentley III

Associate Professors
Major Albert Meza
Major Shawn Owens

Ancient Mediterranean Civilizations
Contact Information
Ancient Mediterranean Civilizations
https://amc.rice.edu/
326 Humanities Building
713-348-4947
Michael R. Maas
Program Director
maas@rice.edu

This interdisciplinary major in the cultures of ancient Greece and Rome, Judaism, early Christianity, and early Islam, as well as their antecedents, explores these traditions both for their intrinsic interest and for the contributions each has made to contemporary Western society. Our combined focus on ancient cultural history in its broadest sense and on perspectives offered by cultural criticism enables students to examine the beginnings of the civilization in which they now participate.

Courses for this major address common questions about the transmission and transformation of cultures in the ancient Mediterranean world. Students examine sources, such as texts and artifacts that illuminate the process. They study how shifting cultural centers and frontiers in this world are delineated, and they explore the general integration and disintegration of specific ancient cultures. This major also offers opportunities for archaeological fieldwork and study abroad.

Rice is a sponsor of the American School of Classical Studies at Athens, the American School of Oriental Research, the American Academy in Rome, the American Research Center in Sofia, and the Intercollegiate Center for Classical Studies in Rome. Students majoring in Ancient Mediterranean Civilizations are encouraged to study in these programs as well as in the College Year in Athens program.

Bachelor's Program
- Bachelor of Arts (BA) Degree with a Major in Ancient Mediterranean Civilizations (p. 109)

Ancient Mediterranean Civilizations does not currently offer an academic program at the graduate level.

Director and Advisor
Michael R. Maas

Professors
David Cook
April D. DeConick
James D. Faubion
Matthias Henze
Michael R. Maas
Scott McGill
Susan Keech McIntosh
Donald Ray Morrison
Paula A. Sanders
Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule

• Course offerings/subject code: Courses from various subjects may apply towards this program

Program Description and Code

• Ancient Mediterranean Civilizations: AMCI

Undergraduate Degree Description and Code

• Bachelor of Arts degree: BA

Undergraduate Major Description and Code

• Major in Ancient Mediterranean Civilizations: AMCI

CIP Code and Description ¹

• AMCI Major/Program: CIP Code/Title: 30.2202 - Classical, Ancient Mediterranean and Near Eastern Studies and Archaeology

¹ Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Bachelor of Arts (BA) Degree with a Major in Ancient Mediterranean Civilizations

Program Learning Outcomes for the BA Degree with a Major in Ancient Mediterranean Civilizations

Upon completing the BA degree with a major in Ancient Mediterranean Civilizations, students will be able to:

1. Explain the historical trajectory of at least two of these Ancient Mediterranean Civilizations: Graeco-Roman, Islamic, Jewish, Christian.

2. Identify and explain how cultural, political, intellectual, religious, and other aspects of Ancient Mediterranean Civilizations have affected aspects of contemporary societies.

3. Create convincing arguments about one or more aspects of Ancient Mediterranean Civilizations through the evaluation and critical analysis of textual and material evidence.

Requirements for the BA Degree with a Major in Ancient Mediterranean Civilizations

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Ancient Mediterranean Civilizations must complete:

• A minimum of 10 courses (30-32 credit hours, depending on course selection) to satisfy major requirements.

• A minimum of 120 credit hours to satisfy degree requirements.

• A minimum of 60 credit hours outside of major requirements.

• A minimum of 5 courses (15 credit hours) taken at the 300-level or above.

Although not required, courses in ancient languages are recommended.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier [https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/].) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Ancient Mediterranean Civilizations</td>
<td>30-32</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Ancient Mediterranean Civilizations</td>
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Degree Requirements

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<td>Core Requirements</td>
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<tr>
<td></td>
<td>Select 3 courses from 3 of the 5 following categories (see course lists below)</td>
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<tr>
<td></td>
<td>Graeco-Roman Civilization</td>
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</tr>
<tr>
<td></td>
<td>Islamic Civilization</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Jewish Civilization</td>
<td></td>
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<tr>
<td></td>
<td>Christian Civilization</td>
<td></td>
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<td></td>
<td>Archaeological Methods and Theory</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Themes Across Time ¹</td>
<td>3-4</td>
</tr>
<tr>
<td></td>
<td>Select 1 course from the Themes Across Time category (see course list below)</td>
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</tr>
<tr>
<td></td>
<td>Comparative Studies ²</td>
<td>3-4</td>
</tr>
<tr>
<td></td>
<td>Select 1 course from the Comparative Studies category (see course list below)</td>
<td></td>
</tr>
</tbody>
</table>
Elective Requirements
Select 5 elective courses from any of the course lists below 15

Total Credit Hours Required for the Major in Ancient Mediterranean Civilizations 30-32

Additional Credit Hours to Complete BA Degree Requirements 28-30

University Graduation Requirements (p. 26) 60

Total Credit Hours 120

Footnotes and Additional Information
* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 Courses in this requirement address the creation, transmission, and reception of traditions in the Mediterranean world.

2 Courses in this requirement address two different cultural traditions or reflect similar themes but from different cultures (e.g. Women in Greece and Rome).

Course Lists to Satisfy Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>LATT 101 / MDEM 101</td>
<td>ELEMENTARY LATIN I</td>
<td>3</td>
</tr>
<tr>
<td>LATT 102 / MDEM 102</td>
<td>ELEMENTARY LATIN II</td>
<td>3</td>
</tr>
<tr>
<td>LATT 201 / MDEM 211</td>
<td>INTERMEDIATE LATIN I: PROSE</td>
<td>3</td>
</tr>
<tr>
<td>LATT 202 / MDEM 212</td>
<td>INTERMEDIATE LATIN II</td>
<td>3</td>
</tr>
<tr>
<td>LATT 302</td>
<td>ADVANCED LATIN</td>
<td>3</td>
</tr>
<tr>
<td>LATT 303</td>
<td>ADVANCED LATIN: PLAUTUS AND TERENCE</td>
<td>3</td>
</tr>
<tr>
<td>LATT 313</td>
<td>CICERO AND CATULLUS: LITERATURE AND SOCIETY IN THE ROMAN REPUBLIC</td>
<td>3</td>
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</tbody>
</table>

Islamic Civilization

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASIA 221 / RELI 221</td>
<td>THE LIFE OF THE PROPHET MUHAMMAD</td>
<td>3</td>
</tr>
<tr>
<td>RELI 223</td>
<td>QUR’AN AND COMMENTARY</td>
<td>3</td>
</tr>
<tr>
<td>RELI 440</td>
<td>ISLAM’S MYSTICAL AND ESOTERIC TRADITION</td>
<td>3</td>
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Jewish Civilization

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>HIST 381 / RELI 385</td>
<td>GOD, TIME AND HISTORY</td>
<td>3</td>
</tr>
<tr>
<td>RELI 104 / MDEM 103</td>
<td>INTRODUCTION TO JEWISH MYSTICISM</td>
<td>3</td>
</tr>
<tr>
<td>RELI 108</td>
<td>INTRODUCTION TO JUDAISM</td>
<td>3</td>
</tr>
<tr>
<td>RELI 122</td>
<td>THE BIBLE AND ITS INTERPRETERS</td>
<td>3</td>
</tr>
<tr>
<td>RELI 125 / HEBR 125</td>
<td>INTRODUCTION TO BIBLICAL HEBREW I</td>
<td>3</td>
</tr>
<tr>
<td>RELI 126 / HEBR 126</td>
<td>INTRODUCTION TO BIBLICAL HEBREW II</td>
<td>3</td>
</tr>
<tr>
<td>RELI 127</td>
<td>INTERMEDIATE BIBLICAL HEBREW III</td>
<td>3</td>
</tr>
<tr>
<td>RELI 203 / HIST 201</td>
<td>JUDAISM OF JESUS AND HILLEL</td>
<td>3</td>
</tr>
<tr>
<td>RELI 382</td>
<td>LOST JUDAISMS: THE APOCRYPHAL WRITINGS</td>
<td>3</td>
</tr>
<tr>
<td>RELI 383</td>
<td>THE DEAD SEA SCROLLS</td>
<td>3</td>
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</table>

Christian Civilization

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td>RELI 105 / MDEM 105</td>
<td>INTRODUCTION TO MEDIEVAL CHRISTIAN THOUGHT</td>
<td>3</td>
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<tr>
<td>RELI 122</td>
<td>THE BIBLE AND ITS INTERPRETERS</td>
<td>3</td>
</tr>
<tr>
<td>RELI 125 / HEBR 125</td>
<td>INTRODUCTION TO BIBLICAL HEBREW I</td>
<td>3</td>
</tr>
<tr>
<td>RELI 126 / HEBR 126</td>
<td>INTRODUCTION TO BIBLICAL HEBREW II</td>
<td>3</td>
</tr>
<tr>
<td>RELI 127</td>
<td>INTERMEDIATE BIBLICAL HEBREW III</td>
<td>3</td>
</tr>
<tr>
<td>RELI 243</td>
<td>THE BOOK OF GENESIS</td>
<td>3</td>
</tr>
<tr>
<td>RELI 271 / MDEM 271</td>
<td>MEDIEVAL POPULAR CHRISTIANITY</td>
<td>3</td>
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<tr>
<td>RELI 282</td>
<td>INTRODUCTION TO CHRISTIANITY</td>
<td>3</td>
</tr>
<tr>
<td>RELI 304</td>
<td>JESUS AND THE GOSPELS</td>
<td>3</td>
</tr>
<tr>
<td>RELI 307</td>
<td>BASIC COPTIC 1</td>
<td>3</td>
</tr>
<tr>
<td>RELI 308</td>
<td>BASIC COPTIC 2</td>
<td>3</td>
</tr>
<tr>
<td>RELI 309</td>
<td>BASIC COPTIC 3</td>
<td>1-3</td>
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<tr>
<td>RELI 365</td>
<td>PAUL AND THE NEW TESTAMENT</td>
<td>3</td>
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<tr>
<td>RELI 381</td>
<td>THE MESSIA</td>
<td>3</td>
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<tr>
<td>Code</td>
<td>Title</td>
<td>Credit Hours</td>
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<tr>
<td>----------</td>
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<tr>
<td>RELI 383</td>
<td>THE DEAD SEA SCROLLS</td>
<td>3</td>
</tr>
<tr>
<td>RELI 449</td>
<td>EARLY CHRISTIAN CONTROVERSIES</td>
<td>3</td>
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<tr>
<td></td>
<td><strong>Archaeological Methods and Theory</strong></td>
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<tr>
<td>ANTH 203</td>
<td>INTRODUCTION TO BIOLOGICAL ANTHROPOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 205</td>
<td>INTRODUCTION TO ARCHAEOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 312 / MDEM 311</td>
<td>AFRICAN PREHISTORY</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 345</td>
<td>THE POLITICS OF THE PAST: ARCHAEOLOGY IN SOCIAL CONTEXT</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 362</td>
<td>ARCHAEOLOGICAL FIELD TECHNIQUES</td>
<td>3</td>
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<tr>
<td>ANTH 363</td>
<td>THE ARCHAEOLOGY OF CITIES AND STATES</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 392</td>
<td>KINGS, QUEENS, AND COMMONERS: THE ARCHAEOLOGY OF ANCIENT MESOAMERICA</td>
<td>3</td>
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<tr>
<td>ANTH 425</td>
<td>ADVANCED TOPICS IN ARCHAEOLOGY</td>
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<tr>
<td>ANTH 460</td>
<td>ADVANCED ARCHAEOLOGICAL THEORY</td>
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</table>

**Themes Across Time**

Select 1 course from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>ANTH 363</td>
<td>THE ARCHAEOLOGY OF CITIES AND STATES</td>
<td>3</td>
</tr>
<tr>
<td>HART 101 / CLAS 102 / MDEM 111</td>
<td>INTRODUCTION TO THE HISTORY OF WESTERN ART I: ANTIQUITY TO GOTHIC</td>
<td>4</td>
</tr>
<tr>
<td>HIST 200</td>
<td>ANCIENT EMPIRES: ORIGINS OF WESTERN CIVILIZATIONS</td>
<td>3</td>
</tr>
<tr>
<td>HIST 308 / MDEM 308</td>
<td>THE WORLD OF LATE ANTIQUITY</td>
<td>3</td>
</tr>
<tr>
<td>HIST 381 / RELI 385</td>
<td>GOD, TIME AND HISTORY</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 201 / CLAS 201 / MDEM 201</td>
<td>HISTORY OF PHILOSOPHY I</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 301 / CLAS 301 / MDEM 301</td>
<td>ANCIENT AND MEDIEVAL PHILOSOPHY</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 307</td>
<td>SOCIAL AND POLITICAL PHILOSOPHY</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 327</td>
<td>HISTORY OF SOCIAL AND POLITICAL PHILOSOPHY</td>
<td>3</td>
</tr>
<tr>
<td>RELI 104 / MDEM 103</td>
<td>INTRODUCTION TO JEWISH MYSTICISM</td>
<td>3</td>
</tr>
<tr>
<td>RELI 315 / ASIA 315 / SWGS 315</td>
<td>GENDER AND ISLAM</td>
<td>3</td>
</tr>
</tbody>
</table>

**Comparative Studies**

Select 1 course from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 392</td>
<td>KINGS, QUEENS, AND COMMONERS: THE ARCHAEOLOGY OF ANCIENT MESOAMERICA</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>CLAS 336 / LING 336</strong> INTRO TO INDO-EUROPEAN</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>HIST 357 / MDEM 357</strong> JEWS AND CHRISTIANS IN MEDIEVAL EUROPE</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>PHIL 301 / CLAS 301 / MDEM 301</strong> ANCIENT AND MEDIEVAL PHILOSOPHY</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>RELI 112</strong> COMPARING CHRISTIANITIES</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>RELI 213</strong> THE PROPHET JEREMIAH: THE BIBLICAL BOOK AND ITS RECEPTION IN JUDAISM AND CHRISTIANITY</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>RELI 348</strong> CHRISTIANITY AND ISLAM IN AFRICA</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>RELI 384</strong> PILGRIMAGE AND CRUSADE</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>RELI 392</strong> JERUSALEM: HOLY CITY IN TIME AND IMAGINATION</td>
<td>3,4</td>
</tr>
</tbody>
</table>

**Policies for the BA Degree with a Major in Ancient Mediterranean Civilizations**

**Transfer Credit**

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

**Program Transfer Credit Guidelines**

Students pursuing the major in Ancient Mediterranean Civilizations should be aware of the following program-specific transfer credit guidelines:

- Request for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

**Distribution Credit Information**

The determination of distribution eligibility is done as part of the new course creation process (https://registrar.rice.edu/facstaff/courseprocess/). As part of an annual roll call (https://registrar.rice.edu/facstaff/distribution_credit/) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean's Offices of each of the academic schools.

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**Additional Information**

For additional information, please see the Ancient Mediterranean Civilizations website: https://amc.rice.edu/
Opportunities for the BA Degree with a Major in Ancient Mediterranean Civilizations

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Additional Information
For additional information, please see the Ancient Mediterranean Civilizations website:
https://amc.rice.edu/
See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this major.

Anthropology

Contact Information
Anthropology
https://anthropology.rice.edu/
572 Sewall Hall
713-348-4847

Eugenia Georges
Department Chair
nia@rice.edu

Jeffrey B. Fleisher
Director of Undergraduate Studies
jfleisher@rice.edu

A. Cymene Howe
Director of Graduate Studies
cymene@rice.edu

Anthropology is a discipline that encompasses many subjects of study, all related to understanding human beings and their cultures. A student may organize a major in one or more of anthropology’s principal fields or may combine a major in anthropology with one in another discipline. The goal of anthropology is to understand and interpret cultural and biological differences among human societies, both past and present.

The Rice Anthropology department includes diverse offerings in all major subfields of the subject. In archaeology there are courses on the rise and decline of past civilizations and cultures, as well as practical courses that permit students to participate in excavations. In biological anthropology there are courses in human evolution, human nutrition, and on the practice of medicine in our own and other cultures. Cultural anthropology surveys the diversity of world cultures, and offers courses on particular culture areas and provides critical perspectives on the study of contemporary culture changes globally. Social anthropology courses focus upon the study of myth, ritual, and religion among traditional and complex societies and the idea of history as cultural myth.

We also offer courses that explore the relationships between language, culture, and modes of thought in a number of societies. For those interested in the history of anthropology and its current concerns, there are a number of courses offered, including the art of ethnography and the study of the historical, political, and literary roots of anthropological ideas.

Bachelor’s Program
- Bachelor of Arts (BA) Degree with a Major in Anthropology

Minor
- Minor in Anthropology

Master’s Program
- Master of Arts (MA) Degree in the field of Anthropology

Doctoral Program
- Doctor of Philosophy (PhD) Degree in the field of Anthropology

Chair
Eugenia Georges

Professors
Dominic C. Boyer
James D. Faubion
Susan Keech McIntosh

Associate Professors
Andrea Ballestero
Jeffrey B. Fleisher
A. Cymene Howe

Assistant Professor
Zoë Wool

Professors Emeriti
George E. Marcus
Roderick J. McIntosh
Julie M. Taylor
Stephen A. Tyler

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
- Course offerings/subject code: ANTH

Department Description and Code
- Anthropology, ANTH
Undergraduate Degree Description and Code

• Bachelor of Arts degree: BA

Undergraduate Major Description and Code

• Major in Anthropology: ANTH

Undergraduate Minor Description and Code

• Minor in Anthropology: ANTY

Graduate Degree Descriptions and Codes

• Master of Arts degree: MA
• Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code

• Degree Program in Anthropology: ANTH

CIP Code and Description

• ANTH Major/Program: CIP Code/Title: 45.0201 - Anthropology
• ANTY Minor: CIP Code/Title: 45.0201 - Anthropology

Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Bachelor of Arts (BA) Degree with a Major in Anthropology

Program Learning Outcomes for the BA Degree with a Major in Anthropology

Upon completing the BA degree with a major in Anthropology, students will be able to:

1. Understand how the history of anthropological debates, concepts, and goals is relevant to the discipline’s changing understanding of the dynamics of cultures past and present.

2. Think historically and comparatively, based on a solid understanding of anthropological perspectives on culture, experience, and social practice with regard to particular dimensions of culture, for example gender, health, law, ethics, ritual, materiality, heritage, and the environment.

3. Apply disciplinary tools for responsibly researching and describing culture and critically conceptualizing the relationship between culture and factors such as historical change, power and social difference, and human diversity. These tools are based on an understanding of anthropological theory and method.

4. Apply research and analytical tools to individual research questions and case studies in order to become effective producers and critical evaluators of anthropological knowledge.

Requirements for the BA Degree with a Major in Anthropology

For general university requirements, see Graduation Requirements (p. 26).

Students pursuing the BA degree with a major in Anthropology must complete:

• A minimum of 10 courses (30 credit hours) to satisfy major requirements.

• A minimum of 120 credit hours to satisfy degree requirements.

• A minimum of 60 credit hours outside of major requirements.

• A minimum of 6 courses (18 credit hours) taken at the 300-level or above.

• A maximum of 4 courses (12 credit hours) from study abroad or transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.

• A minimum of 8 courses (24 credit hours) from departmental (ANTH) course offerings.

• The requirements for one area of specialization (see below for areas of specialization). The BA degree with a major in Anthropology offers two areas of specialization:
  • Anthropological Archaeology (p. ), or
  • Social-Cultural Anthropology (p. )

• A final Capstone or Honors research project culminating in an oral presentation as well as a written paper.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degneworks/officialcertifier/ ) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<th>Code</th>
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<th>Credit Hours</th>
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</tr>
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<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Anthropology</td>
<td>120</td>
</tr>
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</table>

Degree Requirements

Core Requirements

Introductory Courses

Select 2 courses from the following: 6

<table>
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<tr>
<th>Code</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>ANTH 201</td>
<td>INTRODUCTION TO SOCIAL/CULTURAL ANTHROPOLOGY</td>
<td></td>
</tr>
<tr>
<td>ANTH 203</td>
<td>INTRODUCTION TO BIOLOGICAL ANTHROPOLOGY</td>
<td></td>
</tr>
</tbody>
</table>

Method Course

Select 1 course from the following: 3 or 4

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 362</td>
<td>ARCHAEOLOGICAL FIELD TECHNIQUES</td>
<td></td>
</tr>
<tr>
<td>ANTH 398</td>
<td>ETHNOGRAPHIC RESEARCH METHODS</td>
<td></td>
</tr>
<tr>
<td>SOSC 302</td>
<td>QUANTITATIVE ANALYSIS FOR THE SOCIAL SCIENCES</td>
<td></td>
</tr>
<tr>
<td>SOSC 303</td>
<td>QUALITATIVE METHODS IN THE SOCIAL SCIENCES</td>
<td></td>
</tr>
</tbody>
</table>

Theory Course

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 302</td>
<td>ANTHROPOLOGICAL THEORY, A SURVEY</td>
<td>3</td>
</tr>
<tr>
<td>or ANTH 460</td>
<td>ADVANCED ARCHAEOLOGICAL THEORY</td>
<td></td>
</tr>
</tbody>
</table>

Elective Requirements
Select 6 elective courses (18 credit hours) from departmental (ANTH) course offerings at the 300-level or above \(^1,2\) 18

Area of Specialization
Select 1 from the following Areas of Specialization (see Areas of Specialization below)

- Anthropological Archaeology
- Social-Cultural Anthropology

Research Sequence: Capstone or Honors
Select 1 of the following research sequences:\(^3\) 3 or 4

<table>
<thead>
<tr>
<th>ANTH 493</th>
<th>SENIOR RESEARCH PREPARATION and ANTHROPOLOGY CAPSTONE (^4)</th>
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</thead>
<tbody>
<tr>
<td>&amp; ANTH 495</td>
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<table>
<thead>
<tr>
<th>ANTH 490</th>
<th>DIRECTED HONORS RESEARCH &amp; ANTH 491</th>
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</thead>
<tbody>
<tr>
<td>&amp; ANTH 493</td>
<td>and DIRECTED HONORS RESEARCH</td>
</tr>
<tr>
<td>&amp; ANTH 493</td>
<td>and SENIOR RESEARCH PREPARATION (^5)</td>
</tr>
</tbody>
</table>

Total Credit Hours Required for the Major in Anthropology 30-31
Additional Credit Hours to Complete BA Degree Requirements 29-30
University Graduation Requirements (p. 26)\(^1\) 60
Total Credit Hours 120

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1. Students may petition the undergraduate advisor to apply up to 2 courses (6 credit hours) of relevant coursework completed outside of the department toward Elective Requirements.

2. Courses taken to satisfy the Research Sequence: Capstone or Honors requirement may be applied toward the Elective Requirements.

3. The research sequence consists of 2 courses (4 credit hours) for Capstone students and 3 courses (7 credit hours) for Honors students. All students take ANTH 493. Capstone students will also take ANTH 495. Honors students will also take ANTH 490 for 3 credit hours and ANTH 491 for 3 credit hours.

4. The Anthropology Capstone provides an opportunity for students to conduct an independent research project on a topic that interests them, while working one-on-one with a faculty supervisor. The project culminates in a research paper and a presentation to the faculty and assembled students. The Capstone includes a one-credit research preparation course, ANTH 493, and one three-credit independent research course (Anthropology Capstone ANTH 495).

5. See the Opportunities tab for more information.

Anthropology Areas of Specialization

The major in Anthropology has two distinct areas of specialization, Anthropological Archaeology and Social-Cultural Anthropology. Depending on a student’s interest and desired area of specialization, students should see specific department advisors for assistance with elective course selection.

Area of Specialization: Anthropological Archaeology

In this area of specialization, the focus is on research skills in the library, the field, and the laboratory. Archaeology students will also engage theoretical developments and current critical debates on issues such as the politics of the past and cultural heritage. Students also develop at least one analytical skill, such as, archaeological statistics, osteology, or geoarchaeology, drawing on the university’s laboratory and computer facilities. The archaeology program at Rice has a long-term focus on the archaeology of urban, complex societies in East and West Africa. The program offers students the opportunity to participate in archaeological excavations abroad as well as projects in Houston that focus on the city’s African-American past. Students inquiring about the anthropological archaeology area of specialization should see Dr. Jeffrey Fleisher (jfleisher@rice.edu, Sewall Hall, 582) about elective course options.

Area of Specialization: Social-Cultural Anthropology

This area of specialization engages with contemporary issues populations, and social dynamics that affect human life and culture broadly around the world. Social-cultural anthropology inquires across a vast range of human concerns from religion to social movements, from gender to medicine, from science studies to media, and from nature to law. Students are trained in ethnographic research methods and qualitative data collection, and they learn the theoretical principles that have shaped the discipline as well as contemporary, innovative approaches that question how human sociality is constituted in the 21st century. The social-cultural anthropology program at Rice has always championed interdisciplinary theoretical, and experimental modes of anthropology inquiry, and students are encouraged to add their creative intellectual insights to their research pursuits and goals. Students inquiring about the social-cultural anthropology area of specialization should see Dr. Jeffrey Fleisher (jfleisher@rice.edu, Sewall Hall, 582) about elective course options.

Policies for the BA Degree with a Major in Anthropology

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaac.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in Anthropology should be aware of the following departmental transfer credit guidelines:

- No more than 4 courses (12 credit hours) of transfer credit from U.S. or international universities of similar standing may apply toward the major.
- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.
- Dr. Beverly Mitchell is the undergraduate transfer credit advisor. All students seeking transfer credit in anthropology for courses taken elsewhere should see Dr. Mitchell for approval.
- Transfer credit coursework from online-only courses cannot be used to count towards the major.

Additional Information

For additional information, please see the Anthropology website: https://anthropology.rice.edu/.
Opportunities for the BA Degree with a Major in Anthropology

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Archaeological Field School in Sub-Saharan Africa
The Department of Anthropology offers an archaeological field school during the summer months in Africa. Past field schools have been on the island of Gorée, located off the coast of Senegal, where research focused on the development of Gorée as a supply port for the Atlantic trade, at Songo Mnaa, a 15th-century Swahili urban center on the southern Tanzanian coast, and Basanga, an Iron Age settlement mound in southwest Zambia. This course is offered for a total of six hours of credit (ANTH 364 and ANTH 370). The course is offered without specific prerequisites, but there is a general requirement that students have some prior coursework in archaeology or African history. Program fees apply.

Requirements for the Departmental Honors Program
The Honors Program is intended to acknowledge outstanding students, and to provide them with advanced training in the planning and execution of sustained, independent research. As a rule, students should petition the undergraduate advisor to be admitted to the Program no later than the 10th week of the spring semester of their junior year. Admission is at the discretion of the department faculty. The only formal prerequisite to admittance are a Grade Point Average in the major of at least 3.50 and an overall GPA at the end of the junior year of at least 3.00. Final decisions concerning admission are at the discretion of department faculty. Once admitted to the Program, each student must complete a thesis, on a topic of her or his choosing, under the direction of one of the members of the department’s faculty. Topics should be approved by the faculty advisor by the end of the first month of the senior year. Theses are due at the end of the last semester of the senior year.

The Honors Thesis includes a one-credit research preparation and support course, ANTH 493, and two three-credit research courses (Directed Honors Research ANTH 490 and ANTH 491).

All honors projects will be considered for the Distinction in Research and Creative Work (p. 48).

Additional Information
For additional information, please see the Anthropology website: https://anthropology.rice.edu/.

Doctor of Philosophy (PhD) Degree in the field of Anthropology

Program Learning Outcomes for the MA and PhD Degrees in the field of Anthropology
Upon completing the MA and PhD degrees in the field of Anthropology, students will be able to:

1. Excel at professions within and outside the academy that emphasize research, analytic, and writing skills.
2. Demonstrate a comprehensive understanding of the history of the discipline as well as anthropological theory and practice.
3. Utilize the key methodological, theoretical, and analytical skills at the heart of the discipline and become skilled producers of anthropological knowledge, able to critique actively and reconfigure canonical approaches to social science.
4. Apply research and analytical skills to original research questions and case studies to produce innovative approaches to anthropological knowledge and intervene effectively in both disciplinary discussions and wider sociocultural debates.
5. Conduct responsible, ethical research with interlocutors and consultants in a world of increasingly complex interplay between small-scale and large-scale concerns and commitments.

Requirements for the MA and PhD Degrees in the field of Anthropology

MA Degree Program
The MA degree is a thesis master’s degree. For general university requirements, please see Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Although students are not normally admitted to study for an MA in the social-cultural area of specialization, graduate students may earn the MA degree after obtaining approval of their candidacy for the PhD. To earn an MA degree in the field of Anthropology, students must complete:

- 30 semester hours of approved course work.
- Two qualifying exams or two qualifying essays required for PhD candidacy.
- A thesis which meets the standards of the student’s PhD candidacy committee.

PhD Degree Program
For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the PhD degree program in Anthropology with the social-cultural specialization must:

- Complete required course work: 90 semester hours of graduate study (undergraduate courses, including language courses, do not satisfy this requirement).
- Complete 5 Required Courses (15 credit hours) listed below.
- Complete 4 additional courses (12 credit hours) as electives in the Department of Anthropology (either ANTH 500-level or ANTH 600-level).
Prior to achieving candidacy, successfully complete an end-of-year report. Students will write a 2-3 page (double-spaced) summary of their achievements for the year and consult with a faculty panel at the end of each spring semester.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tbody>
<tr>
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<td>Total Credit Hours Required for the PhD Degree in Anthropology</td>
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### Degree Requirements

#### Core Requirements

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<tr>
<td>ANTH 506</td>
<td>HISTORY OF ANTHROPOLOGICAL IDEAS</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 507</td>
<td>ANTHROPOLOGICAL DIRECTIONS FROM SECOND WORLD WAR TO PRESENT</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 601</td>
<td>GRADUATE PROSEMINAR IN ANTHROPOLOGY: THEORY, METHOD, AND PROFESSIONALIZATION</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 602</td>
<td>ANTHROPOLOGY PROPOSAL WRITING SEMINAR</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 650</td>
<td>PEDAGOGY ¹</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Elective Requirements

- Students pursuing the PhD must select at least 4 courses from departmental (ANTH) course offerings at the 500-level or 600-level: 12 Credit Hours
- Additional Coursework as Approved by the Department: 63 Credit Hours

**Total Credit Hours**: 90

### Footnotes and Additional Information

¹ Only one semester of ANTH 650 is required, however a minimum of 18 credit hours of graduate credit is required in order to be eligible to take this course.

### Policies for the PhD Degree in the field of Anthropology

#### Department of Anthropology Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Anthropology publishes a graduate program handbook, which can be found here: [https://gradhandbooks.rice.edu/2019_20/Anthropology_Graduate_Handbook.pdf](https://gradhandbooks.rice.edu/2019_20/Anthropology_Graduate_Handbook.pdf)

### Financial Support

All first-year students receive the same level of support: a combination of graduate fellowships and tuition scholarships. These awards are renewed for a further four years of study contingent upon satisfactory performance.

### Additional Information

For additional information, please see the Anthropology website: [https://anthropology.rice.edu/](https://anthropology.rice.edu/)

### Opportunities for the PhD Degree in the field of Anthropology

### Additional Information

For additional information, please see the Anthropology website: [https://anthropology.rice.edu/](https://anthropology.rice.edu/)

### Minor in Anthropology

#### Program Learning Outcomes for the Minor in Anthropology

Upon completing the minor in Anthropology, students will be able to:

1. Understand the origins and current state of approaches and methods across the discipline's subfield.
2. Describe anthropology's unique, comparative, and historically informed perspective on human social, cultural, and political continuity and variation.
3. Make use of anthropology's critical perspectives to understand contemporary social and cultural practices in the world around them.
4. Utilize critical reading and thinking skills to make original arguments about the significance of social and cultural practices in the world around them.

### Requirements for the Minor in Anthropology

Students pursuing the minor in Anthropology must complete:

- Successful completion of all required courses. Students must receive at least a 'B' in a course for the department to deem it successfully completed. An overall GPA of at least 3.00 each semester must be maintained to remain in good academic standing.
- The approval by the student's candidacy committee of either two qualifying examinations or two qualifying essays (further details are noted in the Graduate Student Handbook on the Department of Anthropology's website [http://gradhandbooks.rice.edu/2017_18/Anthropology_Graduate_Handbook.pdf](http://gradhandbooks.rice.edu/2017_18/Anthropology_Graduate_Handbook.pdf)).
- The approval by the student's candidacy committee of the design and content of at least one undergraduate syllabus to be created in ANTH 650.
- The committee's approval of the thesis research.
- For students not bilingual (in English and their field research language), the passing of an examination in a period of 90 minutes, with the help of a dictionary, of at least 1,000 words into English from an academic journal article in anthropology in either the relevant field language or a major scholarly language, such as French, German, or Spanish.
- (For acquisition of the PhD) Successful completion of extended fieldwork with regular reports made back to the thesis committee.
- (For acquisition of the PhD) Complete and defend the thesis to the satisfaction of the thesis committee.
• A minimum of 6 courses (18 credit hours) to satisfy minor requirements.
• A minimum of 3 courses (9 credit hours) taken at the 300-level or above.
• A maximum of 2 courses (6 credit hours) from study abroad or transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the minor’s Official Certifier (https://registrar.rice.edu/facstaff/degeworks/officialcertifier/)). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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Minor Requirements

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<td></td>
<td><strong>Core Requirements</strong></td>
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<tr>
<td></td>
<td>Select 2 courses from the following:</td>
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</tr>
<tr>
<td>ANTH 200 / LING 200</td>
<td>INTRODUCTION TO THE SCIENTIFIC STUDY OF LANGUAGE</td>
<td></td>
</tr>
<tr>
<td>ANTH 201</td>
<td>INTRODUCTION TO SOCIAL/CULTURAL ANTHROPOLOGY</td>
<td></td>
</tr>
<tr>
<td>ANTH 203</td>
<td>INTRODUCTION TO BIOLOGICAL ANTHROPOLOGY</td>
<td></td>
</tr>
<tr>
<td>ANTH 205</td>
<td>INTRODUCTION TO ARCHAEOLOGY</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Elective Requirements</strong></td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Select 4 elective courses from departmental (ANTH) course offerings ¹</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>18</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

¹ A minimum of 3 of the elective courses (minimum 9 credit hours) must be completed at the 300-level or above.

Policies for the Minor in Anthropology

Program Restrictions and Exclusions

Students pursuing the minor in Anthropology should be aware of the following program restriction:

• As noted in Majors, Minors, and Certificates (p. 11), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the minor in Anthropology should be aware of the following departmental transfer credit guidelines:

• No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the minor.
• Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.
• Dr. Beverly Mitchell is the undergraduate transfer credit advisor. All students seeking transfer credit in anthropology for courses taken elsewhere should see Dr. Mitchell for approval.
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Additional Information

For additional information, please see the Anthropology website: https://anthropology.rice.edu/.

Opportunities for the Minor in Anthropology

Academic Honors

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The Department of Anthropology offers an archaeological field school during the summer months in Africa. Past field schools have been on the island of Gorée, located off the coast of Senegal, where research focused on the development of Gorée as a supply port for the Atlantic trade, at Songo Mnara, a 15th-century Swahili urban center on the southern Tanzanian coast, and Basanga, an Iron Age settlement mound in southwest Zambia. This course is offered for a total of six hours of credit (ANTH 364 and ANTH 370). The course is offered without specific prerequisites, but there is a general requirement that students have some prior coursework in archaeology or African history. Program fees apply.

Additional Information

For additional information, please see the Anthropology website: https://anthropology.rice.edu/.

Applied Physics

Contact Information

Applied Physics
https://appliedphysics.rice.edu/
713-348-3566
Junichiro Kono
Program Chair
kono@rice.edu
The Applied Physics Graduate Program (APP) includes faculty from the departments of electrical and computer engineering, physics and astronomy, bioengineering, chemistry, chemical and biomolecular engineering, materials science and nanoengineering, and statistics.

A joint effort of both the Wiess School of Natural Sciences and the George R. Brown School of Engineering at Rice where the application of physics principles is beneficial, and overseen by the Smalley-Curl Institute (SCI), the Applied Physics Graduate Program is administered by a committee composed of members from the participating departments mentioned above. The objective is to provide an interdisciplinary graduate education in the basic science that underlies important technology. The faculty believes that the experience obtained by performing research at the intellectually stimulating interface of physical science and engineering is particularly effective in producing graduates who succeed in careers based on new and emerging technologies.

Due to the interdisciplinary nature of the program, students can involve virtually any of the research facilities in either the natural sciences or engineering schools of Rice University. Prospective students are urged to contact the Program Chair or SCI for detailed descriptions of research facilities and ongoing research projects.

Applied Physics does not currently offer an academic program at the undergraduate level.

### Master's Program
- Master of Science (MS) Degree in the field of Applied Physics*

### Doctoral Program
- Doctor of Philosophy (PhD) Degree in the field of Applied Physics (p. 118)
  - Although students are not directly admitted to a Master of Science (MS) degree program, graduate students must earn the MS in lieu of a qualifying exam as they work toward the PhD.

### Chair, Applied Physics Graduate Program
Junichiro Kono

### Director, Smalley-Curl Institute
Naomi J. Halas

### Executive Director, Smalley-Curl Institute
Alberto Pimpinelli

### CIP Code and Description
1. **APBI** Major/Program: CIP Code/Title: 14.1201 - Engineering Physics/Applied Physics
2. **APCA** Major/Program: CIP Code/Title: 14.1201 - Engineering Physics/Applied Physics
3. **APCB** Major/Program: CIP Code/Title: 14.1201 - Engineering Physics/Applied Physics
4. **APCH** Major/Program: CIP Code/Title: 40.0899 - Physics, Other
5. **APEA** Major/Program: CIP Code/Title: 40.0899 - Physics, Other
7. **APME** Major/Program: CIP Code/Title: 14.1201 - Engineering Physics/Applied Physics
8. **APMS** Major/Program: CIP Code/Title: 14.1201 - Engineering Physics/Applied Physics
9. **APPH** Major/Program: CIP Code/Title: 40.0899 - Physics, Other
10. **APPL** Major/Program: CIP Code/Title: 40.0899 - Physics, Other
11. **APST** Major/Program: CIP Code/Title: 14.1201 - Engineering Physics/Applied Physics

1. Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

### Graduate Degree Descriptions and Codes
- Master of Science degree: MS
- Doctor of Philosophy degree: PhD

### Graduate Degree Program Descriptions and Codes
1. Degree Program for Applied Physics students in Bioengineering: APBI
2. Degree Program for Applied Physics students in Chemical and Biomolecular Engineering: APCB
3. Degree Program for Applied Physics students in Chemistry: APCH
4. Degree Program for Applied Physics students in Computational and Applied Mathematics: APA
5. Degree Program for Applied Physics students in Earth Science: APEA
6. Degree Program for Applied Physics students in Electrical Engineering: APEL
7. Degree Program for Applied Physics students in Materials Science and NanoEngineering: APMS
8. Degree Program for Applied Physics students in Mechanical Engineering: APME
9. Degree Program for Applied Physics students in Physics: APPH
10. Degree Program for Applied Physics students in Statistics: APST
11. Degree Program offered to students in Applied Physics (1st year students only): APPL

### Graduate Degree Program Descriptions and Codes
- Doctor of Philosophy (PhD) Degree in the field of Applied Physics

### Course Catalog/Schedule
- Course offerings/subject codes: Courses from various subjects may apply toward the graduate degree

### Program Description and Code
- Applied Physics: APPL
Program Learning Outcomes for the MS and PhD Degrees in the field of Applied Physics

Upon completing the MS and PhD degrees in the field of Applied Physics, students will be able to:

1. Acquire and demonstrate advanced knowledge in the foundational applications of physics including familiarity with past and current scientific literature in their chosen specialization.
2. Develop the ability to conduct independent applied physics research including the aptitude to identify, formulate, and overcome challenging scientific and engineering problems in this endeavor.
3. Make an original and significant technical contribution in their chosen specialization area.

Requirements for the MS and PhD Degrees in the field of Applied Physics

The Applied Physics Program (APP) offers a PhD degree. For general university requirements, please see Doctoral Degrees (p. 65). The MS degree is a thesis master’s degree. For general university requirements, please see Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55).

The program does not offer a stand-alone thesis MS degree, although students admitted to the program are required to earn the MS within the program before proceeding to the PhD. For each degree, the student must fulfill the university requirements set forth in the General Announcements under which he/she entered. The semester hour requirements may be fulfilled both by classroom hours and research hours. A total of nine one-semester, 3-credit hour course minimum, graduate level courses is required for the master’s degree in applied physics, ordinarily a requirement for advancement to candidacy in the PhD program. Four of these are core courses required of all students, and five are elective courses chosen according to individual research goals. The Applied Physics Curriculum and Admissions Committee (APCAC) may waive some course requirements for students who demonstrate a thorough knowledge of material in one or more core/elective course(s). Full requirements are available online at https://appliedphysics.rice.edu/ (https://appliedphysics.rice.edu/)

By the end of the third year in the program, all APP students should have completed the university requirements for the master’s degree, fulfilled the course requirements of the APP, and defended a master’s thesis in a public oral examination by a committee approved by the APCAC. The examination covers the work reported in the thesis as well as the entire field in which the student intends to work toward their PhD. The examining committee votes separately on awarding the master’s degree and on admission to candidacy for the PhD. The student may be required to fulfill teaching/grading requirements set by the host department. Fulfillment of all university degree requirements and successful defense of a PhD thesis in a public examination by an APCAC-approved committee is necessary for the PhD.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the PhD in the field of Applied Physics</td>
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Degree Requirements

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<tr>
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<td>Core Requirements 1</td>
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<tr>
<td></td>
<td>Select 4 courses from the following, depending on area of research (see Areas of Specialization below).</td>
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<tr>
<td>BIOE 502 / SSPB 501</td>
<td>PHYSICAL BIOLOGY</td>
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<tr>
<td>CHBE 501</td>
<td>FLUID MECHANICS AND TRANSPORT PROCESSES</td>
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<tr>
<td>PHYS 515</td>
<td>CLASSICAL DYNAMICS</td>
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<tr>
<td>PHYS 516</td>
<td>MATHEMATICAL METHODS</td>
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</tr>
<tr>
<td>PHYS 521</td>
<td>QUANTUM MECHANICS I</td>
<td></td>
</tr>
<tr>
<td>or CHEM 530</td>
<td>QUANTUM CHEMISTRY</td>
<td></td>
</tr>
<tr>
<td>PHYS 522</td>
<td>QUANTUM MECHANICS II</td>
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<tr>
<td>or CHEM 531</td>
<td>ADVANCED QUANTUM CHEMISTRY</td>
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<tr>
<td>PHYS 526</td>
<td>STATISTICAL PHYSICS</td>
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<tr>
<td>or CHEM 520</td>
<td>CLASSICAL AND STATISTICAL THERMODYNAMICS</td>
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<tr>
<td>PHYS 532</td>
<td>CLASSICAL ELECTRODYNAMICS</td>
<td></td>
</tr>
<tr>
<td>PHYS 563 / ELEC 563</td>
<td>INTRODUCTION TO SOLID STATE PHYSICS</td>
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</tr>
<tr>
<td>CHBE 602</td>
<td>PHYSICO-CHEMICAL HYDRODYNAMICS</td>
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<tr>
<td>CHBE 611</td>
<td>ADVANCED TOPICS-THERMODYNAMICS</td>
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</tbody>
</table>

Elective Requirements

| Select 5 elective courses (See Areas of Specialization suggested courses below) | 15 |

Additional Requirements as Defined by Department | 63 |

Total Credit Hours | 90 |

Footnotes and Additional Information

1 Any course taken beyond the four-course requirement for the Applied Physics Core Requirements can be applied towards the Applied Physics Electives requirement.

2 It is assumed that the student has an adequate background in classical mechanics, electrostatics, and statistical and thermal physics. This background is determined from interviews or exams given to entering students by the APCAC or the host department.

3 A full list of elective courses can be found on the Applied Physics website (http://rqi.rice.edu/curriculum/). No courses may be used for both core and elective courses. Due to overlap of curricula, only one from each of the pairs PHYS 521/CHEM 530, and PHYS 526/CHEM 520 may be used for the nine required courses.

Course Lists to Satisfy Requirements

Areas of Specialization

Some examples of areas of specialization that students may choose are listed below. The lists are only suggested lists and are by no means a full list of possible courses for the area of specialization.
# Doctor of Philosophy (PhD) Degree in the field of Applied Physics

## Applied Biological and Soft Matter Physics

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td><strong>Suggested Core Courses</strong></td>
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</tr>
<tr>
<td>BIOE 502 / SSPB 501</td>
<td>PHYSICAL BIOLOGY</td>
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<td>CHBE 501</td>
<td>FLUID MECHANICS AND TRANSPORT PROCESSES</td>
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<tr>
<td>PHYS 515</td>
<td>CLASSICAL DYNAMICS</td>
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<tr>
<td><strong>Suggested Elective Courses</strong></td>
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<tr>
<td>BIO 551</td>
<td>MOLECULAR BIOPHYSICS</td>
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<tr>
<td>BIO 589 / BIOC 589</td>
<td>COMPUTATIONAL MOLECULAR BIOENGINEERING/BIOPHYSICS</td>
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</tr>
<tr>
<td>BIO 610 / PHYS 610</td>
<td>METHODS OF MOLECULAR SIMULATION</td>
<td>3</td>
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<tr>
<td>CHBE 560 / MSNE 560</td>
<td>COLLOIDAL AND INTERFACIAL PHENOMENA</td>
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<td>MSNE 555</td>
<td>MATERIALS IN NATURE AND BIO-MIMETIC STRATEGIES</td>
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<tr>
<td>PHYS 551</td>
<td>Biological Physics</td>
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<tr>
<td>PHYS 552</td>
<td>TOPICS IN BIOLOGICAL PHYSICS</td>
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## Applied Chemical Physics

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<td>CHEM 530</td>
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<td>PHYS 526</td>
<td>STATISTICAL PHYSICS</td>
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<td>PHYS 563 / ELEC 563</td>
<td>INTRODUCTION TO SOLID STATE PHYSICS</td>
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<td><strong>Suggested Elective Courses</strong></td>
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<tr>
<td>BIO 610 / PHYS 610</td>
<td>METHODS OF MOLECULAR SIMULATION</td>
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<td>CHBE 560 / MSNE 560</td>
<td>COLLOIDAL AND INTERFACIAL PHENOMENA</td>
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<tr>
<td>CHBE 590</td>
<td>KINETICS, CATALYSIS, AND REACTION ENGINEERING</td>
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<tr>
<td>CHBE 615</td>
<td>APPLICATION OF MOLECULAR SIMULATION AND STATISTICAL MECHANICS</td>
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<td>CHBE 630</td>
<td>CHEMICAL ENGINEERING OF NANOSTRUCTURED MATERIALS</td>
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<td>CHEM 531</td>
<td>ADVANCED QUANTUM CHEMISTRY</td>
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<td>CHEM 533 / CEVE 533</td>
<td>NANOSENSE AND NANOTECHNOLOGY I</td>
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<tr>
<td>CHEM 547</td>
<td>SUPRAMOLECULAR CHEMISTRY</td>
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<td>CHEM 595</td>
<td>TRANSITION METAL CHEMISTRY</td>
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<tr>
<td>PHYS 539</td>
<td>CHARACTERIZATION AND FABRICATION AT THE NANOSCALE</td>
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## Applied Mathematical and Computational Physics

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<td>PHYS 532</td>
<td>CLASSICAL ELECTRODYNAMICS</td>
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<td><strong>Suggested Elective Courses</strong></td>
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<tr>
<td>BIO 610</td>
<td>METHODS OF MOLECULAR SIMULATION</td>
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<td>CAAM 615 / NEUR 615</td>
<td>THEORETICAL NEUROSCIENCE: FROM CELLS TO LEARNING SYSTEMS</td>
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<tr>
<td>CHBE 615</td>
<td>APPLICATION OF MOLECULAR SIMULATION AND STATISTICAL MECHANICS</td>
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<td>ADVANCED QUANTUM CHEMISTRY</td>
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<td>ELEC 581 / BIO 581</td>
<td>CARDIOVASCULAR AND RESPIRATORY DYNAMICS</td>
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<td>MECH 520 / CEVE 503</td>
<td>NONLINEAR FINITE ELEMENT ANALYSIS</td>
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<td>COMPUTATIONAL MATERIALS MODELING</td>
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## Applied Mechanics

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<td>PHYS 515</td>
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<td>APPLICATION OF MOLECULAR SIMULATION AND STATISTICAL MECHANICS</td>
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<td>CHBE 630</td>
<td>CHEMICAL ENGINEERING OF NANOSTRUCTURED MATERIALS</td>
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<td>ADVANCED QUANTUM CHEMISTRY</td>
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<td>NANOSENSE AND NANOTECHNOLOGY I</td>
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<td>CHARACTERIZATION AND FABRICATION AT THE NANOSCALE</td>
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## Applied Optics and Photonics

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<td>CLASSICAL ELECTRODYNAMICS</td>
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<td>PHYS 563 / ELEC 563</td>
<td>INTRODUCTION TO SOLID STATE PHYSICS</td>
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Suggested Elective Courses

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<tr>
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<td>OPTICAL IMAGING AND NANOBIOPHOTONICS</td>
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<td>ELEC 562</td>
<td>OPTOELECTRONIC DEVICES</td>
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</tr>
<tr>
<td>ELEC 568</td>
<td>LASER SPECTROSCOPY</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 569 / PHYS 569</td>
<td>ULTRAFAST OPTICAL PHENOMENA</td>
<td>3</td>
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<tr>
<td>ELEC 571</td>
<td>IMAGING AT THE NANOSCALE</td>
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<td>ELEC 603</td>
<td>TOPICS IN NANOPHOTONICS</td>
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<td>PHYS 571</td>
<td>MODERN ATOMIC PHYSICS</td>
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Applied Physical Electronics

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<td>QUANTUM MECHANICS I</td>
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<td>CLASSICAL ELECTRODYNAMICS</td>
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<td>INTRODUCTION TO SOLID STATE PHYSICS</td>
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Suggested Elective Courses

<table>
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<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>CHEM 511</td>
<td>SPECTRAL METHODS IN ORGANIC CHEMISTRY</td>
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<td>ELEC 562</td>
<td>OPTOELECTRONIC DEVICES</td>
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<td>ELEC 680 / BIO 680</td>
<td>NANO-NEUROTECHNOLOGY</td>
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</tr>
<tr>
<td>PHYS 522</td>
<td>QUANTUM MECHANICS II</td>
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<td>PHYS 539</td>
<td>CHARACTERIZATION AND FABRICATION AT THE NANOSCALE</td>
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<td>PHYS 567</td>
<td>QUANTUM MATERIALS</td>
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<tr>
<td>PHYS 663</td>
<td>CONDENSED MATTER THEORY: APPLICATIONS</td>
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Policies for the PhD Degree in the field of Applied Physics

Applied Physics Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, Applied Physics publishes a graduate program handbook, which can be found here: [https://gradhandbooks.rice.edu/2019_20/Applied_Physics_Graduate_Handbook.pdf](https://gradhandbooks.rice.edu/2019_20/Applied_Physics_Graduate_Handbook.pdf)

Additional Information

For additional information, please see the Applied Physics website: [https://appliedphysics.rice.edu/](https://appliedphysics.rice.edu/)

Opportunities for the PhD Degree in the field of Applied Physics

Students who have completed the PhD program in Applied Physics establish careers in industry, government laboratories, and academia.

Additional Information

For additional information, please see the Applied Physics website: [https://appliedphysics.rice.edu/](https://appliedphysics.rice.edu/)
Master’s Programs
- Master of Architecture (MArch) Degree (p. 127)
- Master of Arts (MA) Degree in the field of Architecture (p. 131)
- Master of Architecture in Urban Design (MAUD) Degree*

Doctoral Programs
- Doctor of Architecture (DArch) Degree*

* The MAUD and DArch degree programs are currently inactive and are not accepting applications for admission.

Interim Dean, Harry K. and Albert K. Smith Professor
John J. Casbarian

Gus Sessions Wortham Professor
Albert H. Pope

Professors
Carlos Jimenez
Gordon G. Wittenberg Jr.

Associate Professors
Dawn Finley
Reto Geiser
Christopher Hight
R. Troy Schaum

Assistant Professors
Juan Jose Castellon Gonzalez
Scott Colman
Andrew Colopy
Jesús Vassallo Fernando

Professor Emeriti
William Tillman Cannady

Professors in the Practice
Nonya S. Grenader
Douglas E. Oliver
Danny M. Samuels
Mark S. Wamble

Senior Lecturers
Alan Fleishacker
David Stephen Fox
James Furr
Christof Spieler

Lecturers
Ernesto Alfaro
Andrew Albers
Mandi Chapa
Tom F. Lord
Stephen Redding
Rives Taylor

Adjunct Professor
Ron Witte

Smith Visiting Critic
Ajay Manthripragada

Wortham Fellows
Viola Ago
Amelyn Ng

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
- Course offerings/subject code: ARCH

School/Department Description and Code
- Architecture: ARCH

Undergraduate Degree Descriptions and Codes
- Bachelor of Arts degree: BA
- Bachelor of Architecture degree: BArch

Undergraduate Major Descriptions and Codes
- Major in Architecture (attached to the BA degree): ARCH
- Major in Architectural Studies (attached to the BA degree): ARST
- Major in Architecture and Building Science (attached to the BArch degree): ARBS

Graduate Degree Descriptions and Codes
- Master of Architecture degree: MArch
- Master of Arts degree: MA

Graduate Degree Program Description and Code
- Degree Program in Architecture (attached to the MA degree): ARCH
- Degree Program in Architecture and Building Science (attached to the MArch degree): ARBS

Graduate Degree Program Option Descriptions and Codes*
- Degree Program Option - Option 1 Thesis (MArch degree only): MARCH-TH1
- Degree Program Option - Option 1 Non-Thesis (MArch degree only): MARCH-NONTH1
- Degree Program Option - Option 2 Thesis (MArch degree only): MARCH-TH2
- Degree Program Option - Option 2 Non-Thesis (MArch degree only): MARCH-NONTH2

CIP Code and Description
- ARCH Major/Program: CIP Code/Title: 04.0201 - Architecture
- ARST Major/Program: CIP Code/Title: 04.0201 - Architecture
Bachelor of Architecture (BArch) Degree

Program Learning Outcomes for the BArch Degree

Upon completing the BArch degree, students will be able to:

1. Innovate the knowledge and practice of architecture through advanced critical thinking, experimentation, and research.
2. Explore the practice of architecture through the Preceptorship Program, a year-long supervised internship in an architectural firm that subsequently informs advanced research and design.
3. Project innovative architectural practices and ideas through experimental research and design, synthesizing heterogeneous cultural and technical considerations into a coherent project.
4. Integrate experience in architectural practice with experimental design projects through advanced building technologies, including material, structural, environmental, and mechanical systems.

Requirements for the BArch Degree

Students pursuing the BArch degree must complete:

• A minimum of 8 courses (62 credit hours) to satisfy major requirements.
• A minimum of 62 credit hours to satisfy degree requirements.
• A minimum grade of C (2.00 grade points) in each course.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>Total Credit Hours Required for the BArch Degree</td>
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Degree Requirements

Core Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>ARCH 500</td>
<td>PRECEPTORSHIP PROGRAM (2nd semester)</td>
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Select 1 course from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
<td>ARBS</td>
<td>Systems Use Only: this information is used solely by internal offices at Rice University (such as OTR, GPS, etc.) and primarily within student information systems and support.</td>
<td></td>
</tr>
</tbody>
</table>

Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Footnotes and Additional Information

1. All courses above must be taken in the sequence and semester prescribed by the School of Architecture and completed with a grade of C (2.00 grade points) or higher.
2. By accepting a place in the BArch degree program and Preceptorship, each student agrees to all the terms specified by Rice and/or the assigned Preceptorship office, including: registration fees, start and end dates, work responsibilities, performance expectations, and agreement to return to Rice the subsequent year. Failure to meet these expectations will result in an unsatisfactory grade evaluation and may prevent further progress in the program. Students’ concerns while on Preceptorship should be brought to the attention of the Director of External Programs as soon as possible. While on Preceptorship, a student remains a Rice student and is governed by applicable student codes of conduct, rights, and responsibilities.
3. ARCH 500 is taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade. As a S/U course, it does not apply to the requirement of a minimum grade of C (2.00 grade points) in each required course.
4. Students will substitute a course at the 300-level or above from departmental (ARCH) offerings if the student completed ARCH 423/ARCH 623 during his/her first four years of study.
5. If students are attending the Rice School of Architecture in Paris, students must enroll in two semesters of ARCH 620 Architectural Problems as their studio courses, in place of ARCH 601 and ARCH 602.

Policies for the BArch Degree

The Bachelor of Architecture (BArch) degree program is open to students who have completed the undergraduate preprofessional architecture program at Rice. The BArch degree requires the successful completion of the Bachelor of Arts (BA) degree with a major in Architecture, completion of the two-semester Preceptorship, and completion of two advanced option studios and approved lecture or seminar courses. Admission into the program requires completion of all university and major requirements for the BA degree, a portfolio of work and formal application. Admittance is dependent upon satisfactory academic performance, demonstrated aptitude, and preparation for the Preceptorship and the advanced coursework of the final year. Grades are not the exclusive criterion for admission; however the school expects a minimum of a B (3.00) GPA within the required courses for the major and, typically, no grades in the C (2.00) GPA range during the last two years of studio courses. Preliminary admittance is offered early in the spring semester of senior year contingent upon satisfactory completion of remaining coursework.
The academic year immediately following preceptorship, students must return for their final year of study to the School of Architecture, taking advanced level studios and courses. In this year, students may apply to Rice Architecture in Paris to complete a semester abroad. The autumn studios feature the Totalization studio, in which the student’s experience from preceptorship is integrated into academic research through a comprehensive design project. At the end of this final two-year stage, students graduate with a Bachelor of Architecture (professional) degree.

The Bachelor of Architecture (BArch) degree program is accredited by the National Architectural Accrediting Board (NAAB) and qualifies graduates to take the state professional licensing exams after completing the required internship in an architectural office.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the BArch degree should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information
For additional information, please see the School of Architecture website: https://arch.rice.edu/.

Opportunities for the BArch Degree

Rice Architecture - Paris
BArch students in their fifth year may apply to the Paris program to complete one semester in Paris.

Recent Preceptor Offices
- BAR (San Francisco)
- Pei, Cobb, Freed & Partners (New York)
- Bohlin Cywinski Jackson (San Francisco)
- Pelli Clarke Pelli (New Haven)
- PLP (London)
- Ennead Architects (New York)
- Renzo Piano Building Workshop (Genoa)
- Johnston Marklee (Los Angeles)
- Rogers Partners (New York)
- Kieran Timberlake (Philadelphia)
- SHoP (New York)
- KPF (London)
- SOM (San Francisco)
- KPF (New York)
- Thomas Phifer & Associates (New York)
- Weiss/Manfredi (New York)
- WXY (New York)
- NADAAA (Boston)

Additional Information
For additional information, please see the School of Architecture website: https://arch.rice.edu/ (https://architecture.rice.edu/).

Bachelor of Arts (BA) Degree with a Major in Architectural Studies

Program Learning Outcomes for the BA Degree with a Major in Architectural Studies

Upon completing the BA degree with a major in Architectural Studies, students will be able to:

1. Gain knowledge of the history and theory of architecture in relation to broader social, technological, and cultural practices and transformations.
2. Understand the design process in architecture through a variety of scales and problems and with an appreciation of design’s importance in the quality of our cities and environment.
3. Explore and develop specific interests concerning the discipline and/or its relationship to other fields and endeavors.

Requirements for the BA Degree with a Major in Architectural Studies

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Architectural Studies must complete:

- A minimum of 12 courses (48 credit hours) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 2 courses (6 credit hours) taken at the 300-level or above.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

2019-2020 General Announcements
PDF Generated 1/29/2020
Summary

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<td>Total Credit Hours Required for the BA Degree with a Major in Architectural Studies</td>
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Degree Requirements

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<th>Code</th>
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<td>Core Requirements</td>
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<td>Design Studios</td>
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<td>ARCH 101</td>
<td>PRINCIPLES OF ARCHITECTURE I - ORDER</td>
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<td>ARCH 102</td>
<td>PRINCIPLES OF ARCHITECTURE II - REPRESENTATION</td>
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<tr>
<td>ARCH 201</td>
<td>PRINCIPLES OF ARCHITECTURE III - ORGANIZATION</td>
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<td>ARCH 202</td>
<td>PRINCIPLES OF ARCHITECTURE IV - EFFECTS</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>History and Theory</td>
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<td>ARCH 225 / HART 225</td>
<td>INTRODUCTION TO ARCHITECTURAL THINKING</td>
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<td>ARCH 345 / HART 345</td>
<td>FOUNDATIONS IN THE HISTORY AND THEORY OF ARCHITECTURE I (1450-1850)</td>
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<td>Technology</td>
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<td>ARCH 207</td>
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<td>ARCH 309</td>
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<td></td>
<td>Elective Requirements</td>
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<td>Select 4 elective courses from departmental (ARCH) course offerings</td>
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<td>Total Credit Hours</td>
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</table>

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAR, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

Policies for the BA Degree with a Major in Architectural Studies

Admission

The BA degree with a major in Architectural Studies provides a foundation in architectural ideas and design while allowing a broader pursuit of other fields as an undergraduate. Enrollment is restricted to students admitted into the architecture program who have completed the first two years of required courses. Approval is based on academic performance and demonstrated aptitude indicating that the student is on track for continued study in the discipline. While grades are not the exclusive criteria for the decision, the School of Architecture expects a minimum of a B (3.00) GPA within the required courses for the major, and no more than 1 studio course grade in the C (2.00) GPA range.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in Architectural Studies should be aware of the following departmental transfer credit guidelines:

* Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information

For additional information, please see the School of Architecture website: https://arch.rice.edu/.

Opportunities for the BA Degree with a Major in Architectural Studies

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Additional Information

For additional information, please see the School of Architecture website: https://arch.rice.edu/ (https://architecture.rice.edu/).

Bachelor of Arts (BA) Degree with a Major in Architecture

Program Learning Outcomes for the BA Degree with a Major in Architecture

Upon completing the BA degree with a major in Architecture, students will be able to:

1. Formulate architectural projects that integrate design skills with critical thinking, engaging broader theoretical, social, political, economic, cultural, and environmental issues.
2. Explore how technology, issues of the environment, and construction inform innovative design solutions.
3. Strategize how the relationship of architectural concepts, communication and representation techniques, and construction technology can innovate practice.
Requirements for the BA Degree with a Major in Architecture

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Architecture must complete:

- A minimum of 17 courses (75 credit hours) to satisfy major requirements.
- A minimum of 130 credit hours to satisfy degree requirements.
- A minimum of 55 credit hours outside of major requirements, 45 of which must be taken outside of the School of Architecture (courses outside of departmental (ARCH) course offerings), and 10 of which may be taken as free electives from any subject code.
- A minimum of 11 courses (45 credit hours) taken at the 300-level or above.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

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<tr>
<th>Code</th>
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<td>Total Credit Hours Required for the BA Degree with a Major in Architecture</td>
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### Degree Requirements

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<td><strong>Core Requirements</strong></td>
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<td>ARCH 101</td>
<td>PRINCIPLES OF ARCHITECTURE I - ORDER</td>
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<td>ARCH 102</td>
<td>PRINCIPLES OF ARCHITECTURE II - REPRESENTATION</td>
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<td>ARCH 201</td>
<td>PRINCIPLES OF ARCHITECTURE III - ORGANIZATION</td>
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<tr>
<td>ARCH 202</td>
<td>PRINCIPLES OF ARCHITECTURE IV - EFFECTS</td>
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<td>ARCH 207</td>
<td>TECHNOLOGY I</td>
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<td>ARCH 225 / HART 225</td>
<td>INTRODUCTION TO ARCHITECTURAL THINKING</td>
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<tr>
<td>ARCH 301</td>
<td>INTERMEDIATE PROBLEMS IN ARCHITECTURE I - SITUATION</td>
<td>6</td>
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<tr>
<td>ARCH 302</td>
<td>INTERMEDIATE PROBLEMS IN ARCHITECTURE II - LEGIBILITY</td>
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<td>ARCH 309</td>
<td>TECHNOLOGY II</td>
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<tr>
<td>ARCH 314</td>
<td>TECHNOLOGY III</td>
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<td>ARCH 316</td>
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<td>ARCH 401</td>
<td>ADVANCED TOPICS IN ARCHITECTURE - THE METROPOLIS</td>
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<td>ARCH 402</td>
<td>ADVANCED TOPICS IN ARCHITECTURE - WILLIAM WARD WATKIN</td>
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<td>ARCH 403</td>
<td>DEGREE PROJECT SEMINAR</td>
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</table>

### Elective Requirements

- Complete 45 credit hours from any course offerings outside of ARCH course offerings.
- Complete 10 additional credit hours as free electives from any course offerings.

### Required Plan-of-Study

Students must complete the required ARCH course offerings below in the sequence and semester prescribed the School of Architecture.

<table>
<thead>
<tr>
<th>Course</th>
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<td>ARCH 255 / HART 225</td>
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<td><strong>2nd Semester</strong></td>
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<td>ARCH 102</td>
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<td><strong>Credit Hours</strong></td>
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<tr>
<td><strong>3rd Semester</strong></td>
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<tr>
<td>ARCH 201</td>
<td>PRINCIPLES OF ARCHITECTURE III - ORGANIZATION</td>
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<td>ARCH 346</td>
<td>FOUNDATIONS IN THE HISTORY AND THEORY OF ARCHITECTURE II (1850-1950)</td>
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<td><strong>Credit Hours</strong></td>
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<tr>
<td><strong>4th Semester</strong></td>
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<td>ARCH 352</td>
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<td><strong>Credit Hours</strong></td>
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<td><strong>5th Semester</strong></td>
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<td>ARCH 301</td>
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<td><strong>Credit Hours</strong></td>
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</table>
Policies for the BA Degree with a Major in Architecture

The BA degree with a major in Architecture, leading to a Bachelor of Architecture (BArch) degree, is the primary undergraduate architecture program at Rice. Students who apply and are accepted into the University and the School of Architecture enter directly into this program. The required courses for the BA degree with a major in Architecture, leading ultimately to the BArch degree, consist of four integrated sequences in the following areas: Design Studios, History and Theory, Technology, and Practice. Courses in these sequences must be taken in the order and semesters specified by the School of Architecture.

The curriculum for this professional degree program sequence has three two-year long stages. The first stage provides a foundation sequence in design, history and theory, and technology taken in the first and second years. Students are also expected to fulfill the majority of University general distribution requirements during these two years. The curriculum is designed to provide an intensive focus on architecture, while allowing each student to receive a broad education and to pursue other interests.

Approval of major is based on academic performance and demonstrated aptitude indicating that the student is on track for advanced study at the BArch level. While grades are not the exclusive criteria for the decision, the school expects a minimum of a B (average 3.00) GPA within the required courses for the major and no more than one studio course grade in the C (2.00) GPA range. Students apply during the Spring of their second year of architectural study, and are notified after the conclusion of that semester.

The second intermediate stage occurs in the third and fourth years. Students complete the courses required for the BA degree with a major in Architecture, remaining university requirements, and take electives through which each student can develop his or her particular interests in the field and in other areas. In their fourth year, students pursue a design research sequence through a seminar in the fall that is linked to the spring studio. At the end of this stage, and with the completion of all major and university requirements, students graduate, receiving the degree of a BA degree with a major in Architecture.

The third and final stage consists of the Bachelor of Architecture (BArch) degree and includes the year of Preceptorship. The BArch degree program is only open to students who have completed the first four years at Rice School of Architecture and who apply for admission into this stage of the program during their fourth year. As with the approval for major two years prior, approval is based on satisfactory academic performance and preparation for the advanced studies of the BArch degree.

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in Architecture should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

Additional Information

For additional information, please see the School of Architecture website: https://arch.rice.edu/.

Opportunities for the BA Degree with a Major in Architecture

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Additional Information

For additional information, please see the School of Architecture website: https://arch.rice.edu/.

Master of Architecture (MArch) Degree

Program Learning Outcomes for the MArch Degree

Upon completing the MArch degree, students will be able to:

1. Innovate the knowledge and practice of architecture through advanced critical thinking, experimentation, and research.
2. Develop or augment a comprehensive knowledge of the technical aspects of design and construction including an understanding of their impact on design and the environment at a level commensurate with advanced study.
3. Develop a comprehensive knowledge of diverse, advanced building technologies and their application to the design, construction, and operation of buildings, including environmental, material, structural, and mechanical systems, using leading computer applications and tools.
4. Develop or augment a comprehensive understanding of architectural practice and foster the development of innovative forms of practice at a level commensurate with advanced study.
Requirements for the MArch Degree

The MArch degree can be either a thesis or a non-thesis master’s degree depending on the option the student pursues. For general university requirements for thesis master’s degrees, please see Thesis Master’s Degrees (p. 68). For general university requirements for non-thesis master’s degrees, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MArch degree programs must complete:

- A minimum of 93-95 credit hours or 131-133 credit hours, depending on option pursued, to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level and above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- The requirements for one degree program option (see below for options). The MArch degree program offers two options:
  - Option 1 (Thesis or Non-Thesis) (p. ), or
  - Option 2 (Thesis or Non-Thesis) (p. ).
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 3.00 or higher in all Rice coursework that satisfies requirements for the thesis master’s degree or the non-thesis master’s degree with a minimum grade of B- (2.67 grade points) in each course.

The Master of Architecture (MArch) degree program understands architecture to be a generalist practice, while encouraging each student's freedom to forge a specific trajectory within this generalist milieu. We prepare students to engage an ever more ambiguous world—one that can no longer simply be flattened by such binaries as local and global, quantity and quality, mind and nature, form and function, or standards and exceptions. The challenge we pose to our students is to transgress the obsolescence of opposing values and to navigate the tricky waters of a world no longer organized around presupposed notions of solidity, permanence, rootedness, centrality, protection, and identity. Our program is the very place where visions of the future are tested and where students are asked to understand the world's complexity in order to focus on the tangible, the legible, and the relevant.

Individuals who possess a Bachelor’s degree in any discipline can apply to the MArch degree program. Our curriculum offers a set of core courses (in Design, History and Theory, Technology, and Practice) and many free electives, both in the School of Architecture and across campus. In studio courses, strong emphasis is given to the very means by which architecture is able to change the world through program, form, and technology. Such fundamental aspects to design can, when mobilized, produce a practice of architecture that is as speculative as it is realist. Every fall, advanced “Totalization” studios are conducted in such a way as to have students rigorously weigh all aspects of building design while nonetheless biasing their engagement so as to produce highly specific architectural projects. In their final thesis semester, students are asked to face the world and engage it through architectural speculation and a precise understanding of historical, political, economic, and physical dimensions, which can together define a better future.

The MArch degree program is accredited by the National Architectural Accrediting Board (NAAB) and qualifies graduates to take the state professional licensing exams after completing the required internship in an architectural office.

Programs of Study

There are two program options at the Master of Architecture (MArch) level: Option 1 and Option 2. They differ according to the Bachelor’s degree received prior to entering the graduate program. MArch students in Options 1 and 2 complete the degree requirements by either submitting a thesis or by taking alternative coursework. Thesis students are required to take Design Thesis Studio (ARCH 703, 10 credit hours) and Written Thesis (ARCH 729 or ARCH 730, 3 credit hours). Students who pursue the non-thesis MArch degree are required to take the Totalization Studio (ARCH 601, 10 credit hours) in lieu of the thesis studio and an additional elective (worth 3 credit hours) in lieu of the written thesis course. All students are required to enroll in Thesis Proposal (ARCH 701), even if they pursue the non-thesis degree program (option 1 or 2).

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

**Option 1 - MArch Degree Program**

Offered to individuals who hold a four-year undergraduate degree with a major in a field other than Architecture or a major in Architecture with fewer than five semesters of architectural design studio. Preference for admission is given to those who have completed a balanced education in the arts, sciences, and humanities. A minimum of two semesters of college-level courses in the history of art and/or architecture and one semester of college-level courses in mathematics or physics is recommended. Previous preparation in the visual arts is also desirable, as are courses in philosophy, literature, and economics. In order to graduate, students in this program must complete, in addition to 6 semesters of design studios (70-72 credit hours), a curriculum of 34 credit hours with an additional free electives course load of 27 credit hours.

**Summary**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MArch Degree</td>
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**Option 1 Degree Requirements**

**Core Requirements**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<td>ARCH 501</td>
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<td>ARCH 509</td>
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<td>ARCH 514</td>
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<thead>
<tr>
<th>Course</th>
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<tr>
<td>ARCH 516</td>
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<tr>
<td>ARCH 525 /</td>
<td>INTRODUCTION TO ARCHITECTURAL THINKING</td>
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</tr>
<tr>
<td>HART 525</td>
<td></td>
<td></td>
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<tr>
<td>ARCH 601</td>
<td>ARCHITECTURAL PROBLEMS: STUDIO ¹</td>
<td>10</td>
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<tr>
<td>ARCH 602</td>
<td>ARCHITECTURAL PROBLEMS ¹</td>
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<td>ARCH 623</td>
<td>PROFESSIONALISM AND MANAGEMENT IN ARCHITECTURAL</td>
<td>10-12</td>
</tr>
<tr>
<td></td>
<td>PRACTICE</td>
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</tr>
<tr>
<td>ARCH 645 /</td>
<td>FOUNDATIONS AND THE HISTORY AND THEORY OF</td>
<td>3</td>
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<tr>
<td>HART 645</td>
<td>ARCHITECTURE I (1450-1850)</td>
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<td>ARCH 646 /</td>
<td>FOUNDATIONS IN THE HISTORY AND THEORY OF</td>
<td>3</td>
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<td>HART 506</td>
<td>ARCHITECTURE II (1850-1950)</td>
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<td>ARCH 652</td>
<td>FOUNDATIONS IN THE HISTORY AND THEORY OF</td>
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<td></td>
<td>ARCHITECTURE III (1950-2000)</td>
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<tr>
<td>ARCH 655</td>
<td>CONTEMPORARY PRACTICES IN ARCHITECTURE</td>
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**Thesis Requirements**

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<thead>
<tr>
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<tbody>
<tr>
<td>ARCH 701</td>
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<td>ARCH 703</td>
<td>DESIGN THESIS STUDIO ²,³</td>
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<td>ARCH 729</td>
<td>THESIS WRITTEN DOCUMENT (FALL) ²,³</td>
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<tr>
<td>or ARCH 730</td>
<td>THESIS WRITTEN DOCUMENT (SPRING)</td>
<td></td>
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</tbody>
</table>

**Elective Requirements**

Students must complete 9 additional courses: 27

**Total Credit Hours**: 131-133

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**Footnotes and Additional Information**

1. Students enrolled in the Paris program (RSAP) will register for ARCH 620 design studio in lieu of ARCH 601 (fall) or ARCH 602 (spring).

2. All students are required to take ARCH 701 even if they pursue the non-thesis degree program (option 1 or 2). Students who wish to remain enrolled as a registered student for an eighth semester will register for ARCH 703 in their seventh semester and ARCH 730 (instead of ARCH 729) in the eighth semester. Students who wish to take this extension must decide at the beginning of their seventh semester. Students who pursue the non-thesis MArch degree are required to take the Totalization Studio (ARCH 601, 10 credit hours) in lieu of the thesis studio and an additional elective (worth 3 credit hours) in lieu of the written thesis course ARCH 729 or ARCH 730.

3. ARCH 701, ARCH 703, ARCH 729, and ARCH 730 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade. As S/U courses, they do not apply to the requirement of a minimum grade of B-(2.67) in each required course.

---

**Option 1 Plan-of-Study**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>1st Semester</td>
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</tr>
<tr>
<td>ARCH 501</td>
<td>CORE DESIGN STUDIO I</td>
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</tr>
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<td>ARCH 507</td>
<td>TECHNOLOGY I</td>
<td>3</td>
</tr>
<tr>
<td>ARCH 525 /</td>
<td>INTRODUCTION TO ARCHITECTURAL THINKING</td>
<td>3</td>
</tr>
<tr>
<td>HART 525</td>
<td></td>
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<td>Elective one</td>
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<td></td>
<td>Credit Hours</td>
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<tr>
<td>2nd Semester</td>
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<tr>
<td>ARCH 502</td>
<td>CORE DESIGN STUDIO II</td>
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<td>ARCH 509</td>
<td>TECHNOLOGY II</td>
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**3rd Semester**

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<tbody>
<tr>
<td>ARCH 601</td>
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<td>ARCH 623</td>
<td>PROFESSIONALISM AND MANAGEMENT IN ARCHITECTURAL</td>
<td>3</td>
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<td>PRACTICE</td>
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**4th Semester**

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<tbody>
<tr>
<td>ARCH 601</td>
<td>ARCHITECTURAL PROBLEMS</td>
<td>10-12</td>
</tr>
<tr>
<td>ARCH 655</td>
<td>CONTEMPORARY PRACTICES IN ARCHITECTURE</td>
<td>3</td>
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**5th Semester**

<table>
<thead>
<tr>
<th>Course</th>
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</thead>
<tbody>
<tr>
<td>ARCH 601</td>
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<td>ARCH 623</td>
<td>PROFESSIONALISM AND MANAGEMENT IN ARCHITECTURAL</td>
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<td></td>
<td>PRACTICE</td>
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**6th Semester**

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>ARCH 602</td>
<td>ARCHITECTURAL PROBLEMS ¹</td>
<td>10</td>
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<tr>
<td>ARCH 655</td>
<td>CONTEMPORARY PRACTICES IN ARCHITECTURE</td>
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**7th Semester**

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<thead>
<tr>
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<tr>
<td>ARCH 703</td>
<td>DESIGN THESIS STUDIO ²,³</td>
<td>10</td>
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<tr>
<td>ARCH 729</td>
<td>THESIS WRITTEN DOCUMENT (FALL) ²,³</td>
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---

**Footnotes and Additional Information**

1. Students enrolled in the Paris program (RSAP) will register for ARCH 620 design studio in lieu of ARCH 601 (fall) or ARCH 602 (spring).

2. All students are required to take ARCH 701 even if they pursue the non-thesis degree program (option 1 or 2). Students who wish to remain enrolled as a registered student for an eighth semester will register for ARCH 703 in their seventh semester and ARCH 730 (instead of ARCH 729) in the eighth semester. Students who wish to take this extension must decide at the beginning of their seventh semester. Students who pursue the non-thesis MArch degree are required to take the Totalization Studio (ARCH 601, 10 credit hours) in lieu of the thesis studio and an additional elective (worth 3 credit hours) in lieu of the written thesis course ARCH 729 or ARCH 730.

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ARCH 701, ARCH 703, ARCH 729, ARCH 730 and are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade. As S/U courses, they do not apply to the requirement of a minimum grade of B- (2.67) in each required course.

Option 2 - MArch Degree Program

Offered to individuals who hold a four-year undergraduate degree with a major in Architecture. Advanced placement into Option 2 is at the discretion of the admissions committee, but generally preference for admission is given to those who have successfully completed five semesters or more of undergraduate design studio as well as undergraduate courses that are analogous to those given in the first year of Option 1. A minimum of two semesters of college-level courses in the history of art and/or architecture and one semester of college-level courses in mathematics or physics is expected. In order to graduate, students in this program must complete, in addition to 4 semesters of design studios (50-52 credit hours), a curriculum of 31 credit hours with an additional free electives course load of 12 hours.

Summary

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Option 2 Degree Requirements

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<tr>
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<tbody>
<tr>
<td></td>
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<tr>
<td>ARCH 503</td>
<td>CORE DESIGN STUDIO III</td>
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<td>ARCH 504</td>
<td>CORE DESIGN STUDIO IV</td>
<td>10</td>
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<tr>
<td>ARCH 507</td>
<td>TECHNOLOGY I</td>
<td>3</td>
</tr>
<tr>
<td>ARCH 509</td>
<td>TECHNOLOGY II</td>
<td>3</td>
</tr>
<tr>
<td>ARCH 514</td>
<td>TECHNOLOGY III</td>
<td>3</td>
</tr>
<tr>
<td>ARCH 516</td>
<td>TECHNOLOGY IV</td>
<td>3</td>
</tr>
<tr>
<td>ARCH 525</td>
<td>INTRODUCTION TO ARCHITECTURAL THINKING</td>
<td>3</td>
</tr>
<tr>
<td>ARCH 601</td>
<td>ARCHITECTURAL PROBLEMS: STUDIO</td>
<td>3</td>
</tr>
<tr>
<td>ARCH 602</td>
<td>ARCHITECTURAL PROBLEMS</td>
<td>3</td>
</tr>
<tr>
<td>ARCH 623</td>
<td>PROFESSIONALISM AND MANAGEMENT</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>IN ARCHITECTURAL PRACTICE</td>
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</tr>
<tr>
<td></td>
<td>Select 2 courses from the following:</td>
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<tr>
<td>ARCH 645</td>
<td>FOUNDATIONS AND THE HISTORY AND THEORY OF ARCHITECTURE I (1450-1850)</td>
<td>3</td>
</tr>
<tr>
<td>ARCH 646 / HART 506</td>
<td>FOUNDATIONS IN THE HISTORY AND THEORY OF ARCHITECTURE II (1850-1950)</td>
<td>3</td>
</tr>
<tr>
<td>ARCH 652</td>
<td>FOUNDATIONS IN THE HISTORY AND THEORY OF ARCHITECTURE III (1950-2000)</td>
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</tr>
<tr>
<td>ARCH 655</td>
<td>CONTEMPORARY PRACTICES IN ARCHITECTURE</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Thesis Requirements</td>
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<tr>
<td>ARCH 701</td>
<td>THESIS PROPOSAL</td>
<td>1</td>
</tr>
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<td>ARCH 703</td>
<td>DESIGN THESIS STUDIO</td>
<td>10</td>
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<tr>
<td>ARCH 729</td>
<td>THESIS WRITTEN DOCUMENT (FALL)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>or ARCH 730</td>
<td>THESIS WRITTEN DOCUMENT (SPRING)</td>
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Option 2 Plan-of-Study

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<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
</table>
| 1st Semester
| ARCH 503 | CORE DESIGN STUDIO III                   | 10           |
| ARCH 507 | TECHNOLOGY I                               | 3            |
| ARCH 525 | INTRODUCTION TO ARCHITECTURAL THINKING    | 3            |
|         | Elective one | Elective one                             | 3            |
|         | Credit Hours                                        | 19           |
| 2nd Semester
| ARCH 504 | CORE DESIGN STUDIO IV                    | 10           |
| ARCH 509 | TECHNOLOGY II                              | 3            |
|         | History and Theory | History and Theory | 5 |
|         | Elective two | Elective two                             | 3            |
|         | Credit Hours                                        | 16           |
| 3rd Semester
| ARCH 514 | TECHNOLOGY III                             | 3            |
| ARCH 601 | ARCHITECTURAL PROBLEMS: STUDIO            | 10           |
| ARCH 623 | PROFESSIONALISM AND MANAGEMENT             | 3            |
|         | IN ARCHITECTURAL PRACTICE                  |              |
|         | History and Theory | History and Theory | 5 |
|         | Elective two | Elective two                             | 3            |
|         | Credit Hours                                        | 16           |
| 4th Semester
| ARCH 516 | TECHNOLOGY IV                              | 3            |
| ARCH 602 | ARCHITECTURAL PROBLEMS                     | 10-12        |
| ARCH 655 | CONTEMPORARY PRACTICES IN ARCHITECTURE     | 3            |
| ARCH 701 | THESIS PROPOSAL                           | 1            |

Footnotes and Additional Information

1. Students who have previously taken courses equivalent to Technology I and II at another institution may instead take electives with permission from the director of graduate studies.
2. Students enrolled in the Paris program (RSAP) should register for ARCH 620 design studio in lieu of ARCH 601 (fall) or ARCH 602 (spring).
3. All students are required to take ARCH 701 even if they pursue the non-thesis degree program (option 1 or 2). Students who wish to remain enrolled as a registered student for an eighth semester will register for ARCH 703 in their seventh semester and ARCH 730 (instead of ARCH 729) in the eighth semester. Students who wish to take this extension must decide at the beginning of their seventh semester. Students who pursue the non-thesis MArch degree are required to take the Totalization Studio (ARCH 601, 10 credit hours) in lieu of the thesis studio and an additional elective (worth 3 credit hours) in lieu of the written thesis course ARCH 729 or ARCH 730.
4. ARCH 701, ARCH 703, ARCH 729, and ARCH 730 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade. As S/U courses, they do not apply to the requirement of a minimum grade of B- (2.67) in each required course.
### 5th Semester

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>ARCH 703 DESIGN TES.</td>
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</tr>
<tr>
<td>ARCH 729 T.D.(FALL)</td>
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</tr>
<tr>
<td>History and Theory</td>
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**Total Credit Hours:** 20-22

### 6th Semester

<table>
<thead>
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<th>Course</th>
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<td>ARCH 730 T.D.(SPRING)</td>
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</table>

**Total Credit Hours:** 16

**Total Credit Hours:** 87-89

### Footnotes and Additional Information

1. Students who have previously taken courses equivalent to Technology I and II at another institution may instead take electives with permission from the director of graduate students.

2. Students enrolled in the Paris program (RSAP) should register for ARCH 620 in lieu of ARCH 601 (fall) or ARCH 602 (spring).

3. All students are required to take ARCH 701 even if they pursue the non-thesis degree program (option 1 or 2). Students who wish to remain enrolled as a registered student for an eighth semester will register for ARCH 703 in their seventh semester and ARCH 730 (instead of ARCH 729) in the eighth semester. Students who wish to take this extension must decide at the beginning of their seventh semester. Students who pursue the non-thesis MArch degree are required to take the Totalization Studio (ARCH 601, 10 credit hours) in lieu of the thesis studio and an additional elective (worth 3 credit hours) in lieu of the written thesis course ARCH 729 or ARCH 730.

4. Students are required to enroll in ARCH 525 (the ARCH 525 course serves as a History and Theory I Introduction), after which students must select two further History and Theory courses from the following options: ARCH 645, ARCH 646, or ARCH 652. The additional credit hours earned from the two History and Theory courses will complete the 93-95 credit hours required for the MArch degree, Option 2.

5. Students who wish to remain enrolled as a registered student for an eighth semester will register for ARCH 703 in their seventh semester and ARCH 730 (instead of ARCH 729) in the eighth semester. Students who wish to take this extension must decide at the beginning of their seventh semester. Students who pursue the non-thesis MArch degree are required to take the Totalization Studio (ARCH 601, 10 credit hours) in lieu of the thesis studio and an additional elective (worth 3 credit hours) in lieu of the written thesis course ARCH 729 or ARCH 730.

### Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

### Opportunities for the MArch Degree

**Master of Architecture (MArch) Thesis Requirement**

Thesis is payback time—it is when students build upward and outward from what they’ve learned over the years, giving back to the school by providing new disciplinary fodder. More immediate than a crystal ball, some of the common threads underlying a Rice thesis might well reveal tomorrow’s future. Despite working in the context of Texas’s vast horizon, Rice thesis students do not envision an endless frontier. Rather than turning away from the discipline, our students have found new territories embedded within architectural and urban paradigms, breathing into them new life and vitality. All MArch degree candidates are required to propose an independent thesis, articulating an ambition, and envisioning its architectural specificity. Students develop their individual thesis proposals during their penultimate semester. Students in Options 1 and 2 complete the degree requirements by either submitting a thesis or by taking alternative coursework. Thesis design evolves from the honing of that proposal and continues through the final semester, under the guidance of an individual advisor. In early January, thesis projects are reviewed publicly by a panel of eminent invited guests. In short, the school starts each new year with a batch of new visions.

**RSA Paris**

MArch degree (Option 1 and Option 2) students may apply to RSAP to complete one semester in Paris: Option 1 students may do so in their fifth or sixth semester, Option 2 in their third or fourth semester. BArch students may apply to RSAP in their final year of study.

### Additional Information

For additional information, please see the School of Architecture website: [https://arch.rice.edu/](https://arch.rice.edu/)

### Master of Arts (MA) Degree in the field of Architecture

**Program Learning Outcomes for the MA Degree in the field of Architecture**

Upon completing the MA degree in the field of Architecture, students will be able to:

1. Integrate architecture and advanced research to address the most pressing and complex issues of design, environment, and culture.
2. Develop research techniques and knowledge of advanced systems, techniques, and processes.
3. Innovate the knowledge and practice of architecture through advanced critical thinking and experimentation.

### Policies for the MArch Degree

**School of Architecture Graduate Program Handbook**

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the school of Architecture publishes a graduate program handbook, which can be found here: [https://gradhandbooks.rice.edu/2019_20/Architecture_Graduate_Handbook.pdf](https://gradhandbooks.rice.edu/2019_20/Architecture_Graduate_Handbook.pdf)
Requirements for the MA Degree in the field of Architecture

The MA degree can be either a thesis or a non-thesis master's degree depending on the option the student pursues. For general university requirements for thesis master's degrees, please see Thesis Master's Degrees (https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-thesis-masters-degrees/). For general university requirements for non-thesis master's degrees, please see Non-Thesis Master's Degrees (https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-non-thesis-masters-degrees/). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55).

Present Future is a concentrated undertaking culminating in the MA (Master of Arts) degree, in the field of Architecture. The program is structured around a three-semester-long exploration of a topic led by a Rice School of Architecture faculty member. A select group of students form the core: a collective intelligence responsible for developing a discourse that synthesizes theoretical, historical, and design ambitions.

Subjects will be of contemporary importance and will be framed by a 3-credit seminar the first term, a 12-credit collective thesis in the second term, and a concluding 3-credit seminar in the third term. In addition to free electives, each semester will include additional required credits that are appropriate to the selected topic, bringing the total credit hours to 39.

The program's student body will include those with backgrounds in architecture as well as other fields: individuals with BA, BS equivalent, or more advanced degrees in architecture or other disciplines are invited to apply. Coursework will include offerings from the School of Architecture and other departments across Rice University.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MA Degree in the field of Architecture</td>
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Degree Requirements

<table>
<thead>
<tr>
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<th>Credit Hours</th>
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Core Requirements

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<td>ARCH 602</td>
<td>ARCHITECTURAL PROBLEMS</td>
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<tr>
<td>ARCH 651</td>
<td>PRESENT FUTURE SEMINAR</td>
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</tr>
<tr>
<td>ARCH 751</td>
<td>PRESENT FUTURE II</td>
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</tr>
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</table>

Elective Requirements

Students must complete 7 additional courses from departmental (ARCH) course offerings

| Credit Hours | 21 |

Total Credit Hours

| Total Credit Hours | 39 |

Footnotes and Additional Information

1 With permission, thesis or a design studio may be taken as electives.

Policies for the MA Degree in the field of Architecture

School of Architecture Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the school of Architecture publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Architecture_Graduate_Handbook.pdf

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program's advisor when considering transfer credit possibilities.

Additional Information

For additional information, please see the School of Architecture website: https://arch.rice.edu/

Opportunities for the MA Degree in the field of Architecture

Additional Information

For additional information, please see the School of Architecture website: https://arch.rice.edu/

Art History

Contact Information

Art History
https://arthistory.rice.edu/
103 Herring Hall
713-348-4276
The Department of Art History offers a wide range of courses in European, American, Latin American, Middle Eastern/Islamic, and Asian art history. The major in Art History is structured to expose students to the chronological, geographical, and methodological breadth of the field of scholarship.

**Bachelor's Program**
- Bachelor of Arts (BA) Degree with a Major in Art History (p. 133)

**Minor**
- Minor in Cinema and Media Studies (p. 296)

**Master's Program**
- Master of Arts (MA) Degree in the field of Art History*

**Doctoral Program**
- Doctor of Philosophy (PhD) Degree in the field of Art History (p. 141)

* Although students are not normally admitted to a Master of Arts (MA) degree program, graduate students may earn the MA as they work towards the PhD.

**Chair**
Leo Costello

**Director of Undergraduate Studies**
Fabiola López-Durán

**Director of Graduate Studies**
Gordon Hughes

**Professors**
Joseph Manca
Diane Wolfthal

**Associate Professors**
Graham Bader
Leo Costello
Shih-Shan Susan Huang
Gordon Hughes
Fabiola López-Durán
Linda E. Neagley
Lida Oukaderova

**Assistant Professors**
Sophie Crawford-Brown
Farshid Emami

---

### Description and Code Legend

**Note:** Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

**Course Catalog/Schedule**
- Course offerings/subject: HART

**Department Description and Code**
- Art History: HART

**Undergraduate Degree Description and Code**
- Bachelor of Arts degree: BA

**Undergraduate Major Description and Code**
- Major in Art History: HART

**Undergraduate Major Areas of Specialization Descriptions and Attribute Codes**
- Area of Specialization in Art History: AHAH
- Area of Specialization in History of Architecture: AHHA

**Please Note:** Areas of Specialization are department/program-specific and are not formally recognized academic credentials. Unlike Major Concentrations, Areas of Specialization do not appear on the student’s official academic transcript, etc.

**Undergraduate Minor Description and Code**
- Minor in Cinema and Media Studies: CMST

**Graduate Degree Descriptions and Codes**
- Master of Arts degree: MA
- Doctor of Philosophy degree: PhD

**Graduate Degree Program Description and Code**
- Degree Program in Art History: HART

**CIP Code and Description**
- HART Major/Program: CIP Code/Title: 50.0703 - Art History, Criticism and Conservation
- CMST Minor: CIP Code/Title: 50.0601 - Film/Cinema/Video Studies

* Systems Use Only: this information is used solely by internal offices at Rice University (such as OTR, GPS, etc.) and primarily within student information systems and support.

Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: [https://nces.ed.gov/ipeds/cipcode/](https://nces.ed.gov/ipeds/cipcode/)

### Bachelor of Arts (BA) Degree with a Major in Art History

**Program Learning Outcomes for the BA Degree with a Major in Art History**

Upon completing the BA degree with a major in Art History, students will be able to:

1. Understand the historical, social, cultural and political contexts and traditions of art. Students will develop an understanding of the
multiple contexts of art, including its relationship to religion, politics, gender and sexuality, urbanism, history, culture, and other domains of human social experience.

2. Demonstrate effective use of specialized disciplinary vocabulary and appropriate methodologies to analyze works of art and communicate their form, function, and meaning orally and in writing.

3. Demonstrate ability to perform comparative analyses of art works based on differences or similarities in cultural context, form, content, artist, materials, and time and place of production.

4. Demonstrate specialized knowledge about, and be able to identify, art from specific geographical locations, periods, artists, and/or artistic movements.

5. Evaluate and use primary and secondary sources to generate and answer original research questions and produce independent research.

6. Understand major artistic movements, common themes, trends, and the styles of major artists. They will demonstrate generalized knowledge of major figures in art history, major art movements and traditions, and major artistic styles.

Requirements for the BA Degree with a Major in Art History

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Art History must complete:

• A minimum of 10 courses (30 credit hours) to satisfy major requirements.
• A minimum of 120 credit hours to satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
• A minimum of 5 courses (15 credit hours) taken at the 300-level or above.
• A maximum of 4 courses (12 credit hours) from study abroad or transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.
• The requirements for one area of specialization (see below for areas of specialization). When students declare the major (p. 11) in Art History, students must additionally identify and declare one of two areas of specialization, either in:
  • Art History (p. ), or
  • History of Architecture (p. ).

It is possible for students to change their area of specialization at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (registrar@rice.edu).

The department of Art History also offers a unique departmental Honors Program. For more information, including Honors Program requirements, see the Opportunities tab.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
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<td>Total Credit Hours Required for the Major in Art History</td>
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</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Art History</td>
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Degree Requirements

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<th>Title</th>
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<td>Area of Specialization</td>
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<td>Select 1 from the following Areas of Specialization (see Areas of Specialization below):</td>
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<tr>
<td></td>
<td>Art History</td>
<td></td>
</tr>
<tr>
<td></td>
<td>History of Architecture</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Art History</td>
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</tr>
<tr>
<td></td>
<td>Additional Credit Hours to Complete BA Degree Requirements</td>
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</tr>
<tr>
<td></td>
<td>University Graduation Requirements (p. 26)*</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours</td>
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</tr>
</tbody>
</table>

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

Areas of Specialization

Students must complete a total of 10 courses (30 credit hours) as listed in the requirements for one of the Art History areas of specialization. Note that the course lists to satisfy each requirement can be found below the specialization requirements.

Area of Specialization: Art History

To satisfy the requirements for the Art History Specialization, Art History majors must complete 10 courses (30 credit hours) as listed below.

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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
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<td>Ancient–Medieval (Pre-Modern)</td>
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<tr>
<td></td>
<td>Select a minimum of 1 course at the 200-level or above (see below for course list)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Renaissance–18th century (Early Modern)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Select a minimum of 1 course at the 200-level or above (see below for course list)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>19th century–Present (Modern through Contemporary)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Select a minimum of 1 course at the 200-level or above (see below for course list)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Seminars</td>
<td>6</td>
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<tr>
<td></td>
<td>Select a minimum of 2 courses (see below for course list)</td>
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<tr>
<td></td>
<td>Outside European and American Traditions</td>
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</tr>
<tr>
<td></td>
<td>Select a minimum of 1 course at the 200-level or above (see below for course list)</td>
<td></td>
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</tbody>
</table>

Elective Requirements
Select a minimum of 4 additional courses at the 200-level or above as Electives from departmental (HART) course offerings ¹

Total Credit Hours 30

Footnotes and Additional Information
¹ Transfer credit for HART 100 received via the articulation of advanced placement credit (AP) credit, international baccalaureate (IB) credit, or A-level credit will not count toward any major requirements, including elective requirements.

Area of Specialization: History of Architecture
To satisfy the requirements for the History of Architecture Specialization, Art History majors must complete 10 courses (30 credit hours) as listed below.

| Code     | Title                                                                 | Credit Hours |
|----------|                                                                      |              |
| HART 100 | ART OF ANCIENT ROME                                                  | 3            |
| HART 207 | TECHNICAL ART HISTORY: STUDYING THE TECHNIQUES OF WESTERN PAINTING,  | 3            |
|          | 13TH-20TH CENTURIES                                                  |              |
| HART 208 | LIVING IN THE CITY IN THE OTTOMAN EMPIRE                             | 3            |
| HART 301 | IMPERIAL CITY: ISTANBUL 1453-1922                                    | 3            |
| HART 302 | JERUSALEM TO ISFAHAN                                                 | 3            |
| HART 303 | MATERIAL, FORM, SPACE, TIME: CONCRETE AND THE REVOLUTION OF SPACE IN | 3            |
|          | ANCIENT ROME                                                         |              |
| HART 304 | THE BAYEUX TAPESTRY AND THE ANGLO-NORMAN WORLD                       | 3            |
| HART 305 | CAESAR’S PALACE: AUTHOR(ITY) AND MEANING IN THE ROMAN IMPERIAL       | 3            |
|          | RESIDENCE                                                            |              |

Course Lists to Satisfy Requirements

Ancient-Medieval (Pre-Modern) Courses

| Code     | Title                                                                 | Credit Hours |
|----------|                                                                      |              |
| HART 312 | ADVANCED STUDY IN MUSEUMS AND HERITAGE: ARTS OF ANCIENT MEDITERRANEAN AT THE MENIL COLLECTION | 3          |
| HART 316 | VIRTUAL RECONSTRUCTION OF HISTORICAL CITIES                           | 3            |
| HART 318 | SPECIAL TOPICS IN ANCIENT ART                                        | 3            |
| HART 326 | MATERIAL, FORM, SPACE, TIME: CONCRETE AND THE REVOLUTION OF SPACE IN ANCIENT ROME | 3          |
| HART 327 | THE GENESIS OF ROMAN ART                                             | 3            |
| HART 330 | EARLY MEDIEVAL ART                                                   | 3            |
| HART 331 | GOTHIC ART                                                           | 3            |
| HART 332 | ART OF THE COURTS                                                    | 3            |
| HART 337 | EAST & WEST: MEDIEVAL VISUAL CULTURE IN CHINA AND NORTHERN EUROPE     | 3            |
| HART 341 | ARCHITECTURE OF THE GOTHIC CATHEDRAL FROM THE MIDDLE AGES TO THE TWENTIETH CENTURY | 3          |
| HART 433 | THE BAYEUX TAPESTRY AND THE ANGLO-NORMAN WORLD                       | 3            |
| HART 482 | CAESAR’S PALACE: AUTHOR(ITY) AND MEANING IN THE ROMAN IMPERIAL RESIDENCE | 3          |

Footnotes and Additional Information
¹ Transfer credit for HART 100 received via the articulation of advanced placement credit (AP) credit, international baccalaureate (IB) credit, or A-level credit will not count toward any major requirements, including elective requirements.

² Courses listed in the Seminar Courses list can also satisfy a requirement in the History of Architecture, Outside European and American Traditions, or the three chronological categories requirements.

Renaissance–18th Century (Early Modern) Courses

<p>| Code     | Title                                                                 | Credit Hours |
|----------|                                                                      |              |
| HART 307 | TECHNICAL ART HISTORY: STUDYING THE TECHNIQUES OF WESTERN PAINTING,  | 3            |
|          | 13TH-20TH CENTURIES                                                  |              |
| HART 308 | LIVING IN THE CITY IN THE OTTOMAN EMPIRE                             | 3            |
| HART 321 | IMPERIAL CITY: ISTANBUL 1453-1922                                    | 3            |
| HART 322 | JERUSALEM TO ISFAHAN                                                 | 3            |
| HART 326 | MATERIAL, FORM, SPACE, TIME: CONCRETE AND THE REVOLUTION OF SPACE IN ANCIENT ROME | 3          |
| HART 333 | LOOKING AT EUROPEAN PRINTS                                           | 3            |
| HART 339 | AMERICAN ART AND ARCHITECTURE I: 1620-1800                           | 3            |</p>
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<th>Code</th>
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<tr>
<td>HART 340 / MDEM 340</td>
<td>NORTHERN RENAISSANCE ART</td>
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<td>HART 341</td>
<td>EARLY RENAISSANCE ART IN ITALY</td>
<td>3</td>
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<tr>
<td>HART 342</td>
<td>THE HIGH RENAISSANCE AND MANNERISM IN ITALY</td>
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<tr>
<td>HART 343 / MDEM 343</td>
<td>MASTERS OF THE BAROQUE ERA</td>
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<tr>
<td>HART 344</td>
<td>CAPITALISM AND CULTURE</td>
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<tr>
<td>HART 345 / ARCH 345</td>
<td>FOUNDATIONS IN THE HISTORY AND THEORY OF ARCHITECTURE I (1450-1850)</td>
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<tr>
<td>HART 346 / SWGS 346</td>
<td>SEMINAR ON LOVE: MAKING LOVE IN MODERN ART AND THOUGHT</td>
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<td>HART 354</td>
<td>AGE OF ROMANTICISM IN EUROPE</td>
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<td>HART 355</td>
<td>JACQUES-LOUIS DAVID: REVOLUTION</td>
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<td>HART 374</td>
<td>THE VISUAL CULTURE OF THE FRENCH REVOLUTION</td>
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<tr>
<td>HART 378 / MDEM 378</td>
<td>DUTCH ART IN THE AGE OF REMBRANDT</td>
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<td>HART 400</td>
<td>BAYOU BEND UNDERGRADUATE INTERNSHIP I</td>
<td>3</td>
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<tr>
<td>HART 401</td>
<td>BAYOU BEND UNDERGRADUATE INTERNSHIP II</td>
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<tr>
<td>HART 406</td>
<td>ICONOCLASMS: THE DESTRUCTION OF IMAGES</td>
<td>3</td>
</tr>
<tr>
<td>HART 434 / MDEM 434 / SWGS 434</td>
<td>SEEING SEX IN EUROPEAN ART, 1400-1700</td>
<td>3</td>
</tr>
<tr>
<td>HART 435 / HIST 443 / MDEM 435</td>
<td>MULTICULTURAL EUROPE, 1400-1700</td>
<td>3</td>
</tr>
<tr>
<td>HART 440</td>
<td>ISSUES IN THE HISTORY OF PRINTS, PRE-MODERN TO PRESENT</td>
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19th century–Present (Modern through Contemporary) Courses

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<td>HART 202</td>
<td>AVANT-GARDE AND AFTER: MODERN ART IN EUROPE, 1900-1945</td>
<td>3</td>
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<tr>
<td>HART 205</td>
<td>ART SINCE 1945</td>
<td>3</td>
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<tr>
<td>HART 207</td>
<td>FOURTEEN ARTWORKS AT THE MFAH</td>
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<tr>
<td>HART 225 / ARCH 225</td>
<td>INTRODUCTION TO ARCHITECTURAL THINKING</td>
<td>3</td>
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<tr>
<td>HART 250 / FILM 250</td>
<td>CONTEMPORARY EUROPEAN CINEMA</td>
<td>4</td>
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<tr>
<td>HART 263 / FOTO 263</td>
<td>EPISODES IN THE HISTORY OF PHOTOGRAPHY: FROM INVENTION TO THE PRESENT</td>
<td>3</td>
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<tr>
<td>HART 265</td>
<td>A VISUAL CULTURE TRAVELOGUE: ART AND POLITICS IN MODERN LATIN AMERICA</td>
<td>3</td>
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<tr>
<td>HART 280 / ARTS 280 / FILM 280</td>
<td>HISTORY AND AESTHETICS OF FILM</td>
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<tr>
<td>HART 281 / FILM 281</td>
<td>THE BEGINNINGS OF CINEMA</td>
<td>3</td>
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<tr>
<td>HART 283 / FILM 285</td>
<td>AUTEUR FILM: CASE STUDIES OF THREE AUTEURS</td>
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<tr>
<td>Code</td>
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<td>HART 365</td>
<td>ART BETWEEN THE WARS: EUROPEAN MODERNISM, 1918-1940</td>
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<td>HART 375 / ARCH 375</td>
<td>LATIN-EUROPE/LATIN-AMERICA: THE AESTHETICS AND POLITICS OF MODERN CITIES</td>
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<tr>
<td>HART 380 / ENGL 373 / FILM 373</td>
<td>SURVEY OF AMERICAN FILM AND CULTURE</td>
<td>4</td>
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<tr>
<td>HART 381</td>
<td>COLLAGE AND ITS HISTORIES</td>
<td>3</td>
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<td>HART 382 / FILM 382</td>
<td>MODALITIES OF CINEMA</td>
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<td>HART 383 / FILM 383</td>
<td>GLOBAL CINEMA</td>
<td>4</td>
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<td>HART 386</td>
<td>DADA</td>
<td>3</td>
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<tr>
<td>HART 387 / GERM 351</td>
<td>HOLOCAUST MEMORY IN MODERN GERMANY</td>
<td>3-4</td>
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<tr>
<td>HART 388 / FILM 388</td>
<td>POST WAR EUROPEAN CINEMA</td>
<td>4</td>
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<tr>
<td>HART 391 / ANTH 378 / FILM 378</td>
<td>PLACE AND MEMORY IN MIDDLE EASTAN AND EUROPEAN CINEMA</td>
<td>4</td>
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<td>HART 398 / GERM 339</td>
<td>FROM EXPRESSIONISM TO FASCISM: ART AND FILM IN GERMANY</td>
<td>3</td>
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<tr>
<td>HART 400</td>
<td>BAYOU BEND UNDERGRADUATE INTERNSHIP I</td>
<td>3</td>
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<tr>
<td>HART 401</td>
<td>BAYOU BEND UNDERGRADUATE INTERNSHIP II</td>
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<td>HART 406</td>
<td>ICONOCLASMS: THE DESTRUCTION OF IMAGES</td>
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<td>HART 407</td>
<td>POP ART</td>
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<td>HART 413</td>
<td>MURDER AND MODERNISM</td>
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<td>HART 451</td>
<td>MODELS OF ABSTRACTION</td>
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<td>HART 452</td>
<td>MANET(S) AND MODERNISM(S)</td>
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<tr>
<td>HART 457 / FILM 455</td>
<td>VIDEO AND EXPANDED CINEMA</td>
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<td>HART 461</td>
<td>ART OF THE 60s AND 70s</td>
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<td>HART 463 / ARCH 452</td>
<td>PRACTICING UTOPIA: ARCHITECTURE, EUGENICS AND THE MODERN LATIN CITY</td>
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<tr>
<td>HART 465</td>
<td>LATIN AMERICAN BODIES: ON MODERNISM</td>
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<td>HART 473</td>
<td>EVOLUTION CUSTOM BUILT: ARCHITECTURE, GENETICS, AND THE ANTHROPOCENE</td>
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<tr>
<td>HART 480 / ARTS 435 / FILM 435</td>
<td>SEMINAR ON FILM AUTHORSHIP: THE NEW HOLLYWOOD</td>
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<tr>
<td>HART 481 / FILM 485</td>
<td>AUTEUR FILM: CASE STUDIES OF THREE AUTEURS</td>
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<td>WALTER BENJAMIN, MEDIA &amp; MODERNITY</td>
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<td>A REVOLUTION FROM WITHIN: TRENDS IN CONTEMPORARY CUBAN CULTURE</td>
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<td>HART 309 / CLAS 309</td>
<td>THE DAWN OF ROME: GENERATING THE URBAN, SOCIAL AND POLITICAL LIFE OF THE ETERNAL CITY</td>
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<td>ADVANCED STUDY IN MUSEUMS AND HERITAGE: ARTS OF ANCEINT MEDITERRANEAN AT THE MENIL COLLECTION</td>
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<td>MODERN ART AND MONSTROSITY</td>
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<td>EPIPHANIES: SEEING IN A NEW LIGHT AND RECOGNIZING THE RADIANCE</td>
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<td>LOOKING AT EUROPEAN PRINTS 1400-1700</td>
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<td>HART 334</td>
<td>PICASSO, POLLOCK, WARHOL</td>
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<td>HART 349</td>
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<td>HART 351</td>
<td>ART, REVOLUTION, WAR: MODERN ART IN VIOLENT TIMES</td>
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<td>HART 353</td>
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<td>HART 357</td>
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<td>HART 365</td>
<td>ART BETWEEN THE WARS: EUROPEAN MODERNISM, 1918-1940</td>
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<td>HART 371</td>
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<td>HART 374</td>
<td>THE VISUAL CULTURE OF THE FRENCH REVOLUTION</td>
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<td>LATIN-EUROPE/LATIN-AMERICA: THE AESTHETICS AND POLITICS OF MODERN CITIES</td>
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<td>MEDIEVAL MANUSCRIPTS</td>
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<td>COLLAGE AND ITS HISTORIES</td>
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<td>HART 387</td>
<td>HOLOCAUST MEMORY IN MODERN GERMANY</td>
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<td>POST WAR EUROPEAN CINEMA</td>
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<td>HART 391</td>
<td>PLACE AND MEMORY IN MIDDLE EASTAN AND EUROPEAN CINEMA</td>
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<td>MEDICAL HUMANITIES VISUAL CULTURE</td>
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<td>ART IN THE WORLD FIELD STUDY</td>
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<td>HART 398</td>
<td>FROM EXPRESSIONISM TO FASCISM: ART AND FILM IN GERMANY</td>
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<td>POP ART</td>
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<td>HART 413</td>
<td>MURDER AND MODERNISM</td>
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<td>VISUAL CULTURE OF MEDIEVAL PILGRIMAGE</td>
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<td>THE GROTESQUE</td>
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<td>ARCHITECTURE OF THE GOTHIC CATHEDRAL FROM THE MIDDLE AGES TO THE TWENTIETH CENTURY</td>
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<td>HART 433</td>
<td>THE BAYEUX TAPESTRY AND THE ANGLO-NORMAN WORLD</td>
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<td>MULTICULTURAL EUROPE, 1400-1700</td>
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<td>MODELS OF ABSTRACTION</td>
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<td>MANET(S) AND MODERNISM(S)</td>
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<td>HART 457</td>
<td>VIDEO AND EXPANDED CINEMA</td>
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<td>HART 461</td>
<td>ART OF THE 60s AND 70s</td>
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<td>HART 463</td>
<td>PRACTICING UTOPIA: ARCHITECTURE, EUGENICS AND THE MODERN LATIN CITY</td>
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<td>HART 465</td>
<td>LATIN AMERICAN BODIES: ON MODERNISM</td>
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<td>HART 473</td>
<td>EVOLUTION CUSTOM BUILT: ARCHITECTURE, GENETICS, AND THE ANTHROPOCENE</td>
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<td>SEMINAR ON FILM AUTHORSHIP: THE NEW HOLLYWOOD</td>
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<td>HART 495</td>
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**Outside European and American Traditions Courses**

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<td>A VISUAL CULTURE TRAVELOGUE: ART AND POLITICS IN MODERN LATIN AMERICA</td>
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<td>HART 302</td>
<td>FROM THE SUBLIME TO THE SUSTAINABLE: ART, ARCHITECTURE AND NATURE</td>
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<tr>
<td>HART 304</td>
<td>A REVOLUTION FROM WITHIN: TRENDS IN CONTEMPORARY CUBAN CULTURE</td>
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<tr>
<td>HART 310</td>
<td>BRAZIL BUILT: THE CLINIC, THE TROPICAL, AND THE AESTHETIC</td>
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<td>HART 314</td>
<td>POLITICS OF CULTURAL HERITAGE IN THE MODERN MIDDLE EAST, 1800 TO THE PRESENT</td>
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<td>HART 321</td>
<td>IMPERIAL CITY: ISTANBUL 1453-1922</td>
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<td>JERUSALEM TO ISFAHAN</td>
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<td>HART 323</td>
<td>BUDDHIST AND DAIOSIT VISUAL CULTURES IN TRADITIONAL CHINA</td>
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<td>A REVOLUTION FROM WITHIN: TRENDS IN CONTEMPORARY CUBAN CULTURE</td>
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<td>HART 383 / FILM 383</td>
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<td>PRACTICING UTOPIA: ARCHITECTURE, EUGENICS AND THE MODERN LATIN CITY</td>
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<td>HART 465</td>
<td>LATIN AMERICAN BODIES: ON MODERNISM</td>
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### History of Architecture Courses

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<td>INTRODUCTION TO THE HISTORY OF WESTERN ART I: ANTIQUITY TO GOTHIC</td>
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<td>HART 201</td>
<td>ART OF ANCIENT ROME</td>
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<td>HART 220</td>
<td>INTRODUCTION TO MEDIEVAL ART AND ARCHITECTURE OF WESTERN EUROPE</td>
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<td>HART 225 / ARCH 225</td>
<td>INTRODUCTION TO ARCHITECTURAL THINKING</td>
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<tr>
<td>HART 265</td>
<td>A VISUAL CULTURE TRAVELOGUE: ART AND POLITICS IN MODERN LATIN AMERICA</td>
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<td>HART 302</td>
<td>FROM THE SLUBIME TO THE SUSTAINABLE: ART, ARCHITECTURE AND NATURE</td>
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<td>HART 304 / FILM 339 / SPPO 375</td>
<td>A REVOLUTION FROM WITHIN: TRENDS IN CONTEMPORARY CUBAN CULTURE</td>
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<td>HART 311 / ANTH 331</td>
<td>ART AND ARCHAEOLOGY OF THE ANCIENT NEAR EAST</td>
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<td>SPECIAL TOPICS IN ANCIENT ART</td>
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<td>HART 332 / MDEM 332</td>
<td>ART OF THE COURTS</td>
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<td>HART 339</td>
<td>AMERICAN ART AND ARCHITECTURE I: 1620-1800</td>
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<td>HART 345 / ARCH 345</td>
<td>FOUNDATIONS IN THE HISTORY AND THEORY OF ARCHITECTURE I (1450-1850)</td>
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<td>HART 395</td>
<td>ROMAN ARCHAEOLOGY: FIELD SCHOOL</td>
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<td>ARCHITECTURE OF THE GOTHIC CATHEDRAL FROM THE MIDDLE AGES TO THE TWENTIETH CENTURY</td>
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<td>HART 463 / ARCH 452</td>
<td>PRACTICING UTOPIA: ARCHITECTURE, EUGENICS AND THE MODERN LATIN CITY</td>
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<td>LATIN AMERICAN BODIES: ON MODERNISM</td>
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<td>EVOLUTION CUSTOM BUILT: ARCHITECTURE, GENETICS, AND THE ANTHROPOCENE</td>
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<td>CAESAR'S PALACE: AUTHOR(ITY) AND MEANING IN THE ROMAN IMPERIAL RESIDENCE</td>
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</table>

### Policies for the BA Degree with a Major in Art History

#### Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: [https://oaa.rice.edu](https://oaa.rice.edu). Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

#### Departmental Transfer Credit Guidelines

Students pursuing the major in Art History should be aware of the following departmental transfer credit guidelines:

- No more than 4 courses (12 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the major.
- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.
- Transfer credit received via the articulation of advanced placement (AP) credit (HART 100), international baccalaureate (IB) credit, or A-level credit will not be considered towards major requirements.
Distribution Credit Information

The determination of distribution eligibility is done as part of the new course creation process (https://registrar.rice.edu/facstaff/courseprocess/). As part of an annual roll call (https://registrar.rice.edu/facstaff/distribution_credit/) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean's Offices of each of the academic schools.

Faculty and leadership in the academic schools are responsible for ensuring that the courses identified as distribution-eligible meet the criteria as set in the General Announcements (p. 26). Students are responsible for ensuring that they meet graduation requirements (p. 26) by completing coursework designated as distribution at the time of course registration.

Distribution courses from Art History (HART) introduce students to fundamental historical and/or methodological concepts for the study of art, architecture, and material culture. They aim to develop key skills in looking at, writing about, and discussing works of art and their historical roles. These courses may introduce a broad historical overview (Renaissance to the present, etc.), a more specific historical period or concept (Baroque, modernism, ancient Rome, etc.), or a cultural idea or practice that has been important for art's history (pilgrimage, iconoclasm, etc.).

Additional Information

For additional information, please see the Art History website: https://arthistory.rice.edu/

Opportunities for the BA Degree with a Major in Art History

Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Departmental Honors Program in Art History

The departmental honors designation is reserved for those accepted into the Art History Honors Program. Students apply (via the departmental Director of Undergraduate Studies) no earlier than spring of the sophomore year and no later than spring of the junior year, and once accepted, they will be assigned to a faculty mentor. Financial assistance is available for honors students to conduct research between their junior and senior years. Students pursuing this opportunity will have a stronger engagement with art historical research to better prepare for a graduate degree in art history.

To remain in the Honors Program, students must maintain an overall grade point average of 3.30 or higher and receive an A (4.00 grade points) or A- (3.67 grade points) in both semesters of the Honors Thesis (HART 402 and HART 403) taken in their senior year. Students who maintain a grade point average of 3.70 or higher and who receive an A (4.00 grade points) in both semesters of the Honors Thesis (HART 402 and HART 403) may be awarded high honors by vote of the department. If students are not able to maintain the requirements of the Departmental Honors Program, they can still graduate with the Art History major.

Departmental Honors Program Requirements

To satisfy the requirements for the Honors Program in Art History, Art History majors must complete 12 courses (36 credit hours) as listed below. A minimum of 6 courses (18 credit hours) must be taken at the 300-level or above.

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<tr>
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<tr>
<td>HART 403</td>
<td>HONORS THESIS (Senior Year, Spring Semester)</td>
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Total Credit Hours 36

Footnotes and Additional Information

1 Courses listed in the Seminar Courses list can also satisfy a requirement in the Outside European and American Traditions or the three chronological categories requirements.

2 Students register for HART 402 Honors Thesis in the fall semester and HART 403 Honors Thesis in the spring semester of their senior year. Students generally spend the fall semester conducting research on their topic and the spring semester writing the thesis. The final result is a 25-30 page paper with an original statement, well support by research. Students' interpretative, analytical, research, and writing skills evidenced in the thesis are expected to approach graduate-level work.

The final step of the Honors Thesis is the defense, in which students present their thesis to the faculty and students of the Art History department in a 20-minute talk followed by 20 minutes of questions and discussions.

Students must maintain an overall GPA of 3.30 or higher and receive an A (4.00 grade points) or A- (3.67 grade points) in both semesters of the Honors Thesis (HART 402 and HART 403) to remain in the Honors Program in Art History. High honors are awarded to students earning 4.00 grade points in both HART 402 and HART 403.

It is strongly recommended that majors in Art History acquire proficiency in at least one foreign language.

In addition, Art History majors are encouraged to take advantage of the opportunities provided by museum internships, study abroad programs, and travel fellowships.
Additional Information
For additional information, please see the Art History website: https://arthistory.rice.edu/

See https://humanities.rice.edu/student-life (https://humanities.rice.edu/student-life/) for tables of fellowships, prizes, and internships/practica that may be relevant to this major.

Doctor of Philosophy (PhD) Degree in the field of Art History

Program Learning Outcomes for the MA and PhD Degrees in the field of Art History

Upon completing the MA and PhD degrees in the field of Art History, students will be able to:

1. Apply disciplinary methods for the visual interpretation and critique of art to produce scholarship and communicate about art using appropriate disciplinary vocabularies and primary and secondary texts where appropriate.

2. Understand art not as an isolated incident but in relation to the contexts that not only shape art, but are shaped by art, including: history, society, culture, geography, and politics.

3. Understand art as a multicultural issue.

4. Develop and apply understanding of major artistic movements, artists, and art pieces by identifying and situating individual artists and works of art within major movements.

Requirements for the MA and PhD Degrees in the field of Art History

For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). The PhD in Art History program at Rice University trains students for academic research and teaching, curatorial positions, and other careers in the visual arts. Program requirements include two years of coursework and the demonstration of two language proficiencies in addition to English, as well as the successful completion of a graduate research paper, oral and written qualifying exams, a thesis prospectus, and a doctoral thesis. All students entering the PhD program must complete the full curriculum, regardless of the degrees and coursework completed prior to the student’s admission to Rice’s doctoral program.

The MA degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Although all students are admitted into the doctoral program, and no MA program is available, an MA degree may be conferred upon the successful completion of the first two years of coursework, the passing of at least one language exam, and the completion of the graduate research paper.

In addition to the traditional degree timeline, the department also offers a Museum Professionals area of specialization, which is designed for students who currently hold professional appointments at local museums. All requirements for the program remain the same; however, graduate students who continue to hold their position at museums have a longer timetable for completing requirements.

The program is overseen by the Graduate Committee in Art History. The committee is comprised of department faculty and supervised by a Director of Graduate Studies (DGS). The DGS is responsible for advising students on coursework and degree requirements, and the department’s Graduate Program Administrator oversees completion and documentation of program requirements, as well as financial matters concerning graduate students.

All incoming students will be assigned to the DGS for the first semester of enrollment. The DGS will assist in explaining departmental guidelines, choosing courses, and beginning to strategize about primary and secondary fields. Primary and secondary fields are later finalized by the student in consultation with his or her advisor and with a view towards the requirements of the job market. First-year students need to identify a potential faculty advisor in their primary field, approach the faculty member for permission, and, with the advisor’s agreement, declare a permanent advisor by the end of the first week of classes in the Spring semester of the first year.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Minimum Credit Hours Required for the PhD Degree in Art History</td>
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Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td>HART 590</td>
<td>METHODS OF ART HISTORY</td>
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<tr>
<td>Additional Requirements as Defined by Department</td>
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<td></td>
</tr>
<tr>
<td>Total Credit Hours</td>
<td>90</td>
<td></td>
</tr>
</tbody>
</table>

Coursework

Satisfactory completion (grade C+ or above) of at least 36 credit hours (12 courses) of graduate coursework (500-level or 600-level) is required; at least half of these courses need to be seminars. All incoming students are required to take HART 590 (Methods in Art History), an introductory seminar, in the Fall term of their first year, as well as HART 503 (Graduate Research Paper), an independent study, in the second or third year, according to the degree timeline. Both of these courses count toward the 12-course requirement.

Of the 12 required courses, at least 4 courses must be taken in the student’s primary field of interest and at least 2 courses in the secondary field. Students should work with their advisors to identify primary and secondary fields by the end of the second year. Up to 3 graduate courses may be taken outside the department, as approved by the student’s advisor.

If a student chooses to enroll in an independent study course, the student and course supervisor should establish and document the format and expectations for the course by the second week of the term.

Additionally, research hours leading to candidacy and a thesis are also required, but do not count toward the 12-course requirement. HART 600 (Qualifying Exams) and HART 601 (Thesis Prospectus) are taken in preparation for candidacy, and HART 800 (Thesis Research) is taken in preparation for the thesis and for defense.
Foreign Languages

Reading knowledge of at least two languages other than English is required. These languages must be relevant to research in the student’s field of study and must be approved by the student’s advisor. A third language may also be strongly recommended by the student’s advisor. The first language proficiency exam must be taken by December 15 of the first semester of the first year, and the second exam taken by May 1 of the second semester of the second year. If the student fails either exam, s/he may retake them no more than two additional times. The first exam must be passed within a year of the original exam. The second exam must be passed for the student to enter into candidacy, and no later than September 15th of the fourth year. If necessary, students are strongly encouraged to begin study of their second language at the start of their first year.

Graduate Research Paper

In the Spring term of their second year, students are required to complete a substantial research paper, as part of HART 503 (Graduate Research Paper). In preparation for this paper, the student should submit a topic and preliminary bibliography for the graduate research paper to his or her advisor by the end of Fall term of the second year. The purpose of the paper is to demonstrate research skills in art history including the ability to develop a convincing argument, to use visual evidence, to undertake research in foreign languages where applicable, and to develop an original thesis. The paper topic should be the result of careful thought and planning between student and advisor. It should not be thought of as a preliminary version of a thesis, but rather an opportunity to explore in depth a topic of interest, perhaps related to course work. It need not, however, be outside of the student’s primary field of study and may end up being related to an eventual thesis topic. The topic of the paper, and a preliminary bibliography, should be discussed with the advisor before the end of the Fall semester of the second year.

Teaching and Research Assistantships

All students in their third year will serve as Teaching Assistants (TAs). TAs will be assigned to courses based on course enrollments and numbers of TAs available, but in each semester some TAs will be assigned to HART 101 or HART 102. In some semesters, a TA may be assigned to a different course, based on interest/experience, combined with course size and professors’ needs. In both cases, the focus will be on a collaborative process in which TAs are an integral part of the department’s teaching, and will be supervised and trained in ways which will help in the development of their pedagogical skills. Students will gain experience by either leading discussion sections or taking over class sessions during the semester and the TA will be observed and given feedback. After the first year, each student will also serve as a Research Assistant to a faculty member in the department for one semester.

Qualifying Exams

The doctoral qualifying exams (HART 600 and HART 601) consist of two written exams, followed by an oral exam. Preparation of the qualifying exams will begin during the summer term between the second and third years, and continue throughout the third year. The written and oral exams must be completed in the Spring semester of the third year. The exams will cover topics in the student’s primary field of study and secondary field, as agreed upon with the student’s advisor and based on the student’s interests and intended area of study for the doctoral thesis. Passing the qualifying exams is necessary for continuation in the program into the thesis phase.

Thesis Prospectus

In the Spring semester of the third year, students will enroll in HART 601 and prepare a prospectus of 10-12 pages plus bibliography on their thesis topic to be presented to their advisor and thesis committee. Students are encouraged to think of the thesis prospectus as a base document for their thesis research and writing phases. It should clearly present the thesis topic, significance and contribution to the field(s), historical context, methodology and archival sources, and preliminary structure. Format details should be agreed upon with the thesis advisor, and the thesis committee should be approved by the department’s graduate committee. Once the student has passed the doctoral exams and had the prospectus approved by the thesis committee, the student will file a petition for approval of candidacy for the PhD with the Office of Graduate Studies.

Thesis

A thesis represents independent and original research, equivalent to a publishable book, which makes a significant contribution to the current body of knowledge in the field. It must show a mastery of the literature in the subject, be written in acceptable literary style, and conform to the standards outlined on the Rice University Office of Graduate Studies website. Theses may be written on any subject that falls within the supervisory competence of a permanent member of the department.

Policies for the PhD Degree in the field of Art History

Department of Art History Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, including more detailed information regarding the PhD degree program policies and requirements, evaluation of student progress, and recommended timetable for degree completion for traditional students and those in the Museum Professionals Track, please see the Department of Art History Graduate Program Handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Art_History_Graduate_Handbook.pdf

Additional Information

For additional information, please see the Art History website: https://arthistory.rice.edu

Opportunities for the PhD Degree in the field of Art History

Co-Teaching

A competitive co-teaching program will be available to in-residence students beginning in their fifth year, with applications due by January 15 of the preceding year. This is a chance to build on the teaching assistant experience of the third year, while giving students a means to build their teaching résumé during the dissertation stage of the program and as they prepare to go into the job market.

Exhibitions, Lectures, and Arts Programs at Rice and in Houston

Houston is fortunate to have some of the best art collections in the United States. The department enjoys a strong and ongoing relationship with the local museums, in particular the Menil Collection and the Museum of Fine Arts, Houston. The department offers opportunities for students to study with local museums, galleries, and alternative art spaces by way of internship courses, summer internship working
opportunities, fellowships, or collaborative events. The collections and special exhibitions of local museums are often the focus of class lectures and research papers in art history.

The department sponsors the Katherine Tsanoff Brown Lecture Series, which brings leading scholars to Rice to speak on a wide variety of topics. The department also hosts occasional symposia and lectures in collaboration with other departments, presenting the ideas of top scholars, critics, and artists.

The Department of Art History houses the Visual Resources Center, which currently offers a broad and extensive collection of digital images related to the arts for teaching and research, serving both the department and the university at large. Additionally, exhibitions and related activities organized by the Rice University Moody Center for the Arts enrich the university and the Houston community. The Department of Visual and Dramatic Arts mounts several art and photography exhibitions each year and sponsors Rice Cinema, a public alternative film program.

Prizes and Awards
Information regarding graduate prizes and awards, as well as fellowship and internship opportunities at local museums, can be found on the department website, under the Funding and Additional Opportunities section: https://arthistory.rice.edu/graduate/funding-additional-opportunities (https://arthistory.rice.edu/graduate/funding-additional-opportunities/).

Additional Information
For additional information, please see the Art History website: https://arthistory.rice.edu.

See https://humanities.rice.edu/student-life (https://humanities.rice.edu/student-life/) for tables of fellowships, prizes, and internships/practica that may be relevant to this degree.

Asian Studies

Contact Information
Asian Studies
https://chaocenter.rice.edu/
205 Mechanical Laboratory
713-348-5843

Sonia Ryang
Director, Chao Center
sonia.ryang@rice.edu

The undergraduate Asian Studies program offers a comprehensive overview of the geography, history, people and their movements, and cultures of Asia. At the same time, the program is structured to train its students as strong researchers.

Bachelor's Program
- Bachelor of Arts (BA) Degree with a Major in Asian Studies (p. 144)

Asian Studies does not currently offer an academic program at the graduate level.

Director
Sonia Ryang

Associate Directors and Advisors
Haejin E. Koh
Steven W. Lewis

Professors
Tani E. Barlow
Dominic C. Boyer
Shih-Hui Chen
Krista Comer
David Cook
Elaine Howard Ecklund
Anne C. Klein
Jeffrey J. Kripal
Melissa J. Marschall
William B. Parsons
Nanxiu Qian
Sayuri Guthrie Shimizu
Kamala Visweswaran

Associate Professors
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Songying Fang
Shih-Shan Susan Huang
Betty Joseph
Elora Shehabuddin
Kerry R. Ward

Assistant Professor
Zoë Wool

Teaching Professor
Meng Yeh

Professor in the Practice
Steven W. Lewis

Lecturers
Ali Al-Maqtari
Liang Fu
Larisa Moskvitina
Naoko Ozaki
Jayoung Song
Hiromi Takayama

Adjunct Lecturer
Anne Chao

Postdoctoral Fellows
Ka-Kin Cheuk
Eric Huntington
Alex J.S. Lee
Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
- Course offerings/subject: ASIA

Program Description and Code
- Asian Studies: ASIA

Undergraduate Degree Description and Code
- Bachelor of Arts degree: BA

Undergraduate Major Description and Code
- Major in Asian Studies: ASIA

CIP Code and Description
- ASIA Major/Program: CIP Code/Title: 05.0103 - Asian Studies/ Civilization

Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Bachelor of Arts (BA) Degree with a Major in Asian Studies

Program Learning Outcomes for the BA Degree with a Major in Asian Studies

Upon completing the BA degree with a major in Asian Studies, students will be able to:

1. Develop a broad historical and geographic knowledge about Asia as a transnational region.
2. Design and execute independent research on Asia by using either social scientific or humanistic methods.
3. Demonstrate the ability to incorporate Asian-language sources into academic research.

Requirements for the BA Degree with a Major in Asian Studies

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Asian Studies must complete:

- A minimum of 10 courses (30 credit hours) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 4 courses (12 credit hours) taken at the 300-level or above.
- Demonstration of advanced language proficiency in an Asian language.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<td>Total Credit Hours Required for the Major in Asian Studies</td>
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<td>Total Credit Hours Required for the BA degree with a Major in Asian Studies</td>
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Degree Requirements

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<th>Code</th>
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<tr>
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<td>Core Requirement</td>
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<tr>
<td>ASIA 295</td>
<td>INTRODUCTION TO TRANSNATIONAL ASIAN STUDIES</td>
<td>3</td>
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<tr>
<td></td>
<td>Elective Requirements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select 8 elective courses from course offerings with predominantly Asian content (see course list below)</td>
<td>24</td>
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<tr>
<td></td>
<td>Capstone Course</td>
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<td>ASIA 495</td>
<td>ASIAN STUDIES RESEARCH SEMINAR</td>
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<tr>
<td></td>
<td>Advanced Language Proficiency</td>
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<td></td>
<td>Students must demonstrate advanced language proficiency in an Asian language</td>
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<td>Total Credit Hours Required for the Major in Asian Studies</td>
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<td>Additional Credit Hours to Complete BA Degree Requirements</td>
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<tr>
<td></td>
<td>University Graduation Requirements (p. 26) *</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>120</td>
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</tbody>
</table>

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

1 Students must demonstrate advanced language proficiency in an Asian language, and this proficiency requirement may be fulfilled by courses taken at Rice University, through AP credit received, or other means. Up to 4 of the 8 required elective courses may be Asian language courses (Arabic, Chinese, Hindi, Japanese, Korean, or Russian). Students are encouraged to consult with a major advisor regarding this point.

2 A minimum of 3 courses (9 credit hours) must be taken from at least three different subject codes (i.e., HART, HIST, RELI, etc.) to meet Elective Requirements.

Course List to Satisfy Requirements

Elective Requirements

Students must complete a total of 8 courses (24 credit hours) from course offerings with predominantly Asian content, which can be found below. Of these 8 courses, up to 4 may be language courses in a single Asian language (Arabic, Chinese, Hindi, Japanese, Korean, or Russian). A minimum of 3 courses (9 credit hours) must be taken from at least
three different subject codes (i.e., HART, HIST, RELI, etc.) to meet Elective Requirements.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td><strong>Architecture/Art History</strong></td>
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<tr>
<td>ARCH 331 / HART 321</td>
<td>IMPERIAL CITY: ISTANBUL 1453-1922</td>
<td>3</td>
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<tr>
<td><strong>Asian Studies</strong></td>
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<td></td>
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<tr>
<td>ASIA 218 / HIST 218 / FILM 218</td>
<td>HISTORY THROUGH FILM IN EAST AND NORTHEAST ASIA</td>
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<tr>
<td>ASIA 221 / RELI 221</td>
<td>THE LIFE OF THE PROPHET MUHAMMAD</td>
<td>3</td>
</tr>
<tr>
<td>ASIA 222 / ENGL 222</td>
<td>THE WORLD AND SOUTH ASIA</td>
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</tr>
<tr>
<td>ASIA 230 / RELI 230</td>
<td>ASIAN RELIGIONS IN AMERICA</td>
<td>3</td>
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<td>ASIA 231 / RELI 231</td>
<td>AMERICAN METAPHYSICAL RELIGION</td>
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<tr>
<td>ASIA 232 / RELI 232</td>
<td>RELIGIONS FROM INDIA</td>
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<tr>
<td>ASIA 251 / POLI 250 / SWGS 250</td>
<td>SEX, MONEY, AND POWER AROUND THE WORLD</td>
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<td>ASIA 299</td>
<td>DISCOVER ASIA IN HOUSTON</td>
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<td>ASIA 303</td>
<td>ASIA ON THE MOVE: GENDER, SEXUALITY, AND GLOBAL MIGRATION</td>
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<td>ASIA 304</td>
<td>HUMAN MOBILITY IN THE ASIA-PACIFIC</td>
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<td>ASIA 315 / RELI 315 / SWGS 315</td>
<td>GENDER AND ISLAM</td>
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<td>ASIA 316</td>
<td>RELIGION AND MODERNITY: BUDDHISM IN BRITISH COLONIAL SOUTH AND SOUTHEAST ASIA</td>
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<td>ASIA 317</td>
<td>ENVIRONMENT AND SOCIETY IN CHINA: SEARCHING FOR ECOLOGICAL CIVILIZATION</td>
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<td>ASIA 318</td>
<td>ASIA-PACIFIC: NATURE, CULTURE AND POWER FROM COLONIALISM TO 21ST CENTURY CAPITALISM</td>
<td>3</td>
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<tr>
<td>ASIA 322 / RELI 322</td>
<td>INTRODUCTION TO BUDDHISM: ARTS FOR LIFE</td>
<td>3</td>
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<td>ASIA 323 / HART 323 / MDEM 323</td>
<td>BUDDHIST AND DAOIST VISUAL CULTURES IN TRADITIONAL CHINA</td>
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<tr>
<td>ASIA 328 / HIST 384 / SWGS 384</td>
<td>MODERN GIRL AND ASIA IN THE WORLD</td>
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<tr>
<td>ASIA 330 / CHIN 330 / MDEM 370</td>
<td>INTRODUCTION TO TRADITIONAL CHINESE POETRY</td>
<td>3</td>
</tr>
<tr>
<td>ASIA 332 / CHIN 332</td>
<td>CHINESE LITERATURE AND ITS MOVIE ADAPTATIONS</td>
<td>3</td>
</tr>
<tr>
<td>ASIA 334 / CHIN 334</td>
<td>TRADITIONAL CHINESE TALES AND SHORT STORIES</td>
<td>3</td>
</tr>
<tr>
<td><strong>English</strong></td>
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<td>ENGL 397</td>
<td>TOPICS IN LITERATURE AND CULTURE</td>
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<tr>
<td><strong>History</strong></td>
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<td>HIST 212</td>
<td>CONTEMPORARY CHINA</td>
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<td>HIST 271</td>
<td>HISTORY OF SOUTH ASIA</td>
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<td>HIST 281 / MDEM 281</td>
<td>GOLDEN AGE OF ISLAM</td>
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<td>HIST 309</td>
<td>CHINESE INTELLECTUAL HISTORY</td>
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<td>HIST 320</td>
<td>IMPERIAL GARDENS: A CULTURAL COMPARISON</td>
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<td>HIST 342</td>
<td>MODERN CHINA</td>
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<td>HIST 378</td>
<td>MODERN ARAB HISTORY</td>
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<td>HIST 402</td>
<td>CHINESE WOMEN THROUGH TIME</td>
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<td>HIST 433</td>
<td>THE ARAB-ISRAELI CONFLICT</td>
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<td>HIST 434</td>
<td>ISLAM AND THE WEST</td>
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<td>HIST 436</td>
<td>AMERICA IN THE MIDDLE EAST</td>
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<tr>
<td>HIST 494</td>
<td>RULING HINDUSTAN: THE TIMURID-MUGHAL KINGS OF INDIA</td>
<td>3</td>
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</tbody>
</table>
Policies for the BA Degree with a Major in Asian Studies

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines
Students pursuing the major in Asian Studies should be aware of the following program-specific transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's transfer credit advisor) on an individual case-by-case basis.

Distribution Credit Information
The determination of distribution eligibility is done as part of the new course creation process (https://registrar.rice.edu/facstaff/courseprocess/). As part of an annual roll call (https://registrar.rice.edu/facstaff/distribution_credit/) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean's Offices of each of the academic schools.

Faculty and leadership in the academic schools are responsible for ensuring that the courses identified as distribution-eligible meet the criteria as set in the General Announcements (p. 26). Students are responsible for ensuring that they meet graduation requirements (p. 26) by completing coursework designated as distribution at the time of course registration.

Distribution courses from Asian Studies (ASIA) develop students' critical and aesthetic understanding of texts and the arts. They lead students to the analytical examination of ideas and values and introduce students to the variety of approaches and methods with which different disciplines approach intellectual problems. Additionally, they engage students with words of culture that have intellectual importance by virtue of the ideas they express, their historical influence, their mode of expression, or their critical engagement with established cultural assumptions and traditions.

Additional Information
For additional information, please see the Asian Studies website: https://chaocenter.rice.edu/

Opportunities for the BA Degree with a Major in Asian Studies

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Additional Information
For additional information, please see the Asian Studies website: https://chaocenter.rice.edu/

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this major.

Bioengineering
Contact Information

Bioengineering
https://bioe.rice.edu/
BioScience Research Collaborative
713-348-5869

K. Jane Grande-Allen
Department Chair
grande@rice.edu

Bilal Ghosn
Director of Undergraduate Curriculum
bghosn@rice.edu

Michael Diehl
Director of Graduate Studies
diehl@rice.edu
To train the next generation of leaders in bioengineering, Rice's Bioengineering department has created an innovative teaching program that transcends boundaries between bioengineering, basic science, and clinical medicine, integrating the academic, industrial, and societal perspectives. Our hands-on approach to education is supported by a long standing tradition of cross-disciplinary research and education.

The Rice Bioengineering program is a comprehensive training program that provides student with:

- A fundamental understanding of the life and medical sciences.
- Advanced analytical and engineering capabilities.
- Translational research capability for transferring biotechnical advances from bench to bedside.

With this educational background, graduates will be well prepared to participate in independent or collaborative research and development endeavors in industry or academia.

Graduate programs in bioengineering offer concentrations in areas such as biomedical imaging and diagnostics, cellular and biomolecular engineering, computational and theoretical bioengineering, biomaterials and drug delivery and biomaterials, systems and synthetic biology, and tissue engineering and biomechanics. Research areas include biomechanical engineering, biological systems modeling, bioinformatics, cellular and molecular engineering, controlled release technologies, metabolic engineering, spectroscopy, statistical mechanics, systems engineering and instrumentation, thrombosis, tissue engineering, and transport processes.

**Bachelor's Program**

- Bachelor of Science in Bioengineering (BSBE) Degree (p. 148)

**Master's Programs**

- Master of Bioengineering (MBE) Degree (p. 154)
- Master of Science (MS) Degree in the field of Bioengineering*

**Doctoral Program**

- Doctor of Philosophy (PhD) Degree in the field of Bioengineering (p. 152)

**Coordinated Program**

- Doctor of Philosophy (PhD) Degree in the field of Bioengineering / Doctor of Medicine (MD) Degree with Baylor College of Medicine (p. 153)

*Although students are not normally admitted to a Master of Science (MS) degree program, graduate students may earn the MS as they work towards the PhD.

**Chair**

Kathryn Jane Grande-Allen

**Professors**

Gang Bao
Michael W. Deem
Rebekah Anna Drezek
Kathryn Jane Grande-Allen

Oleg A. Igoshin
Herbert Levine
Jianpeng Ma
Antonios G. Mikos
Rebecca Richards-Kortum
Ka-Yiu San
Tomasz Tkaczyk

**Associate Professors**

Michael Diehl
Robert M. Raphael
Laura Segatori
Junghae Suh
Jeffrey J. Tabor
David Zhang

**Assistant Professors**

Caleb Bashor
Isaac Hilton
Jordan Miller
Omid Veiseh

**Teaching Professor**

Z. Maria Oden

**Associate Teaching Professor**

Renata Ramos

**Lecturers**

Sabia Abidi
Will Clifton
Bilal Ghosn

**Professors, Joint Appointments**

Benjamin J. Fregly
Fathi Ghorbel
Ramon Gonzalez
Naomi J. Halas
Jeffrey D. Hartgerink
C. Fred Higgs, III
Lydia Kavraki
Marek Kimmel
Marie Lynn Miranda
Kyriacos Zygourakis

**Associate Professors, Joint Appointments**

Matthew Bennett
Caleb Kemere
Ching-Hwa Kiang
Angel A. Martí-Arbona
Jacob Robinson
Jonathan J. Silberg

**Assistant Professors, Joint Appointments**

James Chappell
Aryeh Warmflash
Adjunct Professors
Sharmila Anandasabapathy
Maria Elena Bottazzi
Suneet Chauhan
Miguel Cruz
Mary E. Dickinson
Cindy Farach-Carson
Ann M. Gillenwater
Ramon Gonzalez
Peter Jay Hotez
Raghu Kalluri
Anirban Maitra
David R. Piwnica-Worms
Ann Saterbak
Konstantin Sokolov

Adjunct Associate Professors
Catherine G. Ambrose
Jean Bismuth
Margaret Cheung-Wyker
Elizabeth Cosgriff-Hernandez
M. Waleed Gaber
Chester Jungdon Koh
Stephen H. Little
Joseph A. Ludwig, IV
Mehdi Razavi
Eric Richardson
Andrew Sikora

Adjunct Assistant Professors
Amina Qutub
Sarah Sartain
Andrew Yee

Description and Code Legend
Note: Internally the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
- Course offerings/subject: BIOE

Department Description and Code
- Bioengineering: BIOE

Undergraduate Degree Description and Code
- Bachelor of Science in Bioengineering degree: BSBE

Undergraduate Major Description and Code
- Major in Bioengineering: BIOE

Graduate Degree Descriptions and Codes
- Master of Bioengineering degree: MBE
- Master of Science degree: MS
- Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code
- Degree Program in Bioengineering: BIOE

Graduate Degree Program Option Descriptions and Codes*
- Degree Program Option - Applied Bioengineering (MBE degree only): MBE
- Degree Program Option - Global Medical Innovation (MBE degree only): MBE-GMI

CIP Code and Description
- BIOE Major/Program: CIP Code/Title: 14.0501 - Bioengineering and Biomedical Engineering

* Systems Use Only: this information is used solely by internal offices at Rice University (such as OTR, GPS, etc.) and primarily within student information systems and support.

Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Bachelor of Science in Bioengineering (BSBE) Degree
The program leading to the BSBE degree is accredited by the Engineering Accreditation Commission (EAC) of ABET, https://www.abet.org.

Program Learning Outcomes (Student Outcomes) for the BSBE Degree
Upon completing the BSBE degree, students will be able to demonstrate:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences.
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Program Educational Objectives for the BSBE Degree
The overall goal of the Bachelor of Science in Bioengineering (BSBE) degree is to prepare graduates to succeed in professional careers by equipping them with the conceptual and technical expertise sought after by top graduate and medical schools, as well as by companies seeking technical skills in bioengineering. Recognizing that graduates
may embark on a number of different educational and career paths, the Program Educational Objectives (PEOs) that graduates are expected to exhibit or achieve with the Bachelor of Science in Bioengineering (BSBE) degree from Rice University are:

1. Graduates demonstrate technical and/or professional skills, which may include engineering problem-solving, scientific inquiry, and/or engineering design, to solve challenging problems in bioengineering and related fields.
2. Graduates are accomplished at communicating and working collaboratively in diverse work environments.
3. Graduates seeking further education at graduate, medical or other professional schools find appropriate levels of success in admission to and progression through these programs. Graduates entering professional careers find appropriate career progression and success.

Requirements for the BSBE Degree

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BSBE degree must complete:

- A minimum of 37 courses (96 or 98 credit hours, depending on course selection) to satisfy major requirements.
- A minimum of 131 credit hours to satisfy degree requirements.
- A minimum of 20 courses (48 credit hours) taken at the 300-level or above.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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Degree Requirements

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<td>INTRODUCTORY BIOLOGY I</td>
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<td>CHEM 122</td>
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<td>BIOENGINEERING FUNDAMENTALS</td>
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<td>BIOE 330</td>
<td>BIOREACTION ENGINEERING</td>
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<td>BIOE 332</td>
<td>BIOENGINEERING THERMODYNAMICS</td>
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<td>LABORATORY IN TISSUE CULTURE</td>
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<td>BIOMATERIALS</td>
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<td>BIOMEDICAL ENGINEERING INSTRUMENTATION</td>
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<td>BIOMEDICAL INSTRUMENTATION LAB</td>
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<td>BIOE 391</td>
<td>NUMERICAL METHODS</td>
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<td>BIOE 420 / CHBE 420</td>
<td>TRANSPORT PHENOMENA IN BIOENGINEERING</td>
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<td>BIOE 439</td>
<td>APPLIED STATISTICS FOR BIOENGINEERING AND BIOTECHNOLOGY</td>
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<td>BIOE 440 / STAT 440</td>
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</table>
BIOE 451 BIOENGINEERING DESIGN I 5 3
BIOE 452 BIOENGINEERING DESIGN II 3

Bioengineering Laboratory Courses 3

Select 2 courses from the following (different laboratory modules may be offered each year):

- BIOE 442 TISSUE ENGINEERING LAB MODULE
- BIOE 443 BIOPROCESSING LAB MODULE
- BIOE 444 MECHANICAL TESTING LAB MODULE
- BIOE 445 ADVANCED INSTRUMENTATION LAB MODULE
- BIOE 446 COMPUTATIONAL MODELING LAB
- BIOE 447 DIGITAL DESIGN & VISUALIZATION 6
- BIOE 449 / GLHT 449 CLINICALLY-RELEVANT BIOMEDICAL EQUIPMENT

Technical Electives

Select a minimum of 3 elective courses and 6 Engineering Points from the Technical Elective course offerings (see course list below) 9

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>BIOE 401</td>
<td>UNDERGRADUATE RESEARCH</td>
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</tr>
<tr>
<td>BIOE 392 / GLHT 392</td>
<td>NEEDS FINDING AND DEVELOPMENT IN BIOENGINEERING</td>
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<tr>
<td>BIOE 400</td>
<td>ENGINEERING UNDERGRADUATE RESEARCH 1,2,5</td>
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<tr>
<td>BIOE 403</td>
<td>ADVANCES IN BIONANOTECHNOLOGY</td>
<td>3</td>
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<tr>
<td>BIOE 408</td>
<td>SYNTHETIC BIOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 422</td>
<td>GENE THERAPY</td>
<td>3</td>
</tr>
</tbody>
</table>

Select 1 course from the following:

- BIOE 464 / BIOC 464 EXTRACELLULAR MATRIX 3
- BIOE 524 / BIOC 523 EXTRACELLULAR MATRIX 3
- BIOE 485 / COMP 485 / ELEC 485 FUNDAMENTALS OF MEDICAL IMAGING I 3
- BIOE 486 / COMP 486 / ELEC 486 FUNDAMENTALS OF MEDICAL IMAGING II 3
- BIOE 492 SENSORY NEUROENGINEERING 3
- BIOE 523 / CHBE 523 BIOENGINEERING SYSTEMS AND CONTROL 3
- BIOE 580 / CHBE 580 PROTEIN ENGINEERING 3
- BIOE 587 OPTICAL IMAGING AND NANOBIPHOTONICS 3
- BIOE 589 / BIOC 589 COMPUTATIONAL MOLECULAR BIOENGINEERING/BIOPHYSICS 3
- BIOE 615 BIOENGINEERING AND CARDIAC SURGERY 3
- BIOE 620 / CHBE 620 TISSUE ENGINEERING 3
- CHBE 310 FUNDAMENTALS OF BIOMOLECULAR ENGINEERING 3
- ENGI 300 ENGINEERING DESIGN WORKSHOP 2-3
- ELEC 220 FUNDAMENTALS OF COMPUTER ENGINEERING 4

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAR, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The *hours outside of the major* requirement may include all of the above university requirements. 2
Students should complete these courses during their freshman year.

2 Students should complete these courses during their sophomore year.

3 BIOE 400 can be counted in place of one of the required senior laboratory courses if taken for at least 3 credit hours at once. If used in this capacity, the student cannot also count that iteration of the course towards an Engineering Point or Technical Elective Requirement.

4 One of BIOE 330, BIOE 332, or BIOE 420 can be replaced with one or more additional Technical Elective courses of equal or greater BIOE Engineering Points value. Engineering points for the courses are: BIOE 330 (2 points), BIOE 332 (3 points), or BIOE 420 (3 points).

5 The Department of Bioengineering anticipates that BIOE 451 will change from 3 credit hours to 4 credit hours in academic year 2020-2021.

6 IF BIOE 447 is taken as a Bioengineering Laboratory course, the student should note that ENGI 355, listed in the Technical Electives section, will not count as a course that satisfies the Technical Electives Requirement.

Course Lists to Satisfy Requirements

Technical Electives

To fulfill the remaining BIOE major requirements, students must complete a minimum of 3 courses (9 credit hours) and 6 Engineering Points from the Technical Elective course offerings. A combination of Technical Electives must be selected that meets this minimum of 3 courses (9 credit hours) and 6 Engineering Points. If a student should choose to replace one of the optional core courses (BIOE 330, BIOE 332, or BIOE 420), then a minimum of 4 Technical Electives will be required as well as adequate Engineering Points for the replaced course’s value (2 to 3 Engineering Points).

Please Note: The following list of courses are those that satisfy the approved Technical Electives requirement. In certain instances, courses not on this official list may be substituted upon approval of the department’s Director of Undergraduate Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Engineering Points

Courses listed below may count toward the Technical Elective requirement (minimum of 3 courses (9 credit hours) and 6 Engineering Points), and will carry the following Engineering Point values.

Please Note: the list of courses and their associated Engineering Point values may change. Students should check with their academic advisor before registering for Technical Elective courses.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Points</th>
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<tbody>
<tr>
<td>ELEC 489</td>
<td>NEURAL COMPUTATION</td>
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<tr>
<td>CAAM 416</td>
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<td>NEUR 416</td>
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<tr>
<td>MECH 311</td>
<td>MECHANICS OF SOLIDS AND STRUCTURES</td>
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<td>CEVE 311</td>
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<td>BIOE 321</td>
<td>CELLULAR ENGINEERING</td>
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<td>BIOE 348</td>
<td>MOLECULAR TECHNIQUES IN BIOENGINEERING</td>
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<td>BIOE 381</td>
<td>FUNDAMENTALS OF NERVE AND MUSCLE ELECTROPHYSIOLOGY</td>
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<td>ELEC 381</td>
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<td>BIOE 431</td>
<td>BIOMATERIALS APPLICATIONS</td>
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<td>BIOE 481</td>
<td>COMPUTATIONAL NEUROSCIENCE AND NEURAL ENGINEERING</td>
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<td>ELEC 481</td>
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<td>BIOE 482</td>
<td>PHYSIOLOGICAL CONTROL SYSTEMS</td>
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<td>BIOE 518</td>
<td>INTRODUCTION TO COMPUTATIONAL BIOLOGY</td>
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<td>BIOE 643</td>
<td>CELL MECHANICS, CELL MECHANOTRANSDUCTION AND THE CELL MICROENVIRONMENT</td>
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<td>CAAM 335</td>
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<td>METABOLIC ENGINEERING</td>
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<td>COMP 571</td>
<td>BIOINFORMATICS: SEQUENCE ANALYSIS</td>
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<td>ELEC 305</td>
<td>INTRODUCTION TO PHYSICAL ELECTRONICS</td>
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<td>ELEC 327</td>
<td>IMPLEMENTATION OF DIGITAL SYSTEMS</td>
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<tr>
<td>ELEC 432</td>
<td>MOBILE BIO-BEHAVIORAL SENSING</td>
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<td>BIOE 360</td>
<td>APPROPRIATE DESIGN FOR GLOBAL HEALTH</td>
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<td>GLHT 360</td>
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<td>BIOE 421</td>
<td>MICROCONTROLLER APPLICATIONS</td>
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<td>BIOE 454</td>
<td>COMPUTATIONAL FLUID MECHANICS</td>
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<td>MECH 454</td>
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<td>BIOPHOTONICS INSTRUMENTATION AND APPLICATIONS</td>
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<td>INTRO COMPUTATIONAL SYSTEMS BIOLOGY: MODELING &amp; DESIGN PRINCIPLES OF BIOCHEM NETWORKS</td>
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<td>CONTINUM BIOMECHANICS</td>
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<td>NEURAL MACHINE LEARNING I</td>
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<td>SIGNALS, SYSTEMS, AND LEARNING</td>
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<td>DIGITAL LOGIC DESIGN</td>
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<td>IMPLEMENTATION OF DIGITAL SYSTEMS</td>
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<td>ELEC 342</td>
<td>ANALOG ELECTRONIC CIRCUITS</td>
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<td>VLSI SYSTEMS DESIGN</td>
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<td>ELEC 435</td>
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<td>MECH PROPERTIES OF MATERIALS</td>
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<td>MECH 343</td>
<td>MODELING OF DYNAMIC SYSTEMS</td>
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</table>

**Two (2) Engineering Points**

- BIOE 321: CELLULAR ENGINEERING
- BIOE 348: MOLECULAR TECHNIQUES IN BIOENGINEERING
- BIOE 381: FUNDAMENTALS OF NERVE AND MUSCLE ELECTROPHYSIOLOGY
- BIOE 431: BIOMATERIALS APPLICATIONS
- BIOE 481: COMPUTATIONAL NEUROSCIENCE AND NEURAL ENGINEERING

**Three (3) Engineering Points**

- BIOE 360: APPROPRIATE DESIGN FOR GLOBAL HEALTH
- BIOE 421: MICROCONTROLLER APPLICATIONS
- BIOE 454: COMPUTATIONAL FLUID MECHANICS
- MECH 454: Advanced Mechanics of Materials
- CEVE 454: Design of Mechatronic Systems

**Four (4) Engineering Points**

- BIOE 360 or BIOE 392: These courses are design courses. See ENGI 300 Note. A maximum of 4 Engineering Points, and 6 credit hours, may be applied towards the Technical Elective requirement from independent research and/or design courses.

**Footnotes and Additional Information**

1. BIOE 400: Students may earn 1 Engineering Point for every 3 credit hours completed. A maximum of 2 Engineering Points can be applied towards the 6 Engineering Points requirement by completing BIOE 400 courses.

2. ENGI 300: Students may earn 1 Engineering Point for every credit hour completed. A maximum of 4 Engineering Points, and 6 credit hours, may be applied towards the Technical Elective requirement from ENGI 300 or from a combination of independent research and/or design courses (i.e. ENGI 300, BIOE 400, BIOE 401, BIOE 360/GLHT 360, BIOE 392/GLHT 392.)

3. BIOE 360 or BIOE 392: These courses are design courses. See ENGI 300 Note. A maximum of 4 Engineering Points, and 6 credit hours, may be applied towards the Technical Elective requirement from independent research and/or design courses.

4. ENGI 355 can be applied toward the Technical Elective requirement only in the event that BIOE 447 is not completed as a Senior Lab requirement. Both MECH 403 and ENGI 355 cannot be counted towards Technical Elective or Engineering Point Requirements.

5. BIOE 400: Students may substitute 3 credit hours (in one semester) of BIOE 400 in place of one credit of the BIOE Laboratory Requirement for BIOE 442, BIOE 443, BIOE 444, BIOE 445, BIOE 446, BIOE 447, or BIOE 449. If this option is chosen, student may not use the same BIOE 400 credit for the Technical Elective or Engineering Point Requirements.

**Policies for the BSBE Degree**

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: [https://oaa.rice.edu](https://oaa.rice.edu). Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

**Departmental Transfer Credit Guidelines**

Students pursuing the BSBE degree should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

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**Policies for the BSBE Degree**

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: [https://oaa.rice.edu](https://oaa.rice.edu). Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

**Departmental Transfer Credit Guidelines**

Students pursuing the BSBE degree should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.
Opportunities for the BSBE Degree

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Fifth-Year Master's Degree Option for Rice Undergraduate Students

Rice students have an option to pursue the Master of Bioengineering (MBE) degree by adding an additional fifth year to their four undergraduate years of science and engineering studies.

Advanced Rice undergraduate students in good academic standing may apply to the MBE degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master's degree program. A plan of study will need to be approved by the student's undergraduate advisor and the MBE program director.

As part of this option and opportunity, Rice undergraduate students:

• must complete the requirements for a bachelor's degree and the master's degree independently of each other (i.e., no course may be counted toward the fulfillment of both degrees).
• should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
• more information on this Undergraduate - Graduate Concurrent Enrollment opportunity, including specific information on the registration process can be found here (p. 17).

Additional Information

For additional information, please see the Bioengineering website: https://bioengineering.rice.edu/

Doctor of Philosophy (PhD) Degree in the field of Bioengineering

Program Learning Outcomes for the MS and PhD Degrees in the field of Bioengineering

Upon completing the MS and PhD degrees in the field of Bioengineering, students will be able to:

1. Work as independent researchers.
2. Acquire a graduate-level understanding of foundations in Bioengineering and apply this material across a variety of sub-disciplines.
3. Integrate knowledge from different sources to solve a defined Bioengineering problem.
4. Acquire deep knowledge in a sub-discipline in which they will pursue their thesis.
5. Demonstrate professional skills in both oral and written communication.

Requirements for the MS and PhD Degrees in the field of Bioengineering

MS Degree Program

The MS degree is a thesis master's degree. For general university requirements, please see Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MS degree in the field of Bioengineering must complete:

• A minimum of 30 credit hours to satisfy degree requirements. MS students must earn additional credits they need for graduation by registering for the research course BIOE 500 during the terms they are engaged in research.
• A minimum of 18 credit hours from foundation, supporting, and advanced courses.
• A minimum GPA of 3.00.

In addition, students must:

• Show evidence on their undergraduate transcript of completion of a class in systems physiology, cell (or physical) biology, and statistics. (If courses were not taken for an undergraduate degree, they must be completed at the beginning of the MS program.)
• Fulfill a teaching requirement.
• Submit an original research thesis.
• Defend the thesis in a public oral examination.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>Total Credit Hours for the MS Degree in the field of Bioengineering</td>
<td>30</td>
</tr>
</tbody>
</table>

Requirements for the PhD Degree in the field of Bioengineering

PhD Degree Program

For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the PhD degree in the field of Bioengineering must complete:

• A minimum of 90 credit hours to satisfy degree requirements. In addition to foundation, PhD students must earn additional credits they need for graduation by registering for the PhD research course BIOE 500, during the terms they are engaged in research.
• A minimum of 30 credit hours from foundation, supporting, and advanced courses with high standing.
• A minimum GPA of 3.20.

In addition, students must:

• Show evidence on their undergraduate transcript of completion of a class in systems physiology, cell (or physical) biology, and statistics.
(If courses were not taken for an undergraduate degree, they must be completed at the beginning of the PhD program.)

- Students are required to serve as a teaching assistant in up to three undergraduate or graduate courses.
- Submit a thesis proposal. PhD students must submit and successfully defend their thesis proposals by the end of their fourth semester in residence.
- Submit a thesis that provides evidence of their ability to carry out original research in a specialized area of bioengineering.
- Defend the thesis in a public oral examination.

Graduate students take required courses and electives in the following areas:

- Synthetic Biology and Genome Engineering
- Biomaterials, Tissue Engineering, Mechanobiology, and Biophysics
- Quantitative Computational and Theoretical Bioengineering
- Biomedical Imaging, Optics, and Diagnostics

Summary

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<tr>
<th>Code</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
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<td>Total Credit Hours Required for the PhD Degree in the field of Bioengineering</td>
<td>90</td>
</tr>
</tbody>
</table>

Policies for the PhD Degree in the field of Bioengineering

Department of Bioengineering Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Bioengineering publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Bioengineering_Graduate_Handbook.pdf

Admissions

To make sure scores are available when admission decisions are made, applicants need to register to take the GRE and, if an international student, the TOEFL at least three months before the application deadline. Applicants should also request transcripts at least two months in advance to give senders time to get the material to Rice University by the deadline. The application deadline for MBE students for spring admission is October 30th. The application deadline for MBE students for fall admission in the same year is April 30th. The application deadline for PhD students for fall admission of the following year is December 20th. PhD students are not admitted in the spring semester. Application materials received after the deadline will not be considered. Once admitted, departmental policy requires full-time PhD students to be registered for at least 12 credit hours each semester. MBE students in the Applied Bioengineering area of specialization may register part-time with the permission of the department. MBE students in the Global Medical Innovation area of specialization are expected to attend full-time.

Additional Information

For additional information, please see the Bioengineering website: https://bioengineering.rice.edu/

Opportunities for the PhD Degree in the field of Bioengineering

Additional Information

For additional information, please see the Bioengineering website: https://bioengineering.rice.edu/

Doctor of Philosophy (PhD) Degree in the field of Bioengineering / Doctor of Medicine (MD) Degree with Baylor College of Medicine

Program Learning Outcomes for the PhD/MD Coordinated Degrees Program

Upon completing the PhD degree in the field of Bioengineering, students will be able to:

1. Work as independent researchers.
2. Acquire a graduate-level understanding of foundations in Bioengineering and apply this material across a variety of sub-disciplines.
3. Integrate knowledge from different sources to solve a defined Bioengineering problem.
4. Acquire deep knowledge in a sub-discipline in which they will pursue their thesis.
5. Demonstrate professional skills in both oral and written communication.

Requirements for the PhD/MD Coordinated Degrees Program

For general university requirements, see Graduate Degrees (p. 49). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). This PhD/MD dual degree program is offered by the Rice University Bioengineering Department and Baylor College of Medicine. This coordinated degrees program prepares students for research careers in medicine. Students must initially be accepted into the program through the Baylor College of Medicine.

Summary

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the PhD Degree in the field of Bioengineering at Rice University</td>
<td>90</td>
</tr>
</tbody>
</table>

Policies for the PhD/MD Coordinated Degrees Program

Additional Information

For additional information, please see the Bioengineering website: https://bioengineering.rice.edu/
Opportunities for the PhD/MD Coordinated Degrees Program

Additional Information
For additional information, please see the Bioengineering website: https://bioengineering.rice.edu/

Master of Bioengineering (MBE) Degree

Program Learning Outcomes for the MBE Degree

Program Learning Outcomes for the Applied Bioengineering Area of Specialization

Upon completing the MBE degree, students pursuing the Applied Bioengineering area of specialization requirements will be able to:

1. Apply and integrate advanced knowledge of Bioengineering topics in at least one of the following areas: Biomaterials and Drug Delivery, Biomedical Imaging and Diagnostics, Computational and Theoretical Bioengineering, Tissue Engineering and Biomechanics, or Systems and Synthetic Biology.
2. Apply knowledge from engineering and other disciplines to identify, formulate, and solve novel and complex problems that require advanced knowledge in bioengineering.
3. Select and apply quantitative analytic techniques to analyze bioengineering data.
4. Gain admission to a graduate or professional program, if students want to pursue further education.

Program Learning Outcomes for the Global Medical Innovation Area of Specialization

Upon completing the MBE degree, students pursuing the Global Medical Innovation area of specialization requirements will be able to:

1. Apply knowledge of Bioengineering topics in at least one of the following areas: Biomaterials and Drug Delivery, Biomedical Imaging and Diagnostics, Computational and Theoretical Bioengineering, Tissue Engineering and Biomechanics, or Systems and Synthetic Biology.
2. Develop effective medical products, from concept to commercialization, within a team environment.
3. Comprehend and navigate the global medical technology industry by leveraging an internship experience.
4. Gain employment or advance professionally in a technical field related to bioengineering.

Requirements for the MBE Degree

The MBE degree is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MBE degree must complete:

- A minimum of 30 credit hours to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University.
- The requirements for one area of specialization (see below for areas of specialization). The MBE degree program offers two areas of specialization:
  - Applied Bioengineering: designed as a flexible degree for students who will pursue careers in research, medicine, or related fields, or
  - Global Medical Innovation: designed specifically for students who will pursue a career in the global medical technology industry. As the medical technology industry becomes increasingly global with an emphasis in cost-effective health care solutions and clinical outcomes, Rice University seeks to prepare engineers for this new and changing environment. This area of specialization of the MBE degree is designed to prepare engineers for careers in medical technology through education in innovation, emerging-market design projects and internships. The Rice MBE area of specialization in Global Medical Innovation program specifically targets students who have an undergraduate degree in engineering (mechanical, electrical, chemical, or bioengineering/medical) or a related field, and who are interested in pursuing a career in the private, public, or non-profit sectors of medical technology.

Both areas of specialization have the same prerequisites, though applicants will be evaluated considering the different purposes of each. More information about each of these areas of specialization can be found below. Curriculum must be approved by the Graduate Academic Affairs Committee and the Bioengineering Department. This is done on a case-by-case basis.

The Master of Bioengineering (MBE) degree is a professional non-thesis master's degree. Students who have a BS or BA degree in an engineering or science discipline may apply. Depending on their background, some students may need to fulfill prerequisites or take remedial engineering courses to earn the MBE degree. For more information, see the department website.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or for students at the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.
Summary

Code | Title | Credit Hours
---|---|---

Total Credit Hours Required for the MBE Degree

30

Degree Requirements

Code | Title | Credit Hours
---|---|---

Area of Specialization

Select 1 of the following Areas of Specialization (see below for Areas of Specialization):

- Applied Bioengineering
- Global Medical Innovation

Total Credit Hours

30

Areas of Specialization

Area of Specialization: Applied Bioengineering

Students pursuing the Applied Bioengineering area of specialization must complete:

- A minimum of 2 courses (3 credit hours) from the core requirements.
- A minimum of 9 courses (27 credit hours) taken at the 500-level or above from selected course offerings.
  - A minimum of 6 courses (18 credit hours) from approved departmental (BIOE) course offerings.
  - A minimum of 1 course (3 credit hours) as a professional development elective course.
  - A minimum of 1 course (3 credit hours) as a quantitative elective course.
  - A minimum of 1 course (3 credit hours) from approved departmental (BIOE) course offerings or another department.
- A minimum GPA of 3.00 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree.

Core Requirements

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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>BIOE 627</td>
<td>MEDICAL INNOVATION INDUSTRY SEMINAR</td>
<td>1.5</td>
</tr>
<tr>
<td>Select 1 from the following:</td>
<td></td>
<td>1.5</td>
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<tr>
<td>BIOE 628</td>
<td>MEDICAL TECHNOLOGY DESIGN SEMINAR</td>
<td>2</td>
</tr>
<tr>
<td>BIOE 633 / MGMT 633</td>
<td>ROLES OF PHYSICIANS, SCIENTISTS, ENGINEERS AND MBA’S IN HIGH-TECH STARTUPS</td>
<td>3</td>
</tr>
</tbody>
</table>

Elective Requirements

Elective Category: BIOE Departmental Electives

Select 6 courses from approved departmental (BIOE) course offerings at the 500-level or above

18

Elective Category: Professional Development

Select a minimum of 3 credit hours from the following: 1

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>ENGI 501</td>
<td>WORKPLACE COMMUNICATION FOR PROFESSIONAL MASTER’S STUDENTS IN ENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td>ENGI 510</td>
<td>TECHNICAL AND MANAGERIAL COMMUNICATIONS</td>
<td></td>
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</tbody>
</table>

Elective Category: Quantitative Requirement

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>BIOE 539</td>
<td>APPLIED STATISTICS FOR BIOENGINEERING AND BIOTECHNOLOGY</td>
<td>3</td>
</tr>
</tbody>
</table>

Elective Category: BIOE General Elective

Select 1 additional course from approved departmental (BIOE) course offerings (or another department) at the 500-level or above 2

3

Total Credit Hours

30

Footnotes and Additional Information

1 Additional course offerings may be completed as a Professional Development Elective with advisor approval.

2 BIOE 539 or an alternative quantitative-based BIOE course, taken at the 400-level or above.

3 Students may complete a course offered by another department, but it must be relevant to the MBE degree.

Area of Specialization: Global Medical Innovation

Students pursuing the Global Medical Innovation area of specialization must complete:

- A minimum of 4 courses (9 credit hours) from the core requirements.
- An internship or independent study (6 credit hours).
- A minimum of 5 courses (15 credit hours) taken at the 500-level or above from selected course offerings.
  - A minimum of 2 courses (6 credit hours) from approved departmental (BIOE) course offerings.
  - A minimum of 1 course (3 credit hours) as a professional development elective course.
  - A minimum of 1 course (3 credit hours) as a quantitative elective course.
  - A minimum of 1 course (3 credit hours) from approved departmental (BIOE) course offerings or another department.
- A minimum GPA of 3.20 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree.

Core Requirements

Medical Technology Design

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<tr>
<th>Code</th>
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<tbody>
<tr>
<td>BIOE 527</td>
<td>HEALTHCARE INNOVATION AND ENTREPRENEURSHIP</td>
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<tr>
<td>BIOE 529</td>
<td>HEALTHCARE INNOVATION AND ENTREPRENEURSHIP LAB</td>
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Industry Seminar Series

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<tbody>
<tr>
<td>BIOE 627</td>
<td>MEDICAL INNOVATION INDUSTRY SEMINAR</td>
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Select 1 from the following: 1

1.5

2019-2020 General Announcements

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<tbody>
<tr>
<td>BIOE 628</td>
<td>MEDICAL TECHNOLOGY DESIGN SEMINAR</td>
</tr>
<tr>
<td>BIOE 633 / MGMT 633</td>
<td>ROLES OF PHYSICIANS, SCIENTISTS, ENGINEERS AND MBA'S IN HIGH-TECH STARTUPS</td>
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</table>

**Internship or Independent Study**

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<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>BIOE 506</td>
<td>GRADUATE INDEPENDENT STUDY (2 semesters required, 1st semester)</td>
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<tr>
<td>BIOE 506</td>
<td>GRADUATE INDEPENDENT STUDY (2 semesters required, 2nd semester)</td>
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**Elective Requirements**

Elective Category: BIOE Departmental Electives

Select 2 courses from approved departmental (BIOE) course offerings at the 500-level or above

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<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>ENGI 501</td>
<td>WORKPLACE COMMUNICATION FOR PROFESSIONAL MASTER'S STUDENTS IN ENGINEERING</td>
</tr>
<tr>
<td>ENGI 510</td>
<td>TECHNICAL AND MANAGERIAL COMMUNICATIONS</td>
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<td>ENGI 515</td>
<td>LEADING TEAMS AND INNOVATION</td>
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<tr>
<td>ENGI 529 / CEVE 529</td>
<td>ETHICS AND ENGINEERING LEADERSHIPS</td>
</tr>
<tr>
<td>ENGI 542</td>
<td>PROFESSIONAL COMMUNICATION FOR ENGINEERING LEADERS</td>
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<td>ENGI 610 / NSCI 610</td>
<td>MANAGEMENT FOR SCIENCE AND ENGINEERING</td>
</tr>
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<td>ENGI 615</td>
<td>LEADERSHIP COACHING FOR ENGINEERS</td>
</tr>
</tbody>
</table>

Elective Category: Professional Development

Select a minimum of 3 credit hours from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>BIOE 539</td>
<td>APPLIED STATISTICS FOR BIOENGINEERING AND BIOTECHNOLOGY</td>
</tr>
</tbody>
</table>

Elective Category: BIOE General Elective

Select 1 additional course from approved departmental (BIOE) course offerings (or another department) at the 500-level or above

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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**Total Credit Hours**

<table>
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<tr>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
<td>30</td>
</tr>
</tbody>
</table>

**Footnotes and Additional Information**

1. This will be considered on a case-by-case basis, and the student is responsible for obtaining and selecting an internship that best aligns with their career goals.

2. BIOE 539 or an alternative quantitative-based BIOE course, taken at the 400-level or above, with the advisor’s approval.

3. Students may complete a course offered by another department, but it must be relevant to the MBE degree.

**Policies for the MBE Degree**

**Department of Bioengineering Graduate Program Handbook**

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Bioengineering publishes a graduate program handbook, which can be found here: [https://gradhandbooks.rice.edu/2019_20/Bioengineering_Graduate_Handbook.pdf](https://gradhandbooks.rice.edu/2019_20/Bioengineering_Graduate_Handbook.pdf)

**Enrollment Status Requirements**

Students may enroll for the Applied Bioengineering area of specialization on a full-time or part-time basis. Students may only enroll on a full-time basis for the Global Medical Innovation area of specialization. University graduation requirements (including the minimum residency requirement for students in graduate degree programs) still apply.

**Transfer Credit**

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

**Additional Information**

For additional information, please see the Bioengineering website: [https://bioengineering.rice.edu/](https://bioengineering.rice.edu/)

**Opportunities for the MBE Degree**

**Fifth-Year Master’s Degree Option for Rice Undergraduate Students**

Rice students have an option to pursue the Master of Bioengineering (MBE) degree by adding an additional fifth year to their four undergraduate years of science and engineering studies.

Advanced Rice undergraduate students in good academic standing may apply to the MBE degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master’s degree program. A plan of study will need to be approved by the student’s undergraduate advisor and the MBE program director.

As part of this option and opportunity, Rice undergraduate students:

- must complete the requirements for a bachelor’s degree and the master’s degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
- should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
- more information on this Undergraduate - Graduate Concurrent Enrollment opportunity, including specific information on the registration process can be found [here](https://bioengineering.rice.edu/).

**Additional Information**

For additional information, please see the Bioengineering website: [https://bioengineering.rice.edu/](https://bioengineering.rice.edu/)

**BioSciences**

**Contact Information**

BioSciences  
[https://biosciences.rice.edu/](https://biosciences.rice.edu/)  
W-100 George R. Brown Hall  
713-348-4015  
Janet Braam  
Department Chair  
braam@rice.edu
The BioSciences department unites faculty engaged in research and teaching in a wide range of disciplines within the life sciences, creating a vibrant and diverse community of scholars. The department offers a broad range of introductory and advanced courses that lead to undergraduate degrees in Biochemistry and Cell Biology (BA, BS), Ecology and Evolutionary Biology (BA, BS), and Biological Sciences (BA). In addition, a Minor in Biochemistry and Cell Biology and a Minor in Ecology and Evolutionary Biology are offered. The BA degrees offer a rigorous biological curriculum suitable for many career paths while allowing the flexibility for extended academic exploration in other areas. The BS degrees offer greater depth in upper-level coursework. Most BioSciences students, regardless of major, participate in undergraduate research, availing themselves of the numerous research opportunities at Rice and in the Houston community.

All major degree paths will prepare students for graduate, medical, or other professional schools and a wide range of careers in the life sciences. In addition, qualified students may apply to the Biochemistry and Cell Biology BA-MS-PhD program track. Additional information on departmental programs, courses, and advising is available at the BioSciences website (http://biosciences.rice.edu/).

The BioSciences department also oversees academic programs that lead to undergraduate degrees in Environmental Science (BA, BS) and Neuroscience (BA), as well as a Minor in Neuroscience. At the graduate-level, the BioSciences department adminsters graduate programs in Biochemistry and Cell Biology (PhD, MS) and in Ecology and Evolutionary Biology (PhD, MS). In addition, some BioSciences faculty members participate in the Systems, Synthetic, and Physical Biology (SSPB) PhD program administered by the Institute of Biosciences and Bioengineering (https://ibb.rice.edu/). Graduate studies include a combination of advanced coursework and individual research with faculty mentors.

For additional information regarding BioSciences and its associated academic programs, please see the department's website: https://biosciences.rice.edu/.

**Bachelor's Programs**
- Bachelor of Arts (BA) Degree with a Major in Biochemistry and Cell Biology (p. 161)
- Bachelor of Arts (BA) Degree with a Major in Biological Sciences (p. 164)
- Bachelor of Arts (BA) Degree with a Major in Ecology and Evolutionary Biology (p. 167)
- Bachelor of Science (BS) Degree with a Major in Biochemistry and Cell Biology (p. 169)
- Bachelor of Science (BS) Degree with a Major in Ecology and Evolutionary Biology (p. 172)

**Minors**
- Minor in Biochemistry and Cell Biology (p. 181)
- Minor in Ecology and Evolutionary Biology (p. 183)

**Accelerated Program**
- Bachelor of Arts (BA) Degree / Master of Science (MS) Degree / Doctor of Philosophy (PhD) Degree in the field of Biochemistry and Cell Biology (p. 159)

**Master's Programs**
- Master of Science (MS) Degree in the field of Biochemistry and Cell Biology (p. 178)
- Master of Science (MS) Degree in the field of Ecology and Evolutionary Biology (p. 180)

**Doctoral Programs**
- Doctor of Philosophy (PhD) Degree in the field of Biochemistry and Cell Biology (p. 175)
- Doctor of Philosophy (PhD) Degree in the field of Ecology and Evolutionary Biology (p. 176)

**Chair**
Janet Braam

**Professors**
Caroline Ajo-Franklin
Bonnie Bartel
Kathleen M. Beckingham
George M. Bennett
Daniel D. Carson
Michael C. Gustin
Oleg A. Igoshin
Caroline A. Masiello
Seiichi P.T. Matsuda
Kathleen Shive Matthews
James A. McNew
Luay K. Nakhleh
Edward P. Nikonowicz
Jose Nelson Onuchic
George Phillips
Volker H.W. Rudolf
Yousif Shamoo
Evan Siemann
Jonathan J. Silberg
Michael Stern
Charles R. Stewart
Yizhi Jane Tao
Peter C. Wolynes

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Michael H. Kohn
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Laura Segatori
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Jeffrey J. Tabor
Daniel S. Wagner

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James Chappell
Scott Egan
Xue Gao
Yang Gao
Isaac Hilton
Natalia Kirienko
Julia Saltz
Adrienne Simoes Correa
Rosa Uribe
Aryeh Warmflash
Han Xiao

Profsessors Emeriti
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Raymond M. Glantz
Paul A. Harcombe
Jordan Konisky
John Steven Olson
Graham A. Palmer
David Queller
Ronald L. Sass
Joan Strassman
Stephen Subtelny
Calvin H. Ward

Teaching Faculty
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David R. Caprette
Daniel J. Catanese
Jonathan Flynn
Scott Solomon

Lecturers
Mary Susan Cates
Rachael Eaton
Elizabeth Eich
Cassidy Johnson
Kirstin Matthews
Caroline V. McNeil
Joseph R. Novak
Alma M. Novotny
Dereth Phillips
Collin E. Thomas

Adjunct Faculty
Richard Behringer
Sarah Bondos
Audrea Burns
Nikki Delk
J. David Dickman
Cindy Farach-Carson
Haichun Gao
Jeffrey Glassberg
Richard H. Gomer
Nancy Greig
Daniel Harrington
Maria K. Hartley
Kendal Hirschi
Kresimir Josic
Olivier Lichtarge
Jianpeng Ma
Kevin R. MacKenzie
Timothy Palzkill
Pamela Constantinou Papadopoulos
Debananda Pati
Neal R. Pellis
Susan M. Rosenberg
Clarence F. Sams
Yigong Shi
Ah-Lim Tsai
Kelly L. Weinersmith
Theodore G. Wensel
Peggy Whitson
Zheng Zhou
Huda Zoghbi

Huxley Research Instructors
David Armitage
Benedicte Bachelot

Rice Academy Fellows
Durre Muhammad
Amanda Shore

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code for Biochemistry and Cell Biology: BIOC
• Course offerings/subject code for Ecology and Evolutionary Biology: EBIO

Department Description and Code
• BioSciences: BIOS

Undergraduate Degree Descriptions and Codes
• Bachelor of Arts degree: BA
• Bachelor of Science degree: BS

Undergraduate Major Descriptions and Codes
• Major in Biochemistry and Cell Biology (for both the BA and BS degrees): BIOC
• Major in Ecology and Evolutionary Biology (for both the BA and BS degrees): EBIO
• Major in Biological Sciences (BA degree only): BIOS

Undergraduate Minor Descriptions and Codes
• Minor in Biochemistry and Cell Biology: BCBM
• Minor in Ecology and Evolutionary Biology: EEBM

Graduate Degree Descriptions and Codes
• Master of Science degree: MS
• Doctor of Philosophy degree: PhD
Graduate Degree Program Descriptions and Codes
- Degree Program in Biochemistry and Cell Biology: BIOC
- Degree Program in Ecology and Evolutionary Biology: EBIO

CIP Code and Description  1
- BIOC Major/Program: CIP Code/Title: 26.0202 - Biochemistry
- BIOS Major/Program: CIP Code/Title: 26.0101 - Biology/Biological Sciences, General
- EBIO Major/Program: CIP Code/Title: 26.1310 - Ecology and Evolutionary Biology
- BCBM Minor: CIP Code/Title: 26.0202 - Biochemistry
- EEBM Minor: CIP Code/Title: 26.1310 - Ecology and Evolutionary Biology

1 Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Bachelor of Arts (BA) Degree / Master of Science (MS) Degree / Doctor of Philosophy (PhD) Degree in the field of Biochemistry and Cell Biology

Program Learning Outcomes for the BA/MS/PhD Accelerated Degree Program in the field of Biochemistry and Cell Biology

Upon completing the Bachelor's degree requirements for this program, students majoring in Biochemistry and Cell Biology will be able to:

1. Demonstrate a comprehensive knowledge of biology with particular emphasis on biochemistry, genetics, and cell biology.
2. Demonstrate the ability to apply the modern scientific method, including designing experiments and/or building mathematical models, and collecting, analyzing, and interpreting data using common statistical methods and software programs.
3. Demonstrate effective oral and written communication skills, including an ability to communicate effectively and work with diverse groups, and the ability to interpret and communicate the results of original research.
4. Locate primary scientific literature and demonstrate the ability to use critical thinking and problem-solving skills to evaluate published and proposed research in the biological sciences and to apply these skills.
5. Demonstrate understanding of the practice and culture of science, scientific ethics, and the relationship between science and society.
6. Develop quantitative reasoning via the construction of models and/or the analysis of data.

Students completing the MS degree requirements will be able to:

1. Develop a knowledge of past and current research accomplishments and techniques in biochemistry and cell biology.
2. Demonstrate problem solving and critical thinking skills.
3. Demonstrate the effective written, oral, and visual communication skills required to articulate scientific findings and significance via a thesis describing independent research, publications, and seminars.

Requirements for the BA/MS/PhD Accelerated Degree Program in the field of Biochemistry and Cell Biology

BA in Biochemistry and Cell Biology Requirements
All of the requirements for a BA in Biochemistry and Cell Biology are required for the BA/MS/PhD accelerated program.

MS in Biochemistry and Cell Biology Requirements
The BA/MS/PhD Committee will advise students pursuing the BA/MS completion and will approve their formal course program during their final two years in the BA/MS program. Students who wish to pursue the BA/MS program must select the MS thesis advisor by the end of their second year, when they declare their major, to provide the opportunity to begin a project that will form the basis of the MS thesis.

Course requirements for the MS degree include:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Module Title</td>
<td></td>
</tr>
<tr>
<td>BIOC 581</td>
<td>GRADUATE SEMINAR IN BIOCHEMISTRY AND CELL BIOLOGY (4 semesters attendance, 1 presentation)</td>
<td>1 credit hour per semester</td>
</tr>
<tr>
<td>or BIOC 582</td>
<td>GRADUATE SEMINAR IN BIOCHEMISTRY AND CELL BIOLOGY</td>
<td></td>
</tr>
<tr>
<td>BIOC 583</td>
<td>MOLECULAR INTERACTIONS</td>
<td>4</td>
</tr>
<tr>
<td>BIOC 587</td>
<td>RESEARCH DESIGN, PROPOSAL WRITING, AND PROFESSIONAL DEVELOPMENT</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 588</td>
<td>CELLULAR INTERACTIONS</td>
<td>4</td>
</tr>
<tr>
<td>UNIV 594</td>
<td>RESPONSIBLE CONDUCT OF RESEARCH</td>
<td>1</td>
</tr>
<tr>
<td>BIOC 800</td>
<td>BIOCHEMISTRY &amp; CELL BIOLOGY GRADUATE RESEARCH</td>
<td>Variable credit hours</td>
</tr>
</tbody>
</table>

Elective Requirements
Select at least 6 credit hours from BIOC course offerings at the 500-level

Additional Coursework as Approved by Department

Total Credit Hours  1
Minimum of 40
Footnotes and Additional Information

1 Safety training in Environmental Health and Safety is required before entry into the laboratory, and training in responsible conduct of research (UNIV 594) is taken during the freshmen or sophomore year. The courses listed must be completed or evidence provided of successful completion of courses that covered the same material with a B- grade average (GPA ≥ 2.67). Students in the BA-MS track are required to register for and participate in BIOC 581 or BIOC 582 both semesters during their junior and senior years and to present their research at least once. Students generally enroll in at least 9 credit hours of BIOC 800 during the summer between the sophomore and junior year, BIOC 587 and up to 6 credit hours of BIOC 800 during the summer between the junior and senior years. Students take BIOC 583 and BIOC 588 in their senior year. Registration for at least 9 credit hours of BIOC 800 is required during the summer following the senior year for MS thesis defense. Undergraduates who are on financial aid must register for at least 12 credit hours that will be applied to the undergraduate transcript each semester to maintain full-time status.

Students will be responsible for the content of these courses in their MS defense (which also serves as the Admission to PhD Candidacy examination).

Progress reviews with the MS thesis committee occur at the end of the junior year and the early spring of the senior year. The MS thesis will be submitted and public oral defense will occur in the summer following graduation at the end of the senior year with completion of the BA requirements. MS candidates continuing to the PhD must maintain a GPA ≥ 3.00, complete a thesis, and make a public oral defense that includes a private examination by their MS thesis committee. Students who complete the MS requirements with a GPA ≥ 2.67 but less than 3.00 must defend their thesis to complete the MS degree, but will not be admitted to the PhD program.

PhD in Biochemistry and Cell Biology Requirements

The following are required for admission to the PhD portion of the BA/MS/PhD accelerated program: Successful completion of the MS thesis and oral defense, which will serve as the admission to candidacy examination for all PhD candidates in this program, an overall GPA ≥ 3.00 for the BA/MS degree courses. Students who are in good academic standing in the BA/MS portion and have passed their MS final oral examination may begin their doctoral studies the summer following. Undergraduates who are on financial aid must register for at least 12 credit hours that will be applied to the undergraduate transcript each semester to maintain full-time status.

Course requirements for the completion of the PhD studies within the accelerated BA/MS/PhD program include all of the required courses taken during the MS studies and the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC 581</td>
<td>GRADUATE SEMINAR IN BIOCHEMISTRY AND CELL BIOLOGY (required in all semesters of residency)</td>
<td>Minimum of 6 credit hours</td>
</tr>
<tr>
<td>or BIOC 582</td>
<td>GRADUATE SEMINAR IN BIOCHEMISTRY AND CELL BIOLOGY</td>
<td></td>
</tr>
<tr>
<td>BIOC 599</td>
<td>GRADUATE TEACHING IN BIOCHEMISTRY AND CELL BIOLOGY</td>
<td>Minimum of 2 credit hours</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

* A minimum of 75 credit hours beyond the MS is required for the PhD.
1 PhD students are required to enroll in BIOC 581 or BIOC 582 during all semesters of residency. A minimum of 6 credit hours of BIOC 581 and BIOC 582 combined are required.
2 BIOC 599 provides PhD students with teaching experience by serving as discussion leaders and grades in two undergraduate courses, and additional teaching experiences are available on an optional basis.
3 BA/MS/PhD students are required to enroll in 15 credit hours each semester after they have defended the master's degree, including summer semesters, to reflect their full-time status. After enrolling in any other required courses, students should enroll in the number of hours of BIOC 800 such that their total credit hours equal 15.

Evaluation of Progress in the PhD Phase of the BA/MS/PhD Program

The Graduate Advisory Committee evaluates each student's record and recommends any further coursework based on the requirements and on the interests of the student. Thesis advisors may require additional courses. At the end of each semester, the department chair, in consultation with the faculty, reviews student performance in the formal coursework. Students must maintain at least a B grade average (GPA ≥ 3.00) perform satisfactorily in their research efforts, and demonstrate outstanding motivation and potential for research.

Evaluation during the PhD phase of the program includes:

- The MS thesis and its oral defense constitute the admission to candidacy examination
- Ongoing review of research progress by the thesis advisor; satisfactory research progress will be indicated by a grade of 'S' in BIOC 800 each semester
- A yearly research progress assessment by the student’s Research Progress Review Committee
- Presentation of research progress at least once a year in seminar format (BIOC 581 or BIOC 582) starting in the first year of PhD study and continuing until submission of the doctoral thesis
- Defense of the PhD thesis research and text in a final public seminar presentation and oral examination attended by the student’s Thesis Committee

Policies for the BA/MS/PhD Accelerated Degree Program in the field of Biochemistry and Cell Biology

Biochemistry and Cell Biology Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, Biochemistry and Cell Biology publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/ Biochemistry_Cell_Biology_Graduate_Handbook.pdf
Admission

Qualified Rice University undergraduates can apply to enroll in the Biochemistry and Cell Biology BA/MS/PhD accelerated program in the spring of their sophomore year. Students who are strong candidates for this program typically join a Rice research lab to start research on a project related to biochemistry or cell biology prior to applying. Upon acceptance, depending on course load, financial aid status, and other variables, program participants may then start taking required graduate course requirements at the same time as their upper-level undergraduate degree course requirements. Students pursuing this program should be aware that there could be financial aid implications, should the conversion of undergraduate coursework to that of graduate level reduce their earned undergraduate credit for any semester below that of full-time undergraduate status (12 hours). Advisors for the program can assist in this determination.

Laboratory research performed in undergraduate and graduate research courses is presented as the MS thesis in the summer following graduation and provides the basis for the PhD thesis work. As a result, the graduate careers of these students will be accelerated by an anticipated 1-2 years, and such students may be able to obtain their PhD degrees approximately 3 years after obtaining their BA/MS degree. If circumstances require, students may stop at the BA or MS level if they meet all the requirements for the respective degrees.

Criteria for selection include academic performance (GPA ≥ 3.50), motivation, previous research experience, and personal qualities. Enrollment is limited, and the Biochemistry and Cell Biology BA/MS/PhD Committee will select applicants for admission.

Additional Information

For additional information, please see the BioSciences website: https://biosciences.rice.edu/.

Program Learning Outcomes for the BA Degree with a Major in Biochemistry and Cell Biology

Upon completing the BA degree with a major in Biochemistry and Cell Biology, students will be able to:

1. Demonstrate a comprehensive knowledge of biology with particular emphasis on biochemistry, genetics, and cell biology.
2. Demonstrate the ability to apply the modern scientific method, including designing experiments and/or building mathematical models, and collecting, analyzing, and interpreting data using common statistical methods and software programs.
3. Demonstrate effective oral and written communication skills, including an ability to communicate effectively and work with diverse groups and the ability to interpret and communicate the results of original research.
4. Locate primary scientific literature and demonstrate the ability to use critical thinking and problem-solving skills to evaluate published and proposed research in the biological sciences and to apply these skills.
5. Demonstrate understanding of the practice and culture of science, scientific ethics, and the relationship between science and society.
6. Develop quantitative reasoning via the construction of models and/or the analysis of data.

Requirements for the BA Degree with a Major in Biochemistry and Cell Biology

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Biochemistry and Cell Biology must complete:

- A minimum of 26 courses (minimum of 63 credit hours) to satisfy major requirements. Additional credit hours may be required depending on course selection.
- A minimum of 123 credit hours to satisfy degree requirements. Additional credit hours may be required depending on course selection.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 10 courses (minimum of 25 credit hours) taken at the 300-level or above.

The BA degree emphasizes a broad understanding of biochemistry and cell biology, provides room for exploration anywhere in the Natural Sciences or Engineering, and culminates in one required 400-level capstone course from an approved list of advanced courses. Students in Biochemistry and Cell Biology are strongly encouraged to pursue their research interests through independent research experiences. The BA degree program offers greater flexibility than the BS due to fewer required courses as detailed below. The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://Registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

Opportunities for the BA/MS/PhD Accelerated Degree Program in the field of Biochemistry and Cell Biology

Information about Student Resources, Attendance at Scientific Conferences, Internships, Graduate Student Awards, the Graduate Student Association, etc. can be found in the Biochemistry and Cell Biology Graduate Program Handbook:

Additional Information

For additional information, please see BioSciences website: https://biosciences.rice.edu/.

Bachelor of Arts (BA) Degree with a Major in Biochemistry and Cell Biology

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://Registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.
# Bachelor of Arts (BA) Degree with a Major in Biochemistry and Cell Biology

## Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Biochemistry and Cell Biology</td>
<td>Minimum of 63</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Biochemistry and Cell Biology</td>
<td>Minimum of 123</td>
</tr>
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</table>

## Degree Requirements

### Core Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Non-Biology Courses ¹</td>
<td></td>
</tr>
<tr>
<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I</td>
<td>3</td>
</tr>
<tr>
<td>or MATH 105</td>
<td>AP/OTH CREDIT IN CALCULUS I</td>
<td></td>
</tr>
<tr>
<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
<td>3</td>
</tr>
<tr>
<td>or MATH 106</td>
<td>AP/OTH CREDIT IN CALCULUS II</td>
<td></td>
</tr>
<tr>
<td>MATH 211</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 125</td>
<td>GENERAL PHYSICS (WITH LAB)</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 126</td>
<td>GENERAL PHYSICS II (WITH LAB)</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 121</td>
<td>GENERAL CHEMISTRY I</td>
<td>3</td>
</tr>
<tr>
<td>or CHEM 111</td>
<td>AP/OTH CREDIT IN GENERAL CHEMISTRY I</td>
<td></td>
</tr>
<tr>
<td>CHEM 123</td>
<td>GENERAL CHEMISTRY LABORATORY I</td>
<td>1</td>
</tr>
<tr>
<td>or CHEM 113</td>
<td>AP/OTH CREDIT IN GENERAL CHEMISTRY LAB I</td>
<td></td>
</tr>
<tr>
<td>CHEM 122</td>
<td>GENERAL CHEMISTRY II</td>
<td>3</td>
</tr>
<tr>
<td>or CHEM 112</td>
<td>AP/OTH CREDIT IN GENERAL CHEMISTRY II</td>
<td></td>
</tr>
<tr>
<td>CHEM 124</td>
<td>GENERAL CHEMISTRY LABORATORY II</td>
<td>1</td>
</tr>
<tr>
<td>or CHEM 114</td>
<td>AP/OTH CREDIT IN GENERAL CHEMISTRY LAB II</td>
<td></td>
</tr>
<tr>
<td>CHEM 211</td>
<td>ORGANIC CHEMISTRY I</td>
<td>3</td>
</tr>
<tr>
<td>&amp; CHEM 213</td>
<td>ORGANIC CHEMISTRY DISCUSSION</td>
<td></td>
</tr>
<tr>
<td>CHEM 212</td>
<td>ORGANIC CHEMISTRY II</td>
<td>3</td>
</tr>
<tr>
<td>&amp; CHEM 214</td>
<td>ORGANIC CHEM DISCUSSION II</td>
<td></td>
</tr>
<tr>
<td>CHEM 215</td>
<td>ORGANIC CHEMISTRY LAB</td>
<td>2</td>
</tr>
<tr>
<td>or CHEM 365</td>
<td>ORGANIC CHEMISTRY LAB</td>
<td></td>
</tr>
</tbody>
</table>

### Core Lecture Courses

- BIOC 201: INTRODUCTORY BIOLOGY I
- BIOC 301: BIOCHEMISTRY I
- BIOC 341: CELL BIOLOGY

Select 2 courses from the following:

- BIOC 302: BIOCHEMISTRY II
- BIOC 344: MOLECULAR BIOLOGY AND GENETICS
- BIOC 352: PHYSICAL CHEMISTRY FOR THE BIOSCIENCES ²

### Core Laboratory Courses

- BIOC 211: INTERMEDIATE EXPERIMENTAL BIOSCIENCES ³
- BIOC 311: ADVANCED EXPERIMENTAL BIOSCIENCES ²

### Advanced Laboratory Courses

Select 2 courses from the following:

- BIOC 313: EXPERIMENTAL SYNTHETIC BIOLOGY
- BIOC 318: MICROBIOLOGY LABORATORY
- BIOC 320 / BIOE 342: LABORATORY IN TISSUE CULTURE

### Elective Lecture Courses

Select 2 courses offered by either the School of Natural Sciences or the School of Engineering at the 300-level or above ⁷

- BIOC 401: UNDERGRADUATE HONORS RESEARCH ⁶
- BIOC 402: UNDERGRADUATE HONORS RESEARCH ⁶
- BIOC 412: UNDERGRADUATE RESEARCH SEMINAR ⁶
- BIOC 424: MICROBIOLOGY AND BIOTECHNOLOGY
- BIOC 425: PLANT MOLECULAR GENETICS AND DEVELOPMENT
- BIOC 442: MOLECULES, MEMORY AND MODEL ANIMALS: METHODS IN BEHAVIORAL NEUROSCIENCE
- BIOC 443: DEVELOPMENTAL NEUROBIOLOGY
- BIOC 445: ADVANCED MOLECULAR BIOLOGY AND GENETICS
- BIOC 447: EXPERIMENTAL BIOLOGY AND THE FUTURE OF MEDICINE
- BIOC 449: ADVANCED CELL AND MOLECULAR NEUROSCIENCE
- BIOC 450: VIRUSES AND INFECTIOUS DISEASES
- BIOC 455: COMPUTATIONAL SYNTHETIC BIOLOGY
- BIOC 460: CANCER BIOLOGY
- BIOC 464: EXTRACELLULAR MATRIX
- BIOC 470: COMPUTATION WITH BIOLOGICAL DATA
- BIOC 481: MOLECULAR BIOPHYSICS I
- BIOC 482: STRUCTURAL BIOLOGY

### Capstone Requirement ⁸

- Select 1 course from the following: Minimum of 3

- BIOC 333: BIONNOVATION STUDIO: FROM BASIC RESEARCH AND IDEATION TO TECHNOLOGY DEVELOPMENT
- BIOC 415: EXPERIMENTAL PHYSIOLOGY
- BIOC 417: EXPERIMENTAL CELL AND MOLECULAR NEUROSCIENCE
- BIOC 530: LAB MODULE IN NMR SPECTROSCOPY AND MOLECULAR MODELING ⁴
- BIOC 535: PRACTICAL X-RAY CRYSTALLOGRAPHY ⁴

### Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.
Policies for the BA Degree with a Major in Biochemistry and Cell Biology

Advising

Rice University policies are governed primarily by the General Announcements; students are encouraged to look there first for academic policies. Advising information specific to the Department of BioSciences can be found at the department website by clicking on the tab for Undergraduate Studies: https://biosciences.rice.edu/.

Program Restrictions and Exclusions

Students pursuing the major in Biochemistry and Cell Biology should be aware of the following program restriction:

- Students pursuing the major in Biochemistry and Cell Biology may not additionally declare the major in Biological Sciences.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in Biochemistry and Cell Biology should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information

For additional information, please see the BioSciences website: https://biosciences.rice.edu/.

Opportunities for the BA Degree with a Major in Biochemistry and Cell Biology

Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Departmental Honors

Instructions on applying for the Distinction in Research and Creative Work award from the Department of BioSciences can be found at the department website, by clicking on the link for Undergraduate Studies, at: https://biosciences.rice.edu/.

Research in the BioSciences

Research is highly encouraged for all biosciences majors, and there are many opportunities for independent research at Rice. Information about research for credit and research internships specific to the Department of BioSciences can be found at the department website, by clicking on the link for Undergraduate Studies, at: https://biosciences.rice.edu/.

Permissible Substitutions: MATH 105 or MATH 111 and MATH 112 may be substituted for MATH 101; MATH 106 may be substituted for MATH 102; CHEM 151 may be substituted for CHEM 121 or CHEM 111; CHEM 153 may be substituted for CHEM 123 or CHEM 113; CHEM 152 may be substituted for CHEM 122 or CHEM 112, and CHEM 154 may be substituted for CHEM 124 or CHEM 114; CHEM 320 may be substituted for CHEM 212; PHYS 101 and PHYS 103 or PHYS 111 may be substituted for PHYS 125; PHYS 102 and PHYS 104 or PHYS 112 may be substituted for PHYS 126.

CHEM 301 and CHEM 302 (both courses for 6 credit hours total) may substitute for BIOL 352.

BIOC 212 may be substituted for BIOC 211.

These advanced labs must be taken concurrently with or after completion of BIOC 482.

All Biochemistry and Cell Biology majors must take at least 1 of the listed additional advanced laboratory courses. If desired, the second advanced laboratory requirement may be satisfied by completing:

1. BIOC 310 if taken for at least 3 credits; or
2. HONS 470 and HONS 471, if the research supervisor is from one of the biosciences departments or if the research is biological in nature and pre-approved by the student’s major advisor; or
3. honors research (BIOC 401 and BIOC 402 and BIOC 412).

This substitution may be used only once regardless of the number of semesters of independent research taken.

The combined courses BIOC 401 and BIOC 402 and BIOC 412 are considered a single BIOC 400-level course and can be counted as one capstone course together as a series and/or as the independent research experience, provided that this substitution has not been used previously; this 3-course series can count as a single lab at 300-level or higher. To be applied toward the major all 3 courses must be completed.

Students must complete a total of 2 courses (6 credit hours) from courses offered by the School of Natural Sciences or the School of Engineering. Courses in Natural Sciences/Engineering include any course taken at the 300-level or higher, for at least 3 credit hours from any department in the Wiess School of Natural Sciences (including BioSciences) or George R. Brown School of Engineering, except independent research courses such as BIOC 310, BIOC 401 and BIOC 402, BIOE 400 and BIOE 401, or EBIO 306, EBIO 403, and EBIO 404, which cannot be used to fulfill this requirement. A maximum of 3 credit hours from BIOC 390 (transfer credit in Biochemistry and Cell Biology) may be applied to this requirement. Courses offered by the School of Engineering and the School of Engineering include the following subject codes: ASTR, BIOE, CAAM, CEVE, CHEB, CHEM, COMP ELEC, ENGI, ENST, ESCI, GLHT, HEAL, KINE, MATH, MECH, MSNE, NSCI, PHYS, and STAT. BIOC 300 is only allowed to fulfill this elective requirement when it is taken prior to BIOC 301 and BIOC 341, or their equivalent transfer course.

To fulfill the remaining BIOC major requirements, students pursuing the BA degree must complete 1 additional course (3 credit hours) as a capstone. Only BIOC 400-level lecture courses from the list which are explicitly designed for the BIOC major, can be used to satisfy this requirement.
Additional Information

For additional information, please see the BioSciences website: https://biosciences.rice.edu/

Bachelor of Arts (BA) Degree with a Major in Biological Sciences

Program Learning Outcomes for the BA Degree with a Major in Biological Sciences

Upon completing the BA degree with a major in Biological Sciences, students will be able to:

1. Demonstrate a comprehensive knowledge of the field of biology, illustrated by the ability to describe the breadth of the discipline and to synthesize a range of biological concepts and ideas.
2. Demonstrate an understanding of the modern scientific method, including a familiarity with current methods for designing experiments and/or mathematical models, and the ability to analyze and interpret data.
3. Demonstrate effective oral and written communication skills, including an ability to communicate effectively and work with diverse groups.
4. Locate primary scientific literature and demonstrate the ability to apply critical thinking and problem-solving skills to evaluate published and proposed research in the biological sciences.
5. Demonstrate understanding of the practice and culture of science, scientific ethics, and the relationship between science and society.
6. Develop quantitative reasoning via the construction of models and/or the analysis of data.

Requirements for the BA Degree with a Major in Biological Sciences

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Biological Sciences must complete:

- A minimum of 28 courses (minimum of 67 credit hours) to satisfy major requirements. Additional credit hours may be required depending on course selection.
- A minimum of 127 credit hours to satisfy degree requirements. Additional credit hours may be required depending on course selection.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 10 courses (minimum of 24 credit hours) taken at the 300-level or above.

The BA degree with a major in Biological Sciences incorporates elements from both the Biochemistry and Cell Biology and the Ecology and Evolutionary Biology programs.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department's Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/).) Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

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<td>Total Credit Hours Required for the BA Degree with a Major in Biological Sciences</td>
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### Degree Requirements

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</table>
### Upper-Level Biology Course

- **BIOC 301** BIOCHEMISTRY I 3

### Elective Requirements

**Upper-Level Biology Courses**

- Select 1 course from the following: 3
  - BIOC 302 BIOCHEMISTRY II
  - BIOC 341 CELL BIOLOGY
  - BIOC 344 MOLECULAR BIOLOGY AND GENETICS
  - BIOC 352 PHYSICAL CHEMISTRY FOR THE BIOSCIENCES 5

**Lecture Courses** 6,7

_Students must complete 5 courses as listed in the EBIO and BIOC Lecture Course Requirements below:_

**EBIO Lecture Courses**

- Select 3-4 courses from the following. 6
  - EBIO 321 ANIMAL BEHAVIOR
  - EBIO 323 / ENST 323 CONSERVATION BIOLOGY
  - EBIO 325 ECOLOGY
  - EBIO 326 INSECT BIOLOGY
  - EBIO 328 EVOLUTION OF GENES & GENOMES
  - EBIO 329 / BIOC 329 ANIMAL BIOLOGY AND PHYSIOLOGY
  - EBIO 331 / BIOC 331 BIOLOGY OF INFECTIOUS DISEASES
  - EBIO 333 / COMP 370 EVOLUTIONARY BIOINFORMATICS
  - EBIO 334 / BIOC 334 EVOLUTION
  - EBIO 336 PLANT DIVERSITY
  - EBIO 340 / ENST 340 / ESCI 340 GLOBAL BIOGEOCHEMICAL CYCLES
  - EBIO 365 INTRODUCTORY PHYCOLOGY
  - EBIO 366 APPLIED PHYCOLOGY
  - EBIO 372 CORAL REEF ECOSYSTEMS
  - EBIO 391 TRANSFER CREDIT IN ECOLOGY AND EVOLUTIONARY BIOLOGY 6
  - EBIO 433 ADVANCED ECOLOGY

**BIOC Lecture Courses**

- Select 1-2 courses from the following: 7
  - BIOC 300 PARADIGMS IN BIOCHEMISTRY AND CELL BIOLOGY
  - BIOC 302 BIOCHEMISTRY II
  - BIOC 331 / EBIO 331 BIOLOGY OF INFECTIOUS DISEASES
  - BIOC 332 / BIOE 302 SYSTEMS PHYSIOLOGY
  - BIOC 335 CELLULAR AND MOLECULAR ANIMAL PHYSIOLOGY
  - BIOC 341 CELL BIOLOGY
  - BIOC 344 MOLECULAR BIOLOGY AND GENETICS
  - BIOC 352 PHYSICAL CHEMISTRY FOR THE BIOSCIENCES
  - BIOC 361 / BIOE 361 / GLHT 361 METABOLIC ENGINEERING FOR GLOBAL HEALTH ENVIRONMENTS
  - BIOC 368 / HUMA 368 CONCEIVING AND MISCONCEIVING THE MONSTROUS IN FICTION AND IN ART, IN MEDICINE AND IN BIOSCIENCE
  - BIOC 371 SEMINAR IN CONTEMPORARY BIOLOGICAL AND BIOMEDICAL RESEARCH
  - BIOC 372 IMMUNOLOGY
  - BIOC 380 / NEUR 380 / PSYC 380 FUNDAMENTAL NEUROSCIENCE SYSTEMS
  - BIOC 385 / NEUR 385 FUNDAMENTALS OF CELLULAR AND MOLECULAR NEUROSCIENCE
  - BIOC 390 TRANSFER CREDIT IN BIOCHEMISTRY AND CELL BIOLOGY 7
  - BIOC 424 MICROBIOLOGY AND BIOTECHNOLOGY
  - BIOC 425 PLANT MOLECULAR GENETICS AND DEVELOPMENT
  - BIOC 442 MOLECULES, MEMORY AND MODEL ANIMALS: METHODS IN BEHAVIORAL NEUROSCIENCE
  - BIOC 443 DEVELOPMENTAL NEUROBIOLOGY
  - BIOC 445 ADVANCED MOLECULAR BIOLOGY AND GENETICS
  - BIOC 447 EXPERIMENTAL BIOLOGY AND THE FUTURE OF MEDICINE
Footnotes and Additional Information

Includes coursework completed as distribution credit, FWIS, LPAR, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

Permissible substitutions: MATH 105 or MATH 111 and MATH 112 may be substituted for MATH 101; MATH 106 may be substituted for MATH 102; CHEM 151 may be substituted for CHEM 121 or CHEM 111; CHEM 153 may be substituted for CHEM 123 or CHEM 113; CHEM 152 may be substituted for CHEM 122 or CHEM 112, and CHEM 154 may be substituted for CHEM 124 or CHEM 114; PHYS 101 and PHYS 103 or PHYS 111 may be substituted for PHYS 125; PHYS 102 and PHYS 104 or PHYS 112 may be substituted for PHYS 126.

1. BIOC 212 may be substituted for BIOC 211.
2. These advanced labs (BIOC 530 and BIOC 535) must be taken concurrently with or after BIOC 482.
3. Only one of the advanced laboratory course requirements can be satisfied by taking any of the following:
   1. BIOC 310 if taken for at least 3 credit hours or EBIO 306 if taken for at least 2 credit hours
   2. HONS 470 and HONS 471, if the research supervisor is from the BioSciences department or if the research is biological in nature and pre-approved by the student's major advisor
   3. BIOC 401 and BIOC 402 and BIOC 412 or EBIO 403 and EBIO 404
   4. BIOC 393/EBIO 393

This substitution may be used only once regardless of the number of semesters of independent research or transfer credit.

5. CHEM 301 and CHEM 302 (both courses for 6 credit hours total) may substitute for BIOC 352.

6. If students choose to complete 3 courses (9 credit hours) from the EBIO Lecture Courses requirement, students will be required to complete 2 courses (6 credit hours) from the BIOC Lecture Courses requirement. BIOC 300 is only allowed to fulfill a BIOC elective lecture course requirement when it is taken prior to BIOC 301 and BIOC 341, or their equivalent transfer course. A maximum of 3 credits of EBIO 391 can apply to this major.

7. If students choose to complete 1 course (3 credit hours) from the BIOC Lecture Courses requirement, students will be required to complete 4 courses (12 credit hours) from the EBIO Lecture Courses requirement. BIOC 300 is only allowed to fulfill a BIOC elective lecture course requirement when it is taken prior to BIOC 301 and BIOC 341, or their equivalent transfer course. A maximum of 3 credit hours of BIOC 390 can apply to this major.

Policies for the BA Degree with a Major in Biological Sciences

Advising

Rice University policies are governed primarily by the General Announcements; students are encouraged to look there first for academic policies. Advising information specific to the Department of BioSciences can be found at the department website by clicking on the tab for Undergraduate Studies: https://biosciences.rice.edu/.

Program Restrictions and Exclusions

Students pursuing the major in Biological Sciences should be aware of the following program restrictions:

- Students pursuing the major in Biological Sciences may not additionally pursue the major or minor in Biochemistry and Cell Biology.
- Students pursuing the major in Biological Sciences may not additionally pursue the major or minor in Ecology and Evolutionary Biology.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in Biological Sciences should be aware of the following transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information

For additional information, please see the BioSciences website: https://biosciences.rice.edu/.

Opportunities for the BA Degree with a Major in Biological Sciences

Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.
Departmental Honors
Instructions on applying for the Distinction in Research and Creative Work award from the Department of BioSciences can be found at the department website, by clicking on the link for Undergraduate Studies, at: https://biosciences.rice.edu/.

Research in the BioSciences
Research is highly encouraged for all biosciences majors, and there are many opportunities for independent research at Rice. Information about research for credit and research internships specific to the Department of BioSciences can be found at the department website, by clicking on the link for Undergraduate Studies, at: https://biosciences.rice.edu/.

Additional Information
For additional information, please see the BioSciences website: https://biosciences.rice.edu/.

Bachelor of Arts (BA) Degree with a Major in Ecology and Evolutionary Biology

Program Learning Outcomes for the BA Degree with a Major in Ecology and Evolutionary Biology
Upon completing the BA degree with a major in Ecology and Evolutionary Biology, students will be able to:

1. Locate primary scientific literature and demonstrate the ability to apply critical thinking and problem solving skills to evaluate published and proposed research in the biological sciences.
2. Demonstrate an understanding of the modern scientific method, including a familiarity with current methods for designing experiments and/or mathematical models, and the ability to analyze and interpret data.
3. Demonstrate effective oral and written communication skills, including an ability to communicate effectively and work with diverse groups.
4. Demonstrate familiarity with the diversity of life.
5. Demonstrate a comprehensive knowledge of biology and an in-depth understanding of ecology and evolutionary biology.
6. Demonstrate understanding of the practice and culture of science, scientific ethics, and the relationship between science and society.

Requirements for the BA Degree with a Major in Ecology and Evolutionary Biology
For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Ecology and Evolutionary Biology must complete:

- A minimum of 20 courses (minimum 49 credit hours) to satisfy major requirements. Additional credit hours may be required depending on course selection.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 9 courses (minimum 22 credit hours) taken at the 300-level or above.

The Ecology and Evolutionary Biology major is intended for students pursuing a wide range of careers in the life sciences. Coursework emphasizes a broad understanding of basic biology, together with in-depth knowledge of ecology and evolutionary biology that culminates in a required 400-level capstone course incorporating primary scientific literature, presentations, and writing in an advanced topic. The BA program is well suited for students with an additional major outside of the sciences, and students are strongly encouraged to take advantage of study abroad opportunities.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor, or where applicable, the department's Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major's Official Certifier [https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/) Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

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### Degree Requirements

#### Core Requirements

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<td>or MATH 106</td>
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<td>ANALYSIS AND VISUALIZATION OF BIOLOGICAL DATA</td>
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<td>1 course from Statistics (STAT) departmental course offerings</td>
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**Biology Lecture Courses**

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<td>BIOC 334 / BIOC 334</td>
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**Biology Laboratory Courses**

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<td>BIOC 213</td>
<td>INTRO EXPERIMENTAL ECOLOGY AND EVOLUTIONARY BIOLOGY</td>
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Scientific Communication Course
EBIO 412 ADVANCED COMMUNICATION IN THE BIOLOGICAL SCIENCES 2

Elective Requirements
Lecture in Ecology and Evolutionary Biology
Select 2 courses from the following: 6
EBIO 321 ANIMAL BEHAVIOR
EBIO 323 / ENST 323 CONSERVATION BIOLOGY
EBIO 326 INSECT BIOLOGY
EBIO 328 EVOLUTION OF GENES & GENOMES
EBIO 329 / BIOL 329 ANIMAL BIOLOGY AND PHYSIOLOGY
EBIO 331 / BIOL 331 BIOLOGY OF INFECTIOUS DISEASES
EBIO 333 / COMP 370 EVOLUTIONARY BIOINFORMATICS
EBIO 336 PLANT DIVERSITY
EBIO 340 / ENST 340 / ESCI 340 GLOBAL BIOGEOCHEMICAL CYCLES
EBIO 365 INTRODUCTORY PHYCHOLOGY
EBIO 366 APPLIED PHYCHOLOGY
EBIO 372 CORAL REEF ECOSYSTEMS
EBIO 391 TRANSFER CREDIT IN ECOLOGY AND EVOLUTIONARY BIOLOGY
EBIO 433 ADVANCED ECOLOGY

Lecture in Biochemistry and Cell Biology
Select 1 course from the following: 3
BIOC 300 PARADIGMS IN BIOCHEMISTRY AND CELL BIOLOGY
BIOC 301 BIOCHEMISTRY I
BIOC 302 BIOCHEMISTRY II
BIOC 332 / BIOE 302 SYSTEMS PHYSIOLOGY
BIOC 335 CELLULAR AND MOLECULAR ANIMAL PHYSIOLOGY
BIOC 341 CELL BIOLOGY
BIOC 344 MOLECULAR BIOLOGY AND GENETICS
BIOC 352 PHYSICAL CHEMISTRY FOR THE BIOSCIENCES
BIOC 361 / BIOE 361 / GLHT 361 METABOLIC ENGINEERING FOR GLOBAL HEALTH ENVIRONMENTS
BIOC 368 / HUMA 368 CONCEIVING AND MISCONCEIVING THE MONSTROUS IN FICTION AND IN ART, IN MEDICINE AND IN BIOSCIENCE
BIOC 371 SEMINAR IN CONTEMPORARY BIOLOGICAL AND BIOMEDICAL RESEARCH
BIOC 372 IMMUNOLOGY
BIOC 380 / NEUR 380 / PSYC 380 FUNDAMENTAL NEUROSCIENCE SYSTEMS
BIOC 385 / NEUR 385 FUNDAMENTALS OF CELLULAR AND MOLECULAR NEUROSCIENCE

EBIO Laboratory Course Requirement
Select 1 course from the following: 2
EBIO 316 LAB MODULE IN ECOLOGY
EBIO 317 LAB MODULE IN BEHAVIOR
EBIO 319 TROPICAL FIELD BIOLOGY
EBIO 320 ECOLOGY AND CONSERVATION OF BRAZILIAN WETLANDS LABORATORY
EBIO 324 CONSERVATION BIOLOGY LAB
EBIO 327 BIOLOGICAL DIVERSITY
EBIO 330 INSECT BIOLOGY LAB
EBIO 332 EVOLUTION OF GENES & GENOMES LAB
EBIO 335 EVOLUTIONARY BIOINFORMATICS LAB
EBIO 337 FIELD BIRD BIOLOGY LAB
EBIO 367 INTRODUCTION PHYCHOLOGY LAB
EBIO 368 APPLIED PHYCHOLOGY LAB
EBIO 379 / ENST 379 LAB MODULE IN AQUATIC ECOLOGY WITH SCUBA
EBIO 393 LABORATORY TRANSFER CREDIT IN BIOSCIENCES

BIOC Laboratory Course Requirement
Select 1 course from the following or complete an additional laboratory course from the EBIO Laboratory requirement: 1-2
BIOC 311 ADVANCED EXPERIMENTAL BIOSCIENCES
BIOC 313 EXPERIMENTAL SYNTHETIC BIOLOGY
BIOC 318 MICROBIOLOGY LABORATORY
BIOC 320 / BIOE 342 LABORATORY IN TISSUE CULTURE
BIOC 333 BIONNOVATION STUDIO: FROM BASIC RESEARCH AND IDEATION TO TECHNOLOGY DEVELOPMENT
BIOC 415 EXPERIMENTAL PHYSIOLOGY

Natural Sciences or Engineering
Select 1 course offered by either the School of Natural Sciences or the School of Engineering at the 300-level or above 3
Total Credit Hours Required for the Major in Ecology and Evolutionary Biology Minimum of 49
Additional Credit Hours to Complete BA Degree Requirements 11
University Graduation Requirements (p. 26) 60
Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAR upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 **Permissible substitutions:** BIO 212 may be substituted for BIOC 211; MATH 111 and MATH 112 may be substituted for MATH 101 or MATH 105; CHEM 151 may be substituted for CHEM 121 or CHEM 111; CHEM 153 may be substituted for CHEM 123 or CHEM 113; PHYS 101 and PHYS 103 or PHYS 111 may be substituted for PHYS 125.

2 One of the advanced laboratory course requirements may be satisfied by taking EBIO 306, if taken for at least 2 credit hours.

3 The elective course in Natural Science or Engineering must be taken for at least 3 credit hours. Courses offered by the School of Natural Sciences and the School of Engineering include the following subject codes: ASTR, BIOE, CAAM, CEVE, CHBE, CHEM, COMP ELEC, ENGI, ENST, ESCI, GLHT, HEAL, KINE, MATH, MECH, MSNE, NSCI, PHYS, and STAT.

**Policies for the BA Degree with a Major in Ecology and Evolutionary Biology**

**Advising**

Rice University policies are governed primarily by the General Announcements; students are encouraged to look there first for academic policies. Advising information specific to the Department of BioSciences can be found at the department website by clicking on the tab for Undergraduate Studies: [https://biosciences.rice.edu/](https://biosciences.rice.edu/).

**Program Restrictions and Exclusions**

Students pursuing the major in Ecology and Evolutionary Biology should be aware of the following program restrictions:

- Students pursuing the major in Ecology and Evolutionary Biology may not additionally declare the major in Biological Sciences.

**Transfer Credit**

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [https://oaa.rice.edu/](https://oaa.rice.edu/). Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

**Departmental Transfer Credit Guidelines**

Students pursuing the major in Ecology and Evolutionary Biology should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

**Additional Information**

For additional information, please see the BioSciences website: [https://biosciences.rice.edu/](https://biosciences.rice.edu/).

**Opportunities for the BA Degree with a Major in Ecology and Evolutionary Biology**

**Academic Honors**

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

**Departmental Honors**

Instructions on applying for the Distinction in Research and Creative Work award from the Department of BioSciences can be found at the department website, by clicking on the link for Undergraduate Studies, at: [https://biosciences.rice.edu/](https://biosciences.rice.edu/).

**Research in the BioSciences**

Research is highly encouraged for all biosciences majors, and there are many opportunities for independent research at Rice. Information about research for credit and research internships specific to the Department of BioSciences can be found at the department website, by clicking on the link for Undergraduate Studies, at: [https://biosciences.rice.edu/](https://biosciences.rice.edu/).

**Additional Information**

For additional information, please see the BioSciences website: [https://biosciences.rice.edu/](https://biosciences.rice.edu/).

**Bachelor of Science (BS) Degree with a Major in Biochemistry and Cell Biology**

**Program Learning Outcomes for the BS Degree with a Major in Biochemistry and Cell Biology**

Upon completing the BS degree with a major in Biochemistry and Cell Biology, students will be able to:

1. Demonstrate a comprehensive knowledge of biology with particular emphasis on biochemistry, genetics, and cell biology.
2. Demonstrate the ability to apply the modern scientific method, including designing experiments and/or building mathematical models, and collecting, analyzing, and interpreting data using common statistical methods and software programs.
3. Demonstrate effective oral and written communication skills, including an ability to communicate effectively and work with diverse groups and the ability to interpret and communicate the results of original research.
4. Locate primary scientific literature and demonstrate the ability to use critical thinking and problem-solving skills to evaluate published and proposed research in the biological sciences and to apply these skills.
5. Demonstrate understanding of the practice and culture of science, scientific ethics, and the relationship between science and society.
6. Develop quantitative reasoning via the construction of models and/or the analysis of data.

Requirements for the BS Degree with a Major in Biochemistry and Cell Biology

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BS degree with a major in Biochemistry and Cell Biology must complete:

- A minimum of 28 courses (minimum of 69 credit hours) to satisfy major requirements. Additional credit hours may be required depending on course selection.
- A minimum of 129 credit hours to satisfy degree requirements. Additional credit hours may be required depending on course selection.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 12 courses (minimum of 31 credit hours) taken at the 300-level or above.

The BS degree path emphasizes a broad understanding of biochemistry and cell biology, provides room for exploration anywhere in the Natural Sciences or Engineering, and culminates in two required 400-level capstone courses from an approved list of courses. Students in Biochemistry and Cell Biology are strongly encouraged to pursue their research interests through independent research experiences. The BS degree program offers greater coverage and depth as compared to the BA.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/d overeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<tr>
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<td>Total Credit Hours Required for the BS Degree with a Major in Biochemistry and Cell Biology</td>
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Degree Requirements

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<th>Credit Hours</th>
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<td>Core Requirements</td>
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<td>Non-Biology Courses</td>
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<td>MATH 211</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA</td>
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<td>PHYS 125</td>
<td>GENERAL PHYSICS (WITH LAB)</td>
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<td>PHYS 126</td>
<td>GENERAL PHYSICS II (WITH LAB)</td>
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<td>or CHEM 111</td>
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<td>CHEM 123</td>
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<td>CHEM 122</td>
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<td>or CHEM 114</td>
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<td>&amp; CHEM 214</td>
<td>and ORGANIC CHEM DISCUSSION II</td>
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<td>CHEM 215</td>
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<td>or CHEM 365</td>
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<td>BIOCHEMISTRY I</td>
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<td>BIOC 302</td>
<td>BIOCHEMISTRY II</td>
<td>3</td>
</tr>
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<td>BIOC 341</td>
<td>CELL BIOLOGY</td>
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<td>BIOC 344</td>
<td>MOLECULAR BIOLOGY AND GENETICS</td>
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<td>BIOC 352</td>
<td>PHYSICAL CHEMISTRY FOR THE BIOSCIENCES ²</td>
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<td>Advanced Laboratory Courses</td>
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<td>BIOC 211</td>
<td>INTERMEDIATE EXPERIMENTAL BIOSCIENCES ³</td>
<td>2</td>
</tr>
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<td>BIOC 311</td>
<td>ADVANCED EXPERIMENTAL BIOSCIENCES</td>
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<td>Select 2 courses from advanced labs at the 300-level or above:</td>
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<td>BIOC 313</td>
<td>EXPERIMENTAL SYNTHETIC BIOLOGY</td>
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<td>BIOC 318</td>
<td>MICROBIOLOGY LABORATORY</td>
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<td>BIOC 320 / BIOE 342</td>
<td>LABORATORY IN TISSUE CULTURE</td>
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<tr>
<td>BIOC 333</td>
<td>BIONNOVATION STUDIO: FROM BASIC RESEARCH AND IDEATION TO TECHNOLOGY DEVELOPMENT</td>
<td></td>
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<tr>
<td>BIOC 415</td>
<td>EXPERIMENTAL PHYSIOLOGY</td>
<td></td>
</tr>
<tr>
<td>BIOC 417</td>
<td>EXPERIMENTAL CELL AND MOLECULAR NEUROSCIENCE</td>
<td></td>
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<tr>
<td>BIOC 530</td>
<td>LAB MODULE IN NMR SPECTROSCOPY AND MOLECULAR MODELING ⁴</td>
<td></td>
</tr>
<tr>
<td>BIOC 535</td>
<td>PRACTICAL X-RAY CRYSTALLOGRAPHY ⁴</td>
<td></td>
</tr>
<tr>
<td>1 independent research experience ⁵,⁶</td>
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<tr>
<td></td>
<td>Elective Lecture Courses</td>
<td></td>
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<tr>
<td>Select 2 courses offered by the School of Natural Sciences and/or the School of Engineering</td>
<td>Minimum of 6</td>
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<td>BIOC 401</td>
<td>UNDERGRADUATE HONORS RESEARCH ⁶</td>
<td></td>
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<tr>
<td>BIOC 402</td>
<td>UNDERGRADUATE HONORS RESEARCH ⁶</td>
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<tr>
<td>BIOC 412</td>
<td>UNDERGRADUATE RESEARCH SEMINAR ⁶</td>
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<td>BIOC 424</td>
<td>MICROBIOLOGY AND BIOTECHNOLOGY</td>
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<tr>
<td>BIOC 425</td>
<td>PLANT MOLECULAR GENETICS AND DEVELOPMENT</td>
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</tbody>
</table>
University Graduation Requirements (p. 26)*

Total Credit Hours Required for the Major in Biochemistry and Cell Biology: Minimum of 69

Total Credit Hours: Minimum of 129

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAR, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 Permissible Substitutions: MATH 105 or MATH 111 and MATH 112 may be substituted for MATH 101; MATH 106 may be substituted for MATH 102; CHEM 151 may be substituted for CHEM 121 or CHEM 111; CHEM 153 may be substituted for CHEM 123 or CHEM 113; CHEM 152 may be substituted for CHEM 122 or CHEM 112, and CHEM 154 may be substituted for CHEM 124 or CHEM 114; CHEM 320 may be substituted for CHEM 212; PHYS 101 and PHYS 103 or PHYS 111 may be substituted for PHYS 125; PHYS 102 and PHYS 104 or and PHYS 112 may be substituted for PHYS 126.

2 CHEM 301 and CHEM 302 (both courses for 6 credit hours total) may substitute for BIOC 352.

3 BIOC 212 may be substituted for BIOC 211.

4 These advanced labs must be taken with or after completion of BIOC 482.

5 All Biochemistry and Cell Biology majors must take at least one of the listed additional advanced laboratory courses. If desired, the second advanced laboratory requirement may be satisfied by completing:
   1. BIOC 310 if taken for at least 3 credits; or
   2. HONS 470 and HONS 471, if the research supervisor is from one of the biosciences departments or if the research is biological in nature and pre-approved by the student's major advisor; or
   3. honors research (BIOC 401 and BIOC 402 and BIOC 412).

This substitution may be used only once regardless of the number of semesters of independent research taken.

6 The combined courses BIOC 401 and BIOC 402 and BIOC 412 are considered a single BIOC 400-level course and can be counted as one capstone course together as a series and/or as an independent research experience, provided that this substitution has not been used previously; this 3-course series can count as a single lab at 300-level or higher. To be applied toward the major all three courses must be completed.

7 Students must complete a total of 2 courses (6 credit hours) from courses offered by the School of Natural Sciences or the School of Engineering. Courses in Natural Sciences/Engineering include any 300-level or greater course of at least 3 credit hours from any department in the Wiess School of Natural Sciences (including BioSciences) or George R. Brown School of Engineering, except independent research courses such as BIOC 310, BIOC 401/BIOC 402, BIOC 400/BIOC 401, or EECS 306/EECS 403/EECS 404, which cannot be used to fulfill this requirement. A maximum of 3 credit hours from BIOC 390 (transfer credit in Biochemistry and Cell Biology) may be applied to this requirement. Courses offered by the School of Natural Sciences and the School of Engineering include the following subject codes: ASTR, BIOC, BIOC, CAAM, CEVE, CHBE, CHEM, COMP, EBOI, ELEC, ENGI, ENST, ESCI, GLHT, HEAL, KINE, MATH, MECH, MSNE, NSCI, PHYS, STAT. BIOC 300 is only allowed to fulfill this elective requirement when it is taken prior to BIOC 301 and BIOC 341, or their equivalent transfer course.

8 To fulfill the remaining BIOC major requirements, students pursuing the BS degree must complete a total of 2 additional courses (6 credit hours) as capstones. Only BIOC 400-level lecture courses from the list which are explicitly designed for the BIOC major, can be used to satisfy this requirement.

Policies for the BS Degree with a Major in Biochemistry and Cell Biology

Advising

Rice University policies are governed primarily by the General Announcements; students are encouraged to look there first for academic policies. Advising information specific to the Department of BioSciences can be found at the department website by clicking on the tab for Undergraduate Studies: https://biosciences.rice.edu/.

Program Restrictions and Exclusions

Students pursuing the major in Biochemistry and Cell Biology should be aware of the following program restrictions:

- Students pursuing the major in Biochemistry and Cell Biology may not additionally declare the major in Biological Sciences.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in Biochemistry and Cell Biology should be aware of the following departmental transfer credit guidelines:
• Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

Additional Information
For additional information, please see the BioSciences website: https://biosciences.rice.edu/.

Opportunities for the BS Degree with a Major in Biochemistry and Cell Biology

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Departmental Honors
Instructions on applying for the Distinction in Research and Creative Work award from the Department of BioSciences can be found at the department website, by clicking on the link for Undergraduate Studies, at: https://biosciences.rice.edu/.

Research in the BioSciences
Research is highly encouraged for all biosciences majors, and there are many opportunities for independent research at Rice. Information about research for credit and research internships specific to the Department of BioSciences can be found at the department website, by clicking on the link for Undergraduate Studies, at: https://biosciences.rice.edu/.

Additional Information
For additional information, please see the BioSciences website: https://biosciences.rice.edu/.

Bachelor of Science (BS) Degree with a Major in Ecology and Evolutionary Biology

Program Learning Outcomes for the BS Degree with a Major in Ecology and Evolutionary Biology
Upon completing the BS degree with a major in Ecology and Evolutionary Biology, students will be able to:

1. Locate primary scientific literature and demonstrate the ability to apply critical thinking and problem solving skills to evaluate published and proposed research in the biological sciences and to apply these skills to develop an independent research project.
2. Demonstrate the ability to apply the modern scientific method, including designing experiments and/or building mathematical models, collecting, analyzing, and interpreting data using common statistical methods and software programs.
3. Demonstrate effective oral and written communication skills, including an ability to communicate effectively and work with diverse groups and the ability to interpret and communicate the results of original research.
4. Demonstrate familiarity with the diversity of life and an in-depth understanding of at least one level or biological organization (i.e. genetic, genomic, cellular, organismal, population, community, or ecosystem).
5. Demonstrate a comprehensive knowledge of biology and an in-depth understanding of ecology and evolutionary biology.
6. Demonstrate understanding of the practice and culture of science, scientific ethics, and the relationship between science and society.

Requirements for the BS Degree with a Major in Ecology and Evolutionary Biology
For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BS degree with a major in Ecology and Evolutionary Biology must complete:

- A minimum of 22 courses (minimum 61 credit hours) to satisfy major requirements. Additional credit hours may be required depending on course selection.
- A minimum of 121 credit hours to satisfy degree requirements. Additional credit hours may be required depending on course selection.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 12 courses (minimum 34 credit hours) taken at the 300-level or above.

The Ecology and Evolutionary Biology major is intended for students pursuing a wide range of careers in the life sciences. Course work emphasizes a broad understanding of basic biology together with in-depth knowledge of ecology and evolutionary biology that culminates in a required capstone 400-level course incorporating primary scientific literature, presentations, and writing in an advanced topic. The BS program is well suited for students planning to go on to graduate or professional school, or who will enter the workforce with the BS as their terminal degree. Students pursuing the BS degree are also required to conduct independent research under the supervision or co-supervision of an Ecology and Evolutionary Biology faculty member (though the research can take place in other locations or institutions such as the Texas Medical Center or at field sites throughout the world). Students are strongly encouraged to take advantage of study abroad opportunities.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier [https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/].) Students and their academic advisors should identify and clearly document the courses to be taken.

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<th>Code</th>
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<th>Credit Hours</th>
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## Degree Requirements

### Core Requirements

**Non-Biology Courses**

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<td>MATH 102</td>
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**Select 1 course from the following:**

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<td>EBIO 338</td>
<td>ANALYSIS AND VISUALIZATION OF BIOLOGICAL DATA</td>
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1 course from STAT departmental course offerings

### Biology Lecture Courses

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<td>EBIO 202</td>
<td>INTRODUCTORY BIOLOGY II</td>
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<td>EBI 325</td>
<td>ECOLOGY</td>
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<td>EBI 334 / BIOC 334</td>
<td>EVOLUTION</td>
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### Biology Laboratory Courses

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<tr>
<td>BIOC 211</td>
<td>INTERMEDIATE EXPERIMENTAL BIOSCIENCES</td>
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<td>EBI 213</td>
<td>INTRO EXPERIMENTAL ECOLOGY AND EVOLUTIONARY BIOLOGY</td>
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### Scientific Communication Course

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<td>EBI 412</td>
<td>ADVANCED COMMUNICATION IN THE BIOLOGICAL SCIENCES</td>
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### Independent Research Courses

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<td>EBI 306</td>
<td>INDEPENDENT RESEARCH FOR ECOLOGY &amp; EVOLUTIONARY BIOLOGY UNDERGRADUATES (at least 2 credit hours)</td>
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<td>EBI 403</td>
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<td>EBI 404</td>
<td>UNDERGRADUATE HONORS RESEARCH IN ECOLOGY AND EVOLUTIONARY BIOLOGY</td>
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### Elective Requirements

**Lecture in Ecology and Evolutionary Biology**

Select 2 courses from the following:

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<td>EBI 321</td>
<td>ANIMAL BEHAVIOR</td>
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<td>EBI 323 / ENST 323</td>
<td>CONSERVATION BIOLOGY</td>
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<td>EBI 326</td>
<td>INSECT BIOLOGY</td>
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<tr>
<td>EBI 328</td>
<td>EVOLUTION OF GENES &amp; GENOMES</td>
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<td>EBI 329 / BIOC 329</td>
<td>ANIMAL BIOLOGY AND PHYSIOLOGY</td>
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<td>EBI 331 / BIOC 331</td>
<td>BIOLOGY OF INFECTIOUS DISEASES</td>
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<table>
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<th>Title</th>
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<tbody>
<tr>
<td>EBI 333 / COMP 370</td>
<td>EVOLUTIONARY BIOINFORMATICS</td>
<td></td>
</tr>
<tr>
<td>EBI 336</td>
<td>PLANT DIVERSITY</td>
<td></td>
</tr>
<tr>
<td>EBI 340 / ENST 340 / ESCI 340</td>
<td>GLOBAL BIOGEOCHEMICAL CYCLES</td>
<td></td>
</tr>
<tr>
<td>EBI 365</td>
<td>INTRODUCTORY PHYCOLOGY</td>
<td></td>
</tr>
<tr>
<td>EBI 366</td>
<td>APPLIED PHYCOLOGY</td>
<td></td>
</tr>
<tr>
<td>EBI 372</td>
<td>CORAL REEF ECOSYSTEMS</td>
<td></td>
</tr>
<tr>
<td>EBI 391</td>
<td>TRANSFER CREDIT IN ECOLOGY AND EVOLUTIONARY BIOLOGY</td>
<td></td>
</tr>
<tr>
<td>EBI 433</td>
<td>ADVANCED ECOLOGY</td>
<td></td>
</tr>
</tbody>
</table>

**Lecture in Biochemistry and Cell Biology**

Select 1 course from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BI 300</td>
<td>PARADIGMS IN BIOCHEMISTRY AND CELL BIOLOGY</td>
<td></td>
</tr>
<tr>
<td>BI 301</td>
<td>BIOCHEMISTRY I</td>
<td></td>
</tr>
<tr>
<td>BI 302</td>
<td>BIOCHEMISTRY II</td>
<td></td>
</tr>
<tr>
<td>BI 332 / BIOC 302</td>
<td>SYSTEMS PHYSIOLOGY</td>
<td></td>
</tr>
<tr>
<td>BI 335</td>
<td>CELLULAR AND MOLECULAR ANIMAL PHYSIOLOGY</td>
<td></td>
</tr>
<tr>
<td>BI 341</td>
<td>CELL BIOLOGY</td>
<td></td>
</tr>
<tr>
<td>BI 344</td>
<td>MOLECULAR BIOLOGY AND GENETICS</td>
<td></td>
</tr>
<tr>
<td>BI 352</td>
<td>PHYSICAL CHEMISTRY FOR THE BIOSCIENCES</td>
<td></td>
</tr>
<tr>
<td>BI 361 / BI 361 / GLHT 361</td>
<td>METABOLIC ENGINEERING FOR GLOBAL HEALTH ENVIRONMENTS</td>
<td></td>
</tr>
<tr>
<td>BI 368 / HUMA 368</td>
<td>CONCEIVING AND MISCONCEIVING THE MONSTROUS IN FICTION AND IN ART, IN MEDICINE AND IN BIOSCIENCE</td>
<td></td>
</tr>
<tr>
<td>BI 371</td>
<td>SEMINAR IN CONTEMPORARY BIOLOGICAL AND BIOMEDICAL RESEARCH</td>
<td></td>
</tr>
<tr>
<td>BI 372</td>
<td>IMMUNOLOGY</td>
<td></td>
</tr>
<tr>
<td>BI 380 / NEUR 380 / PSYC 380</td>
<td>FUNDAMENTAL NEUROSCIENCE SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>BI 385 / NEUR 385</td>
<td>FUNDAMENTALS OF CELLULAR AND MOLECULAR NEUROSCIENCE</td>
<td></td>
</tr>
<tr>
<td>BI 390</td>
<td>TRANSFER CREDIT IN BIOCHEMISTRY AND CELL BIOLOGY</td>
<td></td>
</tr>
<tr>
<td>BI 424</td>
<td>MICROBIOLOGY AND BIOTECHNOLOGY</td>
<td></td>
</tr>
<tr>
<td>BI 425</td>
<td>PLANT MOLECULAR GENETICS AND DEVELOPMENT</td>
<td></td>
</tr>
<tr>
<td>BI 443</td>
<td>DEVELOPMENTAL NEUROBIOLOGY</td>
<td></td>
</tr>
<tr>
<td>BI 445</td>
<td>ADVANCED MOLECULAR BIOLOGY AND GENETICS</td>
<td></td>
</tr>
<tr>
<td>BI 447</td>
<td>EXPERIMENTAL BIOLOGY AND THE FUTURE OF MEDICINE</td>
<td></td>
</tr>
<tr>
<td>BI 450</td>
<td>VIRUSES AND INFECTIOUS DISEASES</td>
<td></td>
</tr>
<tr>
<td>BI 460</td>
<td>CANCER BIOLOGY</td>
<td></td>
</tr>
<tr>
<td>BI 470</td>
<td>COMPUTATION WITH BIOLOGICAL DATA</td>
<td></td>
</tr>
<tr>
<td>BI 481</td>
<td>MOLECULAR BIOPHYSICS I</td>
<td></td>
</tr>
<tr>
<td>BI 482</td>
<td>STRUCTURAL BIOLOGY</td>
<td></td>
</tr>
</tbody>
</table>
EBIO Laboratory Course Requirement

Select 1 course from the following: 1-2

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBIO 316</td>
<td>LAB MODULE IN ECOLOGY</td>
</tr>
<tr>
<td>EBIO 317</td>
<td>LAB MODULE IN BEHAVIOR</td>
</tr>
<tr>
<td>EBIO 319</td>
<td>TROPICAL FIELD BIOLOGY</td>
</tr>
<tr>
<td>EBIO 320</td>
<td>ECOLOGY AND CONSERVATION OF BRAZILIAN WETLANDS LAB</td>
</tr>
<tr>
<td>EBIO 324</td>
<td>CONSERVATION BIOLOGY LAB</td>
</tr>
<tr>
<td>EBIO 327</td>
<td>BIOLOGICAL DIVERSITY</td>
</tr>
<tr>
<td>EBIO 330</td>
<td>INSECT BIOLOGY LAB</td>
</tr>
<tr>
<td>EBIO 332</td>
<td>EVOLUTION OF GENES &amp; GENOMES LAB</td>
</tr>
<tr>
<td>EBIO 335</td>
<td>EVOLUTIONARY BIOINFORMATICS LAB</td>
</tr>
<tr>
<td>EBIO 337</td>
<td>FIELD BIRD BIOLOGY LAB</td>
</tr>
<tr>
<td>EBIO 367</td>
<td>INTRODUCTION PHYCOLOGY LAB</td>
</tr>
<tr>
<td>EBIO 368</td>
<td>APPLIED PHYCOLOGY LAB</td>
</tr>
<tr>
<td>EBIO 379 /</td>
<td>LAB MODULE IN AQUATIC ECOLOGY WITH SCUBA</td>
</tr>
<tr>
<td>ENST 379</td>
<td></td>
</tr>
<tr>
<td>EBIO 393</td>
<td>LABORATORY TRANSFER CREDIT IN BIOSCIENCES</td>
</tr>
</tbody>
</table>

BIOC Laboratory Course Requirement

Select 1 course from the following or complete an additional laboratory course from the EBIO Laboratory requirement: 1-2

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC 311</td>
<td>ADVANCED EXPERIMENTAL BIOSCIENCES</td>
</tr>
<tr>
<td>BIOC 313</td>
<td>EXPERIMENTAL SYNTHETIC BIOLOGY</td>
</tr>
<tr>
<td>BIOC 318</td>
<td>MICROBIOLOGY LABARY</td>
</tr>
<tr>
<td>BIOC 320 /</td>
<td>LABORATORY IN TISSUE CULTURE</td>
</tr>
<tr>
<td>BIOE 342</td>
<td></td>
</tr>
<tr>
<td>BIOC 333</td>
<td>BIONNOVATION STUDIO: FROM BASIC RESEARCH AND IDEATION TO TECHNOLOGY DEVELOPMENT</td>
</tr>
<tr>
<td>BIOC 415</td>
<td>EXPERIMENTAL PHYSIOLOGY</td>
</tr>
</tbody>
</table>

Natural Sciences or Engineering

Select 1 course offered by the School of Natural Sciences or the School of Engineering at the 300-level or above 1 3

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC 212</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours Required for the Major in Ecology and Evolutionary Biology Minimum of 61

University Graduation Requirements (p. 26) 60

Total Credit Hours Minimum of 121

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAR upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 Permissible substitutions: BIOC 212 may be substituted for BIOC 211; MATH 111 and MATH 112 may be substituted for MATH 101 or MATH 105; CHEM 151 may be substituted for CHEM 121 or CHEM 111; CHEM 153 may be substituted for CHEM 123 or CHEM 113; PHYS 101 and PHYS 103 or PHYS 111 may be substituted for PHYS 125.

2 The elective course in Natural Sciences or Engineering must be taken for at least 3 credit hours. Courses offered by the School of Natural Sciences and the School of Engineering include the following subject codes: ASTR, BIOC, CAAM, CEVE, CHBE, CHEM, COMP, ELEC, ENGI, ENST, ESCI, GLHT, HEAL, KINE, MATH, MECH, MSNE, NSCI, PHYS, and STAT.

Policies for the BS Degree with a Major in Ecology and Evolutionary Biology

Advising

Rice University policies are governed primarily by the General Announcements; students are encouraged to look there first for academic policies. Advising information specific to the Department of BioSciences can be found at the department website by clicking on the tab for Undergraduate Studies: https://biosciences.rice.edu/.

Program Restrictions and Exclusions

Students pursuing the major in Ecology and Evolutionary Biology should be aware of the following program restrictions:

* Students pursuing the major in Ecology and Evolutionary Biology may not additionally declare the major in Biological Sciences.

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in Ecology and Evolutionary Biology should be aware of the following departmental transfer credit guidelines:

* Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

Additional Information

For additional information, please see the BioSciences website: https://biosciences.rice.edu/.

Opportunities for the BS Degree with a Major in Ecology and Evolutionary Biology

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Departmental Honors

Instructions on applying for the Distinction in Research and Creative Work award from the Department of BioSciences can be found at the department website, by clicking on the link for Undergraduate Studies, at: https://biosciences.rice.edu/.
Research in the BioSciences
Research is highly encouraged for all biosciences majors, and there are many opportunities for independent research at Rice. Information about research for credit and research internships specific to the Department of BioSciences can be found at the department website, by clicking on the link for Undergraduate Studies, at: https://biosciences.rice.edu/.

Additional Information
For additional information, please see the BioSciences website: https://biosciences.rice.edu/.

Doctor of Philosophy (PhD) Degree in the field of Biochemistry and Cell Biology

Program Learning Outcomes for the PhD Degree in the field of Biochemistry and Cell Biology

Upon completing the PhD degree in the field of Biochemistry and Cell Biology, students will be able to:

1. Develop a comprehensive knowledge of current and past research accomplishments and techniques in biochemistry and cell biology.
2. Demonstrate independent problem solving and critical thinking skills.
3. Demonstrate effective written, oral, and visual communication skills required to articulate scientific findings and significance via publications, seminars, and a thesis describing independent research.

Requirements for the PhD Degree in the field of Biochemistry and Cell Biology

For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the PhD Degree in the field of Biochemistry and Cell Biology must complete the requirements as listed below.

Course Requirements
Most of the formal course studies will be completed in the first year of residence to allow the students to commence thesis research at the end of their second semester at Rice. During the first year, the BCB Graduate Advisory Committee will advise all graduate students. This committee will determine the formal course program to be taken during the first year in residence. Students are required to have training in biochemistry and cell biology; training in genetics and physical chemistry or biophysics is also beneficial. Students lacking formal training in biochemistry or cell biology are required to take the equivalent background courses during their first year.

The following Rice courses must be taken if students lack these prerequisites in their final undergraduate transcript:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC 301</td>
<td>BIOCHEMISTRY I</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 341</td>
<td>CELL BIOLOGY</td>
<td>3</td>
</tr>
</tbody>
</table>

Summary

Total Credit Hours Required for the PhD Degree in the field of Biochemistry and Cell Biology: 90

Degree Requirements

Core Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC 575</td>
<td>INTRODUCTION TO RESEARCH</td>
<td>1</td>
</tr>
<tr>
<td>BIOC 581</td>
<td>GRADUATE SEMINAR IN BIOCHEMISTRY AND CELL BIOLOGY (required in all fall semesters of residency)</td>
<td>1 credit hour per year</td>
</tr>
<tr>
<td>BIOC 582</td>
<td>GRADUATE SEMINAR IN BIOCHEMISTRY AND CELL BIOLOGY (required in all spring semesters of residency)</td>
<td>1 credit hour per year</td>
</tr>
<tr>
<td>BIOC 583</td>
<td>MOLECULAR INTERACTIONS 1</td>
<td>4</td>
</tr>
<tr>
<td>BIOC 587</td>
<td>RESEARCH DESIGN, PROPOSAL WRITING, AND PROFESSIONAL DEVELOPMENT 1</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 588</td>
<td>CELLULAR INTERACTIONS 1</td>
<td>4</td>
</tr>
<tr>
<td>BIOC 599</td>
<td>GRADUATE TEACHING IN BIOCHEMISTRY AND CELL BIOLOGY (first semester, second year) 2</td>
<td>Minimum of 1 credit hour</td>
</tr>
<tr>
<td>BIOC 599</td>
<td>GRADUATE TEACHING IN BIOCHEMISTRY AND CELL BIOLOGY (second semester, second year) 2</td>
<td>Minimum of 1 credit hour</td>
</tr>
<tr>
<td>BIOC 701</td>
<td>GRADUATE LAB RESEARCH I (first year research course, fall semester)</td>
<td>2</td>
</tr>
<tr>
<td>BIOC 701</td>
<td>GRADUATE LAB RESEARCH I (first year research course, spring semester)</td>
<td>2</td>
</tr>
<tr>
<td>BIOC 702</td>
<td>GRADUATE LAB RESEARCH II (first year research course, fall semester)</td>
<td>2</td>
</tr>
<tr>
<td>BIOC 702</td>
<td>GRADUATE LAB RESEARCH II (first year research course, spring semester)</td>
<td>2</td>
</tr>
<tr>
<td>BIOC 800</td>
<td>BIOCHEMISTRY &amp; CELL BIOLOGY GRADUATE RESEARCH (second year research and beyond) 3</td>
<td>1-15</td>
</tr>
<tr>
<td>UNIV 594</td>
<td>RESPONSIBLE CONDUCT OF RESEARCH</td>
<td>1</td>
</tr>
</tbody>
</table>

Elective Requirements

Select a minimum of 6 credit hours from BIOC course offerings at the 500-level:

BIOC 523 | EXTRACELLULAR MATRIX                           |
BIOC 524 | MICROBIOLOGY & BIOTECHNOLOGY                   |
BIOC 525 | PLANT MOLECULAR GENETICS AND DEVELOPMENT       |
BIOC 530 | LAB MODULE IN NMR SPECTROSCOPY AND MOLECULAR MODELING |
BIOC 535 | PRACTICAL X-RAY CRYSTALLOGRAPHY                |
BIOC 540 | METABOLIC ENGINEERING                          |
BIOC 544 | DEVELOPMENTAL NEUROBIOLOGY                     |
BIOC 545 | ADVANCED MOLECULAR BIOLOGY AND GENETICS        |
BIOC 547 | EXPERIMENTAL BIOLOGY AND THE FUTURE OF MEDICINE |
BIOC 550 | VIRUSES AND INFECTIOUS DISEASES                |
Doctor of Philosophy (PhD) Degree in the field of Ecology and Evolutionary Biology

BIOC 551 MOLECULAR BIOPHYSICS
BIOC 552 STRUCTURAL BIOLOGY
BIOC 555 COMPUTATIONAL SYNTHETIC BIOLOGY
BIOC 560 CANCER BIOLOGY
BIOC 570 COMPUTATION WITH BIOLOGICAL DATA
BIOC 571 BIOINFORMATICS: SEQUENCE ANALYSIS
BIOC 572 BIOINFORMATICS: NETWORK ANALYSIS
BIOC 580 PROTEIN ENGINEERING

Thesis Requirement
Completion and public defense of a thesis

Additional Coursework as Approved by Department
Total Credit Hours Minimum of 90

Footnotes and Additional Information
1 Students generally complete BIOC 583, BIOC 587, and BIOC 588 in their first year, and will be responsible for the content of these courses in their admission to candidacy examination.
2 Students gain teaching experience by serving as discussion leaders and graders in two undergraduate courses during their second year (BIOC 599); additional teaching experiences are available on an individual basis.
3 Students are required to enroll in at least 9 hours of BIOC 800 during all semesters of residency after the first 2 semesters.

Evaluation of Progress in Graduate Study
The BCB Graduate Advising Committee evaluates each student’s undergraduate record and recommends course work based on the requirements. Thesis advisors may require additional courses.

At the end of each semester of the first year, the department chair, in consultation with the faculty, reviews student performance in the formal coursework. Students must maintain at least a B average (GPA ≥ 3.00), perform satisfactorily in BIOC 701/BIOC 702, and demonstrate outstanding motivation and potential for research. Thesis lab assignments are made based on student and faculty preferences following research rotations.

Evaluation after the first year includes:

- Ongoing review of research progress by the thesis advisor; satisfactory research progress will be indicated by a grade of ‘S’ in BIOC 800 each semester.
- A yearly research progress assessment by the student’s Research Progress Review Committee.
- Presentation of research progress at least once a year in seminar format (BIOC 581/BIOC 582) starting in the fourth semester and continuing until submission of the thesis.
- Completion of a written and oral admission to candidacy examination before the start of the fifth semester.
- Defense of the PhD thesis research and text in a final public seminar presentation and oral examination attended by the student’s Thesis Committee.

Policies for the PhD Degree in the field of Biochemistry and Cell Biology

Biochemistry and Cell Biology Graduate Program Handbook
The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, Biochemistry and Cell Biology publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Biochemistry_Cell_Biology_Graduate_Handbook.pdf

Admission
Applicants for graduate study in the Biochemistry and Cell Biology Program must have:

- BA or BS degree in biochemistry, biology, chemistry, chemical engineering, physics, or some equivalent
- High levels of intellectual strength and motivation, as indicated by academic record, Graduate Record Examination (GRE) scores, and recommendations

Although the department offers an MS degree in Biochemistry and Cell Biology, the department admits students who intend to pursue the PhD program. For general university requirements, see Graduate Degrees (p. 49).

Additional Information
For additional information, please see the BioSciences website: https://biosciences.rice.edu/

Opportunities for the PhD Degree in the field of Biochemistry and Cell Biology
All full-time Biochemistry and Cell Biology graduate students receive funding and full tuition waivers as specified in their offer letters. Information about Student Resources, Attendance at Scientific Conferences, Internships, Graduate Students Awards, the Graduate Student Association, etc. can be found in the Biochemistry and Cell Biology Graduate Program Handbook online at the department website: http://gradhandbooks.rice.edu/2018_19/Biochemistry_Cell_Biology_Graduate_Handbook.pdf

Additional Information
For additional information, please see the BioSciences website: https://biosciences.rice.edu/

Doctor of Philosophy (PhD) Degree in the field of Ecology and Evolutionary Biology

Program Learning Outcomes for the PhD Degree in the field of Ecology and Evolutionary Biology

Upon completing the PhD degree in the field of Ecology and Evolutionary Biology, students will be able to:
1. Demonstrate an ability to understand and critically evaluate concepts, research accomplishments, and techniques in ecology and evolutionary biology.

2. Demonstrate independent problem solving and critical thinking skills by identifying novel research questions in ecology and evolutionary biology and synthesizing critical paths towards answering them.

3. Demonstrate technical proficiency in a range of ecology and evolutionary biology research methods.

4. Demonstrate the effective written communication skills required for scientific publications, grant proposal submissions, and a thesis describing independent research.

5. Demonstrate the effective oral and visual communication skills necessary for articulating scientific findings and significance to diverse audiences.

Requirements for the PhD Degree in the field of Ecology and Evolutionary Biology

For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the PhD Degree in the field of Ecology and Evolutionary Biology must complete the requirements as listed below.

Course Requirements

Most of the formal course studies will be completed in the first year of residence to allow the students to begin thesis research at the end of their second semester at Rice. Entering students will meet with their faculty advisor to form a course of study of the first year. Students should have completed coursework in ecology, evolution (or equivalent), mathematics (including calculus), and statistics prior to admission. Deficiencies in these subject areas should be made up during the first year of residence; some may be waived at the discretion of the EEB Graduate Advising Committee and the EEB Graduate Program Director.

The following Rice courses must be taken if students lack course work in ecology or evolution in their final undergraduate transcript:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBIO 325</td>
<td>ECOLOGY</td>
<td>3 credit</td>
</tr>
<tr>
<td>EBIO 334</td>
<td>EVOLUTION</td>
<td>3 credit</td>
</tr>
</tbody>
</table>

Summary

Total Credit Hours Required for the PhD Degree in the field of Ecology and Evolutionary Biology

90

Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBIO 569</td>
<td>CORE COURSE IN ECOLOGY AND EVOLUTIONARY BIOLOGY (course</td>
<td>3 credit</td>
</tr>
<tr>
<td></td>
<td>repeatable for credit)</td>
<td>more or</td>
</tr>
<tr>
<td></td>
<td>Select 2 courses from the following (2 semesters of any</td>
<td>2 credit</td>
</tr>
<tr>
<td></td>
<td>combination of EBIO 'Topics' courses).¹</td>
<td>hours or</td>
</tr>
<tr>
<td></td>
<td></td>
<td>more</td>
</tr>
</tbody>
</table>

EBIO 561 TOPICS IN EVOLUTION

EBIO 562 TOPICS IN BEHAVIORAL BIOLOGY

EBIO 563 TOPICS IN ECOLOGY

EBIO 568 TOPICS IN BIOLOGICAL DIVERSITY

EBIO 555 GRADUATE SEMINAR IN ECOLOGY AND EVOLUTIONARY BIOLOGY (required in all years of residency, fall semester) 1 credit hour per year

EBIO 586 GRADUATE SEMINAR/ECOLOGY AND EVOLUTIONARY BIOLOGY (required in all years of residency, spring semester) 1 credit hour per year

EBIO 591 EVOLUTIONARY BIOLOGY (two semesters) 3 credit hours per semester

EBIO 801 EEB GRADUATE RESEARCH Variable credit hours

Thesis Requirement

Completion and public defense of a thesis embodying the results of an original investigation

Additional Coursework as Approved by Department

Total Credit Hours Minimum of 90

Footnotes and Additional Information

¹ At least two topics courses must be completed before candidacy. Students are strongly encouraged to take at least one topics course per semester during all years of residency.

² Students must complete 2 semesters of EBIO 591 during their first 4 semesters to gain teaching experience; additional teaching experiences are available on an optional basis.

³ EBIO 801 EEB Graduate Research credit hours vary depending on the number of other courses the student is taking in a given semester.

Evaluation of Progress in Graduate Study

Students must maintain a minimum grade average of B (3.00 grade points) in courses taken in the department and satisfactory grades in courses taken outside the department. Students must demonstrate satisfactory progress in their degree program in annual reviews by the EEB faculty. The review process requires that each student:

- Presents a public seminar on his/her research at the annual EEB Graduate Student Symposium
- Prepares a written report on his/her progress

First-year students must also participate in a meeting with the EEB Graduate Advising Committee.

PhD Degree Program

In addition to the general university requirements and those listed above, the PhD degree in Ecology and Evolutionary Biology requires:

- Passing the qualifying examination given by the thesis committee. (The committee will be composed of at least three members. Two, including the committee chair, must be members of the student’s department faculty; in doctoral thesis committees one member must have his or her primary appointment in another department within the university.)
- Complete an original investigation and a doctoral thesis with at least three chapters with the potential to produce publications in reputable, peer-reviewed scientific journals

²
• Present a departmental seminar on the research
• Publicly defend the doctoral thesis

Program Learning Outcomes for the MS Degree in the field of Biochemistry and Cell Biology

Upon completing the MS degree in the field of Biochemistry and Cell Biology, students will be able to:

1. Develop a knowledge of past and current research accomplishments and techniques in biochemistry and cell biology.
2. Demonstrate problem solving and critical thinking skills.
3. Demonstrate effective written, oral, and visual communication skills required to articulate scientific findings and significance via publications, seminars, and a thesis describing independent research.

Requirements for the MS Degree in the field of Biochemistry and Cell Biology

Course Requirements

The MS degree is a thesis master's degree. For general university requirements, please see Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Most of the formal course studies will be completed in the first year of residence to allow the students to commence thesis research at the end of their second semester at Rice. During the first year, the BCB Graduate Advisory Committee will advise all graduate students. This committee will determine the formal course program to be taken during the first year in residence. Students are required to have training in biochemistry and cell biology; training in genetics and physical chemistry or biophysics is also beneficial. Students lacking formal training in biochemistry or cell biology are required to take the equivalent background courses during their first year.

The following Rice courses must be taken if students lack these prerequisites in their final undergraduate transcript:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC 301</td>
<td>BIOCHEMISTRY I</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 341</td>
<td>CELL BIOLOGY</td>
<td>3</td>
</tr>
</tbody>
</table>

Summary

Total Credit Hours Required for the MS Degree in the field of Biochemistry and Cell Biology: 30

Degree Requirements

Core Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC 575</td>
<td>INTRODUCTION TO RESEARCH</td>
<td>1</td>
</tr>
<tr>
<td>BIOC 581</td>
<td>GRADUATE SEMINAR IN BIOCHEMISTRY AND CELL BIOLOGY (required in all semesters of residency, fall semester)</td>
<td>1 credit hour per year</td>
</tr>
<tr>
<td>BIOC 582</td>
<td>GRADUATE SEMINAR IN BIOCHEMISTRY AND CELL BIOLOGY (required in all semesters of residency, spring semester)</td>
<td>1 credit hour per year</td>
</tr>
<tr>
<td>BIOC 583</td>
<td>MOLECULAR INTERACTIONS ¹</td>
<td>4</td>
</tr>
</tbody>
</table>

¹ May be taken twice for credit.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC 587</td>
<td>RESEARCH DESIGN, PROPOSAL WRITING, AND PROFESSIONAL DEVELOPMENT</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 588</td>
<td>CELLULAR INTERACTIONS</td>
<td>4</td>
</tr>
<tr>
<td>BIOC 701</td>
<td>GRADUATE LAB RESEARCH I (first year research course, fall semester)</td>
<td>2</td>
</tr>
<tr>
<td>BIOC 701</td>
<td>GRADUATE LAB RESEARCH I (first year research course, spring semester)</td>
<td>2</td>
</tr>
<tr>
<td>BIOC 702</td>
<td>GRADUATE LAB RESEARCH II (first year research course, fall semester)</td>
<td>2</td>
</tr>
<tr>
<td>BIOC 702</td>
<td>GRADUATE LAB RESEARCH II (first year research course, spring semester)</td>
<td>2</td>
</tr>
<tr>
<td>BIOC 800</td>
<td>BIOCHEMISTRY &amp; CELL BIOLOGY GRADUATE RESEARCH</td>
<td>1-15</td>
</tr>
<tr>
<td>UNIV 594</td>
<td>RESPONSIBLE CONDUCT OF RESEARCH</td>
<td>1</td>
</tr>
</tbody>
</table>

**Elective Requirements**

Select at least 6 credit hours from the set of 500-level advanced BIOC electives listed below:

- BIOC 523 EXTRACELLULAR MATRIX
- BIOC 524 MICROBIOLOGY & BIOTECHNOLOGY
- BIOC 525 PLANT MOLECULAR GENETICS AND DEVELOPMENT
- BIOC 530 LAB MODULE IN NMR SPECTROSCOPY AND MOLECULAR MODELING
- BIOC 535 PRACTICAL X-RAY CRYSTALLOGRAPHY
- BIOC 540 METABOLIC ENGINEERING
- BIOC 544 DEVELOPMENTAL NEUROBIOLOGY
- BIOC 545 ADVANCED MOLECULAR BIOLOGY AND GENETICS
- BIOC 547 EXPERIMENTAL BIOLOGY AND THE FUTURE OF MEDICINE
- BIOC 550 VIRUSES AND INFECTIOUS DISEASES
- BIOC 551 MOLECULAR BIOPHYSICS
- BIOC 552 STRUCTURAL BIOLOGY
- BIOC 555 COMPUTATIONAL SYNTHETIC BIOLOGY
- BIOC 560 CANCER BIOLOGY
- BIOC 570 COMPUTATION WITH BIOLOGICAL DATA
- BIOC 572 BIOINFORMATICS: NETWORK ANALYSIS
- BIOC 580 PROTEIN ENGINEERING

**Thesis Requirement**

Completion and public defense of a thesis

**Additional Coursework as Approved by Department**

- Total Credit Hours: Minimum of 30

**Footnotes and Additional Information**

1. Students generally complete BIOC 583, BIOC 587, and BIOC 588 in their first year.
2. Students are required to enroll in at least 9 hours of BIOC 800 during all semesters of residency after the first 2 semesters.

**Evaluation of Progress in Graduate Study**

The BCB Graduate Advising Committee evaluates each student’s undergraduate record and recommends course work based on the requirements. Thesis advisors may require additional courses.

At the end of each semester, the department chair, in consultation with the faculty, reviews student performance in the formal course work.

**MS candidates must maintain a GPA ≥ 2.67, complete a thesis, and successfully complete a public oral defense of their research work to their Thesis Committee and other interested parties.**

**Evaluation after the first year includes:**

- The research progress review examination held during the MS student’s second year replaces the admission to candidacy examination; no other preliminary examination is required before the final oral defense of the master’s thesis; satisfactory research progress will be indicated by a grade of ‘S’ in BIOC 800 each semester
- Presentation of research progress at least once a year in seminar format (BIOC 581/BIOC 582) starting in the fourth semester and continuing until submission of the thesis
- Defense of the MS thesis research and text in a final public seminar presentation and oral examination attended by the student’s Thesis Committee

**Policies for the MS Degree in the field of Biochemistry and Cell Biology**

**Biochemistry and Cell Biology Graduate Program Handbook**

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, Biochemistry and Cell Biology publishes a graduate program handbook, which can be found here: [https://gradhandbooks.rice.edu/2019_20/Biochemistry_Cell_Biology_Graduate_Handbook.pdf](https://gradhandbooks.rice.edu/2019_20/Biochemistry_Cell_Biology_Graduate_Handbook.pdf)

**Admission**

Applicants for graduate study in the Biochemistry and Cell Biology Program must have:

- BA or BS degree in biochemistry, biology, chemistry, chemical engineering, physics, or some equivalent
- High levels of intellectual strength and motivation, as indicated by academic record, Graduate Record Examination (GRE) scores, and recommendations

Although the department offers an MS degree in biochemistry and cell biology, the department admits students who intend to pursue the PhD program. For general university requirements, see Graduate Degrees (p. 49).

**Transfer Credit**

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

**Additional Information**

For additional information, please see the BioSciences website: [https://biosciences.rice.edu/](https://biosciences.rice.edu/)

**Opportunities for the MS Degree in the field of Biochemistry and Cell Biology**

All full-time Biochemistry and Cell Biology graduate students receive funding and full tuition waivers as specified in their offer letters.

Information about Student Resources, Attendance at Scientific
Conferences, Internships, Graduate Students Awards, the Graduate Student Association, etc. can be found in the Biochemistry and Cell Biology Graduate Program Handbook online at the department website: http://gradhandbooks.rice.edu/2018_19/
Biochemistry_Cell_Biology_Graduate_Handbook.pdf

Additional Information
For additional information, please see the BioSciences website: https://biosciences.rice.edu/

Master of Science (MS) Degree in the field of Ecology and Evolutionary Biology

Program Learning Outcomes for the MS Degree in the field of Ecology and Evolutionary Biology

Upon completing the MS degree in the field of Ecology and Evolutionary Biology, students will be able to:

1. Demonstrate an ability to understand and critically evaluate concepts, research accomplishments, and techniques in ecology and evolutionary biology.
2. Demonstrate independent problem solving and critical thinking skills by identifying novel research questions in ecology and evolutionary biology and synthesizing critical paths towards answering them.
3. Demonstrate technical proficiency in a range of ecology and evolutionary biology research methods.
4. Demonstrate the effective written communication skills required for scientific publications, grant proposal submissions, and a thesis describing independent research.
5. Demonstrate the effective oral and visual communication skills necessary for articulating scientific findings and significance to diverse audiences.

Requirements for the MS Degree in the field of Ecology and Evolutionary Biology

Course Requirements

The MS degree is a thesis master’s degree. For general university requirements, please see Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Most of the formal course studies will be completed in the first year of residence to allow the students to begin thesis research at the end of their second semester at Rice. Entering students will meet with their faculty advisor to form a course of study of the first year. Students should have completed coursework in ecology, evolution (or equivalent), mathematics (including calculus), and statistics prior to admission. Deficiencies in these subject areas should be made up during the first year of residence; some may be waived at the discretion of the EEB Graduate Advising Committee and the EEB Graduate Program Director.

The following Rice courses must be taken if students lack coursework in ecology or evolution in their final undergraduate transcript:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBIO 325</td>
<td>ECOWY</td>
<td>3</td>
</tr>
<tr>
<td>EBIO 334 / BIOC 334</td>
<td>EVOLUTION</td>
<td>3</td>
</tr>
</tbody>
</table>

Summary

Total Credit Hours Required for the MS Degree in the field of Ecology and Evolutionary Biology

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
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<td></td>
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</tbody>
</table>

Degree Requirements

Core Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBIO 569</td>
<td>CORE COURSE IN ECOLOGY AND EVOLUTIONARY BIOLOGY</td>
<td>3 credit hours or more</td>
</tr>
</tbody>
</table>

Select a minimum of 2 courses from the following (2 semesters of any combination of EBIO 'Topics' courses):¹

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBIO 561</td>
<td>TOPICS IN EVOLUTION</td>
<td>1 credit hour per year</td>
</tr>
<tr>
<td>EBIO 562</td>
<td>TOPICS IN BEHAVIORAL BIOLOGY</td>
<td>1 credit hour per year</td>
</tr>
<tr>
<td>EBIO 563</td>
<td>TOPICS IN ECOLOGY</td>
<td>1 credit hour per year</td>
</tr>
<tr>
<td>EBIO 568</td>
<td>TOPICS IN BIOLOGICAL DIVERSITY</td>
<td>1 credit hour per year</td>
</tr>
<tr>
<td>EBIO 585</td>
<td>GRADUATE SEMINAR IN ECOLOGY AND EVOLUTIONARY BIOLOGY (required in all years of residency, fall semester)</td>
<td>1 credit hour per year</td>
</tr>
<tr>
<td>EBIO 586</td>
<td>GRADUATE SEMINAR/ECOLOGY AND EVOLUTIONARY BIOLOGY (required in all years of residency, spring semester)</td>
<td>1 credit hour per year</td>
</tr>
<tr>
<td>EBIO 591</td>
<td>GRADUATE TEACHING IN ECOLOGY AND EVOLUTIONARY BIOLOGY (two semesters)</td>
<td>1 credit hour per semester</td>
</tr>
<tr>
<td>EBIO 801</td>
<td>EEB GRADUATE RESEARCH</td>
<td>Variable credit hours</td>
</tr>
</tbody>
</table>

Thesis Requirement

Completion and public defense of a thesis embodying the results of an original investigation

Additional Coursework as Approved by Department

Total Credit Hours Minimum of 30

Footnotes and Additional Information

¹ At least 2 topics courses must be completed before candidacy. Students are strongly encouraged to take at least 1 topics course per semester during all years of residency.
² Students must complete 2 semesters of EBIO 591 during their first 4 semesters to gain teaching experience; additional teaching experiences are available on an optional basis.
³ A minimum of 10 credit hours of EBIO 801 EEB Graduate Research is required for a master’s degree. EBIO 801 credit hours vary per student, depending on the number of other courses the student is taking in a given semester.
Evaluation of Progress in Graduate Study
Students must maintain a minimum grade average of B (3.00 grade points) in courses taken in the department and satisfactory grades in courses taken outside the department. Students must demonstrate satisfactory progress in their degree program in annual reviews by the EEB faculty. The review process requires that each student:

- Presents a public seminar on their research at the annual EEB Graduate Student Symposium
- Prepares a written report on their progress

First-year students must also participate in a meeting with the EEB Graduate Advising Committee.

MS Degree Program
In addition to the general university requirements and those listed above, the MS degree in Ecology and Evolutionary Biology requires:

- Convening a master’s thesis committee. A thesis committee is composed of at least three members. Two, including the committee chair, must be members of the student’s department faculty.
- Completing an original investigation and a master's thesis
- Presenting a departmental seminar on the research
- Publicly defending the master’s thesis

Policies for the MS Degree in the field of Ecology and Evolutionary Biology
Ecology and Evolutionary Graduate Program Handbook
The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, Ecology and Evolutionary Biology publishes a graduate program handbook, which can be found here: [Ecology_Evolutionary_Biology_Graduate_Handbook.pdf](https://gradhandbooks.rice.edu/2019_20/Ecology_Evolutionary_Biology_Graduate_Handbook.pdf)

Admission
Applicants for graduate study in the Ecology and Evolutionary Biology Program must have:

- BA or BS degree or equivalent that provides a strong background in biology
- Strong ability and motivation, as indicated by academic record, Graduate Record Examination (GRE) scores, and recommendations
- Scores from the GRE biology subject exam are optional but can be helpful, particularly for students with nontraditional backgrounds in biology

These requirements do not preclude admission of qualified applicants who have majored in areas other than biology. Although the program offers MS degrees, only on rare occasions are students who do not intend to pursue the PhD admitted to the graduate program. For general university requirements, see Graduate Degrees (p. 49).

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

Additional Information
For additional information, please see the BioSciences website: [https://biosciences.rice.edu/](https://biosciences.rice.edu/)

Opportunities for the MS Degree in the field of Ecology and Evolutionary Biology
All full-time Ecology and Evolutionary Biology graduate students receive funding and full tuition waivers as specified in their offer letters. Information about Student Resources, Attendance at Scientific Conferences, Internships, Graduate Students Awards, the Graduate Student Association, etc. can be found in the Ecology and Evolutionary Biology Graduate Program handbook here: [http://gradhandbooks.rice.edu/2018_19/Ecology_Evolutionary_Biology_Graduate_Handbook.pdf](http://gradhandbooks.rice.edu/2018_19/Ecology_Evolutionary_Biology_Graduate_Handbook.pdf)

Additional Information
For additional information, please see the BioSciences website: [https://biosciences.rice.edu/](https://biosciences.rice.edu/)

Minor in Biochemistry and Cell Biology

Program Learning Outcomes for the Minor in Biochemistry and Cell Biology
Upon completing the minor in Biochemistry and Cell Biology, students will be able to:

1. Demonstrate knowledge of biology with particular emphasis on biochemistry and cell biology.
2. Demonstrate effective oral and written communication skills, including the ability to interpret and communicate the results of biological research.
3. Demonstrate the critical thinking and analysis skills necessary to evaluate published and proposed research in the biological sciences.

Requirements for the Minor in Biochemistry and Cell Biology
Students pursuing the minor in Biochemistry and Cell Biology must complete:

- A minimum of 18 courses (minimum of 44 credit hours) to satisfy minor requirements.

The minor in Biochemistry and Cell Biology is intended for those with an interest in the life sciences but who may be majoring in other areas. This minor incorporates many of the life science core courses required for the health professions.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the minor’s Official Certifier [https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/]). Students and their academic advisors should identify and clearly document the courses to be taken.
Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Minor in Biochemistry and Cell Biology</td>
<td>Minimum of 44</td>
</tr>
</tbody>
</table>

Minor Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
</table>

Core Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
</table>

MATH 101 SINGLE VARIABLE CALCULUS I 3
or MATH 105 AP/OTH CREDIT IN CALCULUS I 3
MATH 102 SINGLE VARIABLE CALCULUS II 3
or MATH 106 AP/OTH CREDIT IN CALCULUS II 3
PHYS 125 GENERAL PHYSICS (WITH LAB) 4
PHYS 126 GENERAL PHYSICS II (WITH LAB) 4
CHEM 121 GENERAL CHEMISTRY I 3
or CHEM 111 AP/OTH CREDIT IN GENERAL CHEMISTRY I 3
CHEM 123 GENERAL CHEMISTRY LABORATORY I 1
or CHEM 113 AP/OTH CREDIT IN GENERAL CHEMISTRY LAB I 1
CHEM 122 GENERAL CHEMISTRY II 3
or CHEM 112 AP/OTH CREDIT IN GENERAL CHEMISTRY II 3
CHEM 124 GENERAL CHEMISTRY LABORATORY II 1
or CHEM 114 AP/OTH CREDIT IN GENERAL CHEMISTRY LAB II 1
CHEM 211 ORGANIC CHEMISTRY I 3
& CHEM 213 ORGANIC CHEMISTRY DISCUSSION 3
CHEM 212 ORGANIC CHEMISTRY II 3
& CHEM 214 ORGANIC CHEM DISCUSSION II 3
CHEM 215 ORGANIC CHEMISTRY LAB 2
or CHEM 365 ORGANIC CHEMISTRY LAB 2
BIOC 201 INTRODUCTORY BIOLOGY I 3
BIOC 301 BIOCHEMISTRY I 3
BIOC 341 CELL BIOLOGY 3

Lab Course Requirement

BIOC 211 INTERMEDIATE EXPERIMENTAL BIOSCIENCES 2

Lecture Course Requirement

Select 1 lecture course from BIOC course offerings at the 300-level or above 3

Total Credit Hours

Minimum of 44

Footnotes and Additional Information

1 Permissible Substitutions: MATH 105 or MATH 111 and MATH 112 may be substituted for MATH 101; MATH 106 may be substituted for MATH 102; CHEM 151 may be substituted for CHEM 121 or CHEM 111; CHEM 153 may be substituted for CHEM 123 or CHEM 113; CHEM 152 may be substituted for CHEM 122 or CHEM 112, and CHEM 154 may be substituted for CHEM 124 or CHEM 114; CHEM 320 may be substituted for CHEM 212; PHYS 101 and PHYS 103 or PHYS 111 may be substituted for PHYS 125; PHYS 102 and PHYS 104 or PHYS 112 may be substituted for PHYS 126; BIOC 212 may be substituted for BIOC 211.

2 Lecture courses are noted in Rice’s Course Catalog with a course type of 'lecture'. These courses do not include courses listed with a course type of 'lecture/laboratory'.

Policies for the Minor in Biochemistry and Cell Biology

Advising

Rice University policies are governed primarily by the General Announcements; students are encouraged to look there first for academic policies. Advising information specific to the Department of BioSciences can be found at the department website by clicking on the tab for Undergraduate Studies: https://biosciences.rice.edu/.

Program Restrictions and Exclusions

Students pursuing the minor in Biochemistry and Cell Biology should be aware of the following program restrictions:

- As noted in Majors, Minors, and Certificates (p. 11), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.
- Students pursuing the major in Biological Sciences may not declare the minor in Biochemistry and Cell Biology.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the minor in Biochemistry and Cell Biology should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information

For additional information, please see the BioSciences website: https://biosciences.rice.edu/.

Opportunities for the Minor in Biochemistry and Cell Biology

Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Research in the BioSciences

Research is highly encouraged for all biosciences majors, and there are many opportunities for independent research at Rice. Information about research for credit and research internships specific to the Department of
BioSciences can be found at the department website, by clicking on the link for Undergraduate Studies, at: https://biosciences.rice.edu/.

Additional Information
For additional information, please see the BioSciences website: https://biosciences.rice.edu/.

Minor in Ecology and Evolutionary Biology

Program Learning Outcomes for the Minor in Ecology and Evolutionary Biology
Upon completing the minor in Ecology and Evolutionary Biology, students will be able to:

1. Demonstrate knowledge of biology with particular emphasis on ecology and evolutionary biology.
2. Demonstrate effective oral and written communication skills, including the ability to interpret and communicate the results of biological research.
3. Demonstrate the critical thinking and analysis skills necessary to evaluate published and proposed research in the biological sciences.

Requirements for the Minor in Ecology and Evolutionary Biology
Students pursuing the minor in Ecology and Evolutionary Biology must complete:

- A minimum of 7 courses (20 credit hours) to satisfy minor requirements.
- A minimum of 4 courses (12 credit hours) taken at the 300-level or above.

The minor in Ecology and Evolutionary Biology is intended for the numerous Rice students with an avid interest in ecology and evolutionary biology but whose major interests are in other departments.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the minor’s Official Certifier (https://registrar.rice.edu/facstaff/degeworks/officialcertifier/). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
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</table>

Total Credit Hours Required for the Minor in Ecology and Evolutionary Biology 20

Minor Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Core Requirements</td>
<td></td>
</tr>
<tr>
<td>BIOC 201</td>
<td>INTRODUCTORY BIOLOGY I</td>
<td>3</td>
</tr>
<tr>
<td>EBIO 202</td>
<td>INTRODUCTORY BIOLOGY II</td>
<td>3</td>
</tr>
</tbody>
</table>

Elective Requirements

Select 4 courses from the following: 12

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBIO 321</td>
<td>ANIMAL BEHAVIOR</td>
</tr>
<tr>
<td>EBIO 323 / ENST 323</td>
<td>CONSERVATION BIOLOGY</td>
</tr>
<tr>
<td>EBIO 325</td>
<td>ECOLOGY</td>
</tr>
<tr>
<td>EBIO 326</td>
<td>INSECT BIOLOGY</td>
</tr>
<tr>
<td>EBIO 328</td>
<td>EVOLUTION OF GENES &amp; GENOMES</td>
</tr>
<tr>
<td>EBIO 329 / BIOC 329</td>
<td>ANIMAL BIOLOGY AND PHYSIOLOGY</td>
</tr>
<tr>
<td>EBIO 331 / BIOC 331</td>
<td>BIOLOGY OF INFECTIOUS DISEASES</td>
</tr>
<tr>
<td>EBIO 333 / COMP 370</td>
<td>EVOLUTION BIOINFORMATICS</td>
</tr>
<tr>
<td>EBIO 334 / BIOC 334</td>
<td>EVOLUTION</td>
</tr>
<tr>
<td>EBIO 336</td>
<td>PLANT DIVERSITY</td>
</tr>
<tr>
<td>EBIO 340 / ENST 340 / ESCI 340</td>
<td>GLOBAL BIOGEOCHEMICAL CYCLES</td>
</tr>
<tr>
<td>EBIO 365</td>
<td>INTRODUCTORY PHYCOLOGY</td>
</tr>
<tr>
<td>EBIO 366</td>
<td>APPLIED PHYCOLOGY</td>
</tr>
<tr>
<td>EBIO 372</td>
<td>CORAL REEF ECOSYSTEMS</td>
</tr>
<tr>
<td>EBIO 391</td>
<td>TRANSFER CREDIT IN ECOLOGY AND EVOLUTION BIOLOGY</td>
</tr>
<tr>
<td>EBIO 433</td>
<td>ADVANCED ECOLOGY</td>
</tr>
</tbody>
</table>

Policies for the Minor in Ecology and Evolutionary Biology

Advising
Rice University policies are governed primarily by the General Announcements; students are encouraged to look there first for academic policies. Advising information specific to the Department of BioSciences can be found at the department website by clicking on the tab for Undergraduate Studies: https://biosciences.rice.edu/.

Program Restrictions and Exclusions
Students pursuing the minor in Ecology and Evolutionary Biology should be aware of the following program restrictions:

- As noted in Majors, Minors, and Certificates (p. 11), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.
- Students pursuing the major in Biological Sciences may not declare the minor in Ecology and Evolutionary Biology.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their
academic program’s transfer credit advisor when considering transfer credit possibilities.

**Departmental Transfer Credit Guidelines**

Students pursuing the minor in Ecology and Evolutionary Biology should be aware of the following departmental transfer credit guidelines:

- Request for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

**Additional Information**

For additional information, please see the BioSciences website: [https://biosciences.rice.edu/](https://biosciences.rice.edu/).

**Opportunities for the Minor in Ecology and Evolutionary Biology**

**Academic Honors**

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see [Latin Honors](#) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

**Research in the BioSciences**

Research is highly encouraged for all biosciences majors, and there are many opportunities for independent research at Rice. Information about research for credit and research internships specific to the Department of BioSciences can be found at the department website, by clicking on the link for [Undergraduate Studies](https://biosciences.rice.edu/).

**Additional Information**

For additional information, please see the BioSciences website: [https://biosciences.rice.edu/](https://biosciences.rice.edu/).

**Bioscience and Health Policy**

**Contact Information**

Bioscience and Health Policy
https://profms.rice.edu/
203 Keck Hall
713-348-3188

Dagmar Beck
Program Director
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Janet Braam
Faculty Director
braam@rice.edu

The professional master’s degree in Bioscience and Health Policy creates broad options for science students interested in working in biomedical research, health care professions, health care management, for the government, or in governmental relations positions at non-profit organizations, in industry, and in academic institutions. This interdisciplinary program equips students with advanced bioscience skills; teaches quantitative skills and data analysis; provides students with communication skills enabling them to understand and formulate public policy recommendations; and trains students how to integrate science knowledge into developing informed policies and practices.

The Bioscience and Health Policy program gives students an advanced background in bioscience complemented by courses in business, economics, humanities, and policy studies to foster their understanding of the role of science in policy making and the role of public policy in science. The coursework provides research and study skills enabling development of specific policy recommendations. Students will also receive the tool-set necessary to become knowledgeable in the formulation and execution of public policy. Direct access to the Baker Institute will allow students to work closely with policy scholars as well as meet with many of the leaders in science and technology policy.

The MS in Bioscience and Health Policy (MSBHP) degree is part of the professional science master's (PSM) program at Rice housed in the Wiess School of Natural Sciences. These master's degrees are designed for students seeking to gain further scientific core expertise coupled with enhanced management and communication skills. They instill a level of scholastic proficiency that exceeds that of the bachelor's level, and create the cross-functional aptitudes needed in modern industry and government.

Students receiving the MSBHP degree will be able to enter into governmental positions; work in non-governmental agencies, insurance, medical and pharmaceutical companies; serve as governmental relations officers for companies or universities with a vested science interest; or enter into post-graduate training in health care professions or biosciences.

A coordinated MBA/MSBHP degrees program is also offered in conjunction with the Jesse H. Jones Graduate School of Business.

Bioscience and Health Policy does not currently offer an academic program at the undergraduate level.

**Master's Program**

- Master of Science in Bioscience and Health Policy (MSBHP) Degree (p. 185)

**Coordinated Program**

- Master of Science in Bioscience and Health Policy (MSBHP) Degree / Master of Business Administration (MBA) Degree (p. 187)

**Director**

Janet Braam

**Advising Committee**

Janet Braam
Mary Susan Cates
Kathleen Shive Matthews
Kirstin R. W. Matthews
Daniel S. Wagner

**Description and Code Legend**

**Note:** Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:
Course Catalog/Schedule

- Course offerings/subject code: Courses from various subjects may apply towards this program

Department Description and Code

- Biosciences: BIOS

Graduate Degree Descriptions and Codes

- Master of Science in Bioscience and Health Policy degree: MSBHP

Graduate Degree Program Description and Code

- Degree Program in Bioscience and Health Policy: BSHP

CIP Code and Description

- BSHP Major/Program: CIP Code/Title: 30.0601 - Systems Science and Theory

Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Master of Science in Bioscience and Health Policy (MSBHP) Degree

Program Learning Outcomes for the MSBHP Degree

Upon completing the MSBHP degree, students will be able to:

1. Become knowledgeable in current advanced bioscience and health policy topics affecting society.
2. Integrate science knowledge into policies and practices.
3. Demonstrate written, oral, and visual communication strategies required to work effectively across science, business, and government.

Requirements for the MSBHP Degree

The MSBHP degree is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MSBHP degree must complete:

- A minimum of 14 courses (minimum of 39-40 credit hours, depending on course selection) to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University.
- A 3-6 month internship. Instead of a thesis, at the conclusion of their internship, students must present their internship project in both oral and written form as part of the Professional Master's Project (NSCI 512). Part-time students who already work in their area of study may request approval to fulfill the internship requirement by working on a specific, pre-approved project with their current employer.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.

- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master's degree.

Note: Some of the listed courses are not offered every year, and some may also have prerequisites or require instructor permission.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MSBHP Degree 39-40</td>
</tr>
</tbody>
</table>

Degree Requirements

Core Requirements

Core Science Courses

Select 4 courses (12 credit hours) from the following:

- BIOC 524 MICROBIOLOGY & BIOTECHNOLOGY
- BIOC 525 PLANT MOLECULAR GENETICS AND DEVELOPMENT
- BIOC 540 / CHBE 640 METABOLIC ENGINEERING
- BIOC 544 DEVELOPMENTAL NEUROBIOLOGY
- BIOC 545 ADVANCED MOLECULAR BIOLOGY AND GENETICS
- BIOC 547 EXPERIMENTAL BIOLOGY AND THE FUTURE OF MEDICINE
- BIOC 550 VIRUSES AND INFECTIOUS DISEASES
- BIOC 555 COMPUTATIONAL SYNTHETIC BIOLOGY
- BIOC 560 / BIOE 560 CANCER BIOLOGY
- BIOC 570 COMPUTATION WITH BIOLOGICAL DATA
- BIOC 573 IMMUNOLOGY
- BIOC 580 / BIOE 580 / CHBE 580 PROTEIN ENGINEERING
- BIOC 585 FUNDAMENTALS OF CELLULAR AND MOLECULAR NEUROSCIENCE
- EBIO 523 CONSERVATION BIOLOGY
- EBIO 524 CONSERVATION BIOLOGY LAB
- EBIO 525 ECOLOGY
- EBIO 540 GLOBAL BIOGEOCHEMICAL CYCLES

Cohort Courses

- NSCI 501 PROFESSIONAL MASTER'S SEMINAR (2 semesters required, 1st semester)
Elective Requirements
Select a minimum of 2 courses (minimum of 6 credit hours) from the following:

ENGI 515 LEADING TEAMS AND INNOVATION
ENGI 529 / CEVE 529 ETHICS AND ENGINEERING LEADERSHIP
ENGI 614 LEARNING HOW TO INNOVATE?
ENGI 615 LEADERSHIP COACHING FOR ENGINEERS
HEAL 507 EPIDEMIOLOGY
HEAL 560 PLANNING AND EVALUATION OF HEALTH PROMOTION AND EDUCATION
HURC 506 HEALTH AND HUMANITIES MASTER CLASS

Footnotes and Additional Information

1 Note: Some of the listed courses are not offered every year, and other coursework may be offered that satisfies the stated requirements upon approval. Depending on the student’s background or interest, course substitutions for any required or elective course may be approved by the program’s academic advisor. Students should consult with their academic advisors before enrolling. For example, students can choose up to two electives from the UT Graduate School of Biomedical Science (GS), Informatics (HI), and/or Health Science Center (PH). See department for more details.

2 PH 3910 is a course offered at the UTHealth School of Public Health and available to Rice students as part of an existing inter-institutional agreement between our two institutions. Once received as approved transfer credit, PH 3910 is eligible to be approved to meet the 3 credit hour requirement for Group B, Finance and Economics. Students are not permitted to take this inter-institutional course in their last semester at Rice.

3 Practical experience is offered via a three to six month immersion. The internship will be under the guidance of a host company, government agency, or non-profit organization. At the conclusion of the internship, students must present a summary of their project in both oral and written form for the cohort and available to Rice students as part of an existing inter-institutional agreement between our two institutions. Once received as approved transfer credit, PH 3910 is eligible to be approved to meet the 3 credit hour requirement for Group B, Finance and Economics. Students are not permitted to take this inter-institutional course in their last semester at Rice.

Policies for the MSBHP Degree

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Professional Science Master’s Program publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Professional_Science_Masters_Handbook.pdf

Admission

Admission to graduate study in Bioscience and Health Policy is open to qualified students holding a bachelor’s degree in biology or a related field. Preparation in biology, chemistry, calculus and statistics is preferred. Scores from the general Graduate Record Examination (GRE) are
required. Department faculty evaluate the previous academic record and credentials of each applicant individually and make admission decisions.

The Bioscience and Health Policy Professional Master’s Program has distinct focus areas for students with primary interests in policy careers, biomedical and health care related positions, or additional post-graduate training or education after degree conferral.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

Additional Information
For additional information, please see the Bioscience and Health Policy website: https://profms.rice.edu/ (https://profms.rice.edu/bioscience-health-policy/overview/)

Opportunities for the MSBHP Degree
Fifth-Year Master’s Degree Option for Rice Undergraduate Students
Rice students have an option to pursue the Master of Science in Bioscience and Health Policy (MSBHP) degree by adding an additional fifth year to their four undergraduate years of science studies.

Advanced Rice undergraduate students in good academic standing may apply to the MSBHP degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master’s degree program. A plan of study will need to be approved by the student’s undergraduate advisor, the Professional Science Master’s (PSM) program director, and the MSBHP program director.

As part of this option and opportunity, Rice undergraduate students:

- must complete the requirements for a bachelor’s degree and the master’s degree independently of each other (i.e., no course may be counted toward the fulfillment of both degrees).
- should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
- more information on this Undergraduate - Graduate Concurrent Enrollment opportunity, including specific information on the registration process can be found here (p. 17).

Additional Information
For additional information, please see the Bioscience and Health Policy website: https://profms.rice.edu/ (https://profms.rice.edu/bioscience-health-policy/overview/)

Master of Science in Bioscience and Health Policy (MSBHP) Degree / Master of Business Administration (MBA) Degree

Program Learning Outcomes for the MSBHP Degree
Upon completing the MSBHP degree, students will be able to:

1. Become knowledgeable in current advanced bioscience and health policy topics affecting society.
2. Integrate science knowledge into policies and practices.
3. Demonstrate written, oral, and visual communication strategies required to work effectively across science, business, and government.

Program Learning Outcomes for the MBA Degree
Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MSBHP/MBA Coordinated Degrees Program
Students may earn a coordinated MBA degree and a Master of Science degree from the Wiess School of Natural Sciences Professional Science Master’s (PSM) program in the following fields:

- Bioscience and Health Policy (MSBHP)
- Environmental Analysis (MSEA)
- Space Studies (MSSpS)
- Subsurface Geoscience (MSSG)

For the coordinated MBA/Master of Science degree from the Professional Science Master’s (PSM) program, students must complete:

- A minimum of 75 credit hours in approved coursework, including:
  - A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the Professional Science Master’s (PSM) degree requirements
  - A minimum of 30 credit hours in the corresponding science discipline
  - All PSM degree-specific requirements
  - A three to six month internship
  - A minimum of 45 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the MBA degree requirements
  - A minimum of 45 credit hours of business coursework
  - All MBA core requirements, the global field experience, custom core requirements, and coordinated elective requirements

Students plan their course schedules in consultation with the Wiess School of Natural Sciences PSM program director and with the Jones Graduate School of Business Registrar Department. Coordinated degrees
candidates can fulfill requirements for both degrees within 3 academic years.

For general university requirements, see Graduate Degrees (p. 49). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Candidates in the MBA/Master of Science degree from the Professional Science Master’s (PSM) program must complete all requirements as listed for both degrees, and must apply and be accepted in both degree programs.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours Required for the Coordinated Master of Science Degree</th>
<th>Minimum of 30</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Total Credit Hours Required for the Coordinated MBA Degree</td>
<td>Minimum of 45</td>
</tr>
<tr>
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</tr>
</tbody>
</table>

### Coordinated MSBHP Degree Requirements

Students in the coordinated MBA/MSBHP degrees program must complete the Core Requirements and Three to Six Month Internship of the MSBHP degree program (p. 185) and Coordinated MSBHP Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
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<tr>
<td></td>
<td>MSBHP Core Requirements</td>
<td>33-34</td>
</tr>
<tr>
<td></td>
<td>MSBHP Three to Six Month Internship</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Coordinated MSBHP Elective Requirements</td>
<td>6</td>
</tr>
</tbody>
</table>

Select a maximum of 6 credit hours from approved course offerings (MGMP, MGMT, or MICO) from the Jones Graduate School of Business at the 500-level or above.

Total Credit Hours: 39-40

### Coordinated MBA Degree Requirements

Students in the coordinated MBA/Master of Engineering degrees program or in the coordinated MBA/Master of Science degree from the Professional Science Master’s (PSM) degrees program must complete the Core Requirements, Global Field Experience, and Custom Core Requirements of the full-time MBA degree program (p. 214) and the Coordinated MBA Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
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<tr>
<td></td>
<td>Full-time MBA Core Requirements</td>
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<tr>
<td></td>
<td>Full-time MBA Global Field Experience Requirement</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>Full-time MBA Custom Core Courses</td>
<td>3-6</td>
</tr>
<tr>
<td></td>
<td>Coordinated MBA Elective Requirements</td>
<td></td>
</tr>
</tbody>
</table>

Select an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours.  

Total Credit Hours: 45

### Footnotes and Additional Information

1. To fulfill the remaining requirements for the coordinated MBA degree program, students must complete an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours. (MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.) The second year of the program is dedicated entirely to MBA elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. MBA electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.

### Policies for the MSBHP/MBA Coordinated Degrees Program

#### Additional Information

For additional information on these two degrees:

1. Please see the Bioscience and Health Policy website: https://profms.rice.edu/
2. Please see the Jones Graduate School of Business website: https://business.rice.edu/

#### Opportunities for the MSBHP/MBA Coordinated Degrees Program

#### Additional Information

For additional information on these two degrees:

1. Please see the Bioscience and Health Policy website: https://profms.rice.edu/
2. Please see the Jones Graduate School of Business website: https://business.rice.edu/

### Business

#### Contact Information

- **Business**
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- **George Andrews**

2019-2020 General Announcements
PDF Generated 1/29/2020
The Jesse H. Jones Graduate School of Business (JGSB) was established in 1974 through a gift from Houston Endowment, Inc. The Jones Graduate School of Business offers a minor in business (BUSI) for undergraduate students, a master’s degree in business administration (MBA) program for graduate students seeking to further their professional careers in business, a one-year master of accounting (MAcc) program, and a PhD program in business for graduate students seeking academic careers at research universities.

**Undergraduate Minor in Business**

The business minor consists of six integrated courses designed to provide a strong foundation in the essential disciplines of business and to develop students’ critical thinking and communication skills. All courses in the minor are taught by JGSB faculty.

**Master of Accounting (MAcc) Degree**

The Master of Accounting degree is designed to enable students with a top-tier non-accounting undergraduate education to complete the educational requirements for becoming a certified public accountant. Program requirements and additional information regarding the Master of Accounting program may be found here (p. 100).

**Master of Business Administration (MBA) Degree Programs**

The MBA degree can be obtained via the Full-Time MBA program, the MBA for Executives program, the MBA for Professionals program, or the MBA@Rice hybrid online program. The Executive and Professional MBA programs and MBA@Rice are designed for executives and working professionals who do not wish to interrupt their careers while pursuing the MBA degree. The MBA for Professionals program has three formats: an evening format, an alternating weekend format, and an extended evening format.

A coordinated MBA/master of engineering program is offered by the Jones Graduate School of Business and the George R. Brown School of Engineering, in many of the departments of engineering. This program prepares students to become managers in organizations requiring a high level of technical expertise and management skills. Students must apply separately and be accepted by both the business school and by the appropriate engineering department.

A coordinated MBA/master of science program is offered by the Jones Graduate School of Business and the Weiss School of Natural Sciences Professional Science Master’s (PSM) Program. This program prepares students to become managers in organizations requiring specialized technical knowledge and general management skills. Students must apply separately and be accepted by both the business school and by the appropriate PSM program.

An MBA/MD dual degree program is offered by the Jones Graduate School of Business and Baylor College of Medicine. This program prepares students to become both physicians and managers in institutions involved in the delivery of high-quality health care, as well as biotechnology-focused industries, health insurance/managed health care firms, and pharmaceutical and medical supply and equipment companies.

**Doctor of Philosophy (PhD) Degree in the field of Business**

The Jones Graduate School of Business PhD program is designed for candidates with outstanding intellectual abilities and a strong commitment to research. The goal of the PhD program is to train students for academic careers focused on cutting-edge, rigorous research and teaching in a business school environment. Applicants to the PhD program must hold a four-year bachelor’s degree from an accredited institution. A master’s degree and work experience are not required for PhD admission. (Advanced degrees (e.g. master’s degrees) and prior work experience are taken into account in admission decisions, but evidence of strong intellectual ability is of utmost importance). Although the Jones Graduate School of Business does not normally admit students to study for an MA, graduate students in the PhD program may earn the MA as they work towards the PhD.

**Minor**

- Minors (p. 272)

**Master’s Programs**

- Master of Arts (MA) Degree in the field of Business* (p. 102)
- Master of Accounting (MAcc) Degree (p. 265) Professional Program (Evening, Evening Extended)
- Master of Business Administration (MBA) Degree, (p. 269) Professional Program (Weekend)
- Master of Accounting (MAcc) Degree, (p. 272) Full-Time Program
  - and a Major Concentration in Accounting (p. 219)
  - and a Major Concentration in Energy (p. 223)
  - and a Major Concentration in Entrepreneurship (p. 227)
  - and a Major Concentration in Finance (p. 231)
  - and a Major Concentration in Health Care (p. 236)
  - and a Major Concentration in Marketing (p. 240)
  - and a Major Concentration in Operations Management (p. 244)
  - and a Major Concentration in Real Estate (p. 249)
  - and a Major Concentration in Strategic Management (p. 253)

**Doctoral Program**

- Doctor of Philosophy (PhD) Degree in the field of Business, (p. 192)
- and a Major Concentration in Economics and Finance (p. 193)

**Coordinated Programs**

**With the George R. Brown School of Engineering**

- Master of Business Administration (MBA) Degree
  - and the Master of Chemical Engineering (MChE) Degree (p. 194)
  - and the Master of Computational and Applied Mathematics (MCAAM) Degree (p. 195)
  - and the Master of Computer Science (MCS) Degree (p. 197)
  - and the Master of Industrial Engineering (MIE) Degree (p. 198)
• and the Master of Materials Science and Nanoengineering (MMSNE) Degree (p. 200)
• and the Master of Mechanical Engineering (MME) Degree (p. 201)
• and the Master of Statistics (MStat) Degree (p. 209)

With the Wiess School of Natural Sciences
• Master of Business Administration (MBA) Degree
  • and the Master of Science in Bioscience and Health Policy (MSBH) Degree (p. 203)
  • and the Master of Science in Environmental Analysis (MSEA) Degree (p. 204)
  • and the Master of Science in Space Studies (MSSpS) Degree (p. 206)
  • and the Master of Science in Subsurface Geoscience (MSSG) Degree (p. 207)

Dual Degree Program
With the Baylor College of Medicine
• Master of Business Administration (MBA) Degree and the Doctor of Medicine (MD) Degree (p. 193)

* Although students are not normally admitted to a Master of Arts (MA) degree program, graduate students may earn the MA as they work towards the PhD.

Dean
Peter Rodriguez

Deputy Dean
Jefferson D. Fleming

Sr. Associate Dean of Degree Programs
Barbara Ostdiek

Sr. Associate Dean of Executive Education
D. Brent Smith

Associate Dean of Degree Programs
George Andrews

Professors
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Alexander W. Butler
Utpal Dholakia
Jefferson D. Fleming
William H. Glick
Gustavo Grullon
Thomas Hemmer
Yael Hochberg
Ajay Kalra
Wagner Kamakura
Haiyang Li
Vikas Mittal
Amit Pazgal
Kris Ramesh
K. Sivaramakrishnan
Scott Sonenshein
Robert A. Westbrook
James P. Weston
Duane Windsor
Stephen A. Zeff
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Jing Zhou

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Kevin Crotty
Erik Dane
Jefferson Duarte
Prashant Kale
Balaji Koka
Barbara Ostdiek
Brian R. Rountree
Douglas A. Schuler
D. Brent Smith
Yuhang Xing
Anastasiya Zavyalova

Assistant Professors
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Brian Akins
Dinah A. Cohen
David DeAngelis
Patricia Naranjo
Otilia Obodaru
Leila Peyravan
Tarik Umar

Professors Emeriti
Richard R. Batsell
Bala G. Dharan
Linda P. Driskill
Jennifer M. George
G. Anthony Gorry
Robert E. Hoskisson
George Kanatas
H. Albert Napier
Ronald N. Taylor
Wilfred Uecker
Edward E. Williams

Clinical Assistant Professor
Constance Elise Porter

Professor in the Practice of Management
William Arnold
Jack M. Gill
Vincent Kaminski
Benjamin Lansford
Dick Viebig
Associate Professor in the Practice of Management
David VanHorn

Senior Lecturers
Jill Foote
Elizabeth O’Sullivan
Rick Schell
David Tobin

Lecturers
Abby Larson
Janet Moore
Lydia Musher
Hesam Panahi

Joint Appointments
Michell ‘Mikki’ R. Hebl
David M. Lane
Frederick L. Oswald

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
- Course offerings/subject code for Business: BUSI
- Course offerings/subject code for Management: MGMT
- Course offerings/subject code for Management Integrated Course Offering: MICO
- Course offerings/subject code for Master of Accounting: MACC
- Course offerings/subject code for MBA for Professionals-Evening: MGMP
- Course offerings/subject code for MBA for Professionals-Weekend: MGMW

Department Description and Code
- Business: BUSI
- Management: MGMT

Undergraduate Minor Description and Code
- Minor in Business: BUSI

Graduate Degree Descriptions and Codes
- Master of Accounting degree: MAcc
- Master of Arts degree: MA
- Master of Business Administration degree: MBA
- Doctor of Philosophy degree: PhD

Graduate Degree Program Descriptions and Codes
- Degree Program in Accounting: ACCO
- Degree Program in Business Administration (MBA degree): MGMT
- Degree Program in Business (MA and PhD degrees): MGMT

Graduate Major Concentration Descriptions and Codes
- Major Concentration in Accounting: BACT (MBA degree, full-time program)
- Major Concentration in Energy: BENR (MBA degree, full-time program)
- Major Concentration in Entrepreneurship: BENT (MBA degree, full-time program)
- Major Concentration in Finance: BFIN (MBA degree, full-time program)
- Major Concentration in Health Care: BHCR (MBA degree, full-time program)
- Major Concentration in Marketing: BMKT (MBA degree, full-time program)
- Major Concentration in Operations Management: BOPM (MBA degree, full-time program)
- Major Concentration in Real Estate: BRES (MBA degree, full-time program)
- Major Concentration in Strategic Management: BSTM (MBA degree, full-time program)
- Major Concentration in Economics and Finance: BEFI (attached to the PhD degree)

Graduate Degree Program Option Descriptions and Codes*
- Degree Program Option - Executive (MBA degree only): EMBA
- Degree Program Option - Full-Time (MBA degree only): MBA
- Degree Program Option - Online (MBA degree only): O MBA
- Degree Program Option - Professional, Evening (MBA degree only): PMBA
- Degree Program Option - Professional, Evening Extended (MBA degree only): X MBA
- Degree Program Option - Professional, Weekend (MBA degree only): W MBA

CIP Code and Description 1
- ACCO Major/Program: CIP Code/Title: 52.0301 - Accounting
- MGMT Major/Program: CIP Code/Title: 52.0201 - Business Administration and Management, General
- BACT Major Concentration: CIP Code/Title: 52.0301 - Accounting
- BEFI Major Concentration: CIP Code/Title: 27.0305 - Financial Mathematics
- BENR Major Concentration: CIP Code/Title: 52.0299 - Business Administration, Management and Operations, Other
- BENT Major Concentration: CIP Code/Title: 52.0701 - Entrepreneurship/Entrepreneurial Studies
- BFIN Major Concentration: CIP Code/Title: 52.0801 - Finance, General
- BHCR Major Concentration: CIP Code/Title: 51.0701 - Health/Health Care Administration/Management
- BMKT Major Concentration: CIP Code/Title: 52.1401 - Marketing/Marketing Management, General
- BOPM Major Concentration: CIP Code/Title: 52.0205 - Operations Management and Supervision
- BRES Major Concentration: CIP Code/Title: 52.1501 - Real Estate
- BSTM Major Concentration: CIP Code/Title: 52.1401 - Marketing/Marketing Management, General
- BUSI Minor: CIP Code/Title: 52.0201 - Business Administration and Management, General
Doctor of Philosophy (PhD) Degree in the field of Business

Program Learning Outcomes for the MA and PhD Degrees in the field of Business

Upon completing the MA and PhD degrees in the field of Business, students will be able to:

1. Summarize major themes and current research problems in their area of specialization.
2. Explain and identify open problems and areas needing development in their discipline.
3. Execute and present original research in their discipline.
4. Communicate effectively, orally and in writing, their research and the major tenets of their discipline.

Requirements for the MA and PhD Degrees in the field of Business

MA Degree Program

The MA degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Although students are not normally admitted to study for an MA in the field of Business, graduate students in the PhD program may complete the MA as part of their path towards the PhD. Students pursuing the MA degree in the field of Business must complete:

- A minimum of 36 credit hours to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum residency enrollment of four fall and/or spring semesters of full-time graduate study at Rice University.
- A minimum of 9 credit hours of doctoral seminars in the student’s specified discipline or area of specialization.
- A minimum overall GPA of 3.00.

Students must also successfully complete the research workshop participation requirements and the first-year summer research requirements (if applicable) in the area of specialization. Additionally, the Jones School requires that not more than 3 years elapse between the time the student is admitted to the PhD program in Business and the completion of the MA degree, unless an extension is approved by the PhD Program Committee.

Requirements for the PhD Degree in the field of Business

PhD Degree Program

For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). For program details, see the PhD Program Guidebook distributed by the Jones Graduate School of Business. Admissions applications should include scores on the Graduate Management Admissions Test (GMAT) or the Graduate Record Examination (GRE). Full financial support will be provided to admitted doctoral students. Candidates for the PhD degree must spend at least two years in full-time coursework and at least two years writing the thesis. Four to five years is a reasonable goal for completing the program. For the PhD, students must:

- Complete a program of doctoral-level courses that is approved by the area faculty advisor. Students take courses from departments such as economics, psychology, statistics, and political science in addition to courses from Jones Graduate School of Business.
- Complete and defend orally a doctoral thesis, setting forth in publishable form, the results of original research.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MA Degree in the field of Business</td>
<td>36</td>
</tr>
</tbody>
</table>

Policies for the PhD Degree in the field of Business

Jones Graduate School of Business Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Jones Graduate School of Business publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Business_Graduate_Handbook.pdf

Withdrawal Policy

A Jones Graduate School of Business student, participating in any offered program, may voluntarily withdraw from school at any time. Upon withdrawal, Rice University applies a sliding scale to tuition, which is noted in the university’s Academic Calendar posted on the Rice Office of the Registrar website (https://Registrar.rice.edu/calendars/).

Additional Information

For additional information, please see the Jones Graduate School of Business website: https://business.rice.edu/

Opportunities for the PhD Degree in the field of Business

Financial Aid

Jones Graduate School of Business scholarships are awarded at the point of admission and are based on the merit of the application. Financial assistance is generally awarded one academic year at a time. Continuation of assistance depends on Satisfactory Academic Progress (SAP) in accordance with Academic and Professional Standards of
performance, professional behavior, and is subject to the availability of funds. Academic or disciplinary probation, suspension, or general failure to maintain academic pace will result in the removal of all forms of financial assistance (i.e. scholarship, employment, Federal/State student loans, etc.). Students have the right to appeal the suspension. All appeals will be reviewed by a committee.

Additional Information
For additional information, please see the Jones Graduate School of Business website: https://business.rice.edu/

Doctor of Philosophy (PhD) Degree in the field of Business and a Major Concentration in Economics and Finance

Program Learning Outcomes for the PhD Degree in the field of Business and a Major Concentration in Economics and Finance

Upon completing the PhD degree in the field of Business and a major concentration in Economics and Finance, students will be able to:

1. Learn mathematical, statistical, econometric and computational tools to carry out independent research in economics and finance.
2. Write an independent and original thesis that is of sufficient quality to merit publication in a top economics or finance journal.
3. Conduct a focused review of the literature and develop a research design to carry out independent research.
4. Learn to defend their research design and modeling choices by presenting their paper in a seminar environment.
5. Communicate their research effectively by writing clearly, concisely, and cogently.
6. Read critically and assess research manuscripts related to their field of study and in other fields.

Requirements for the PhD Degree in the field of Business and a Major Concentration in Economics and Finance

For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). For program details, see the PhD Program Guidebook distributed by the Jones Graduate School of Business. Admissions applications should include scores on the Graduate Management Admissions Test (GMAT) or the Graduate Record Examination (GRE). Full financial support will be provided to admitted doctoral students. Candidates for the PhD degree spend at least two years in full-time coursework and at least two years writing the thesis. Four to five years is a reasonable goal for completing the program. For the PhD, students must:

- Complete a program of doctoral-level courses that is approved by the area faculty advisor. Students take courses from departments such as economics, psychology, statistics, and political science in addition to courses from Jones Graduate School of Business.
- Complete and defend orally a doctoral thesis, setting forth in publishable form, the results of original research.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the PhD Degree in the field of Business and a Major Concentration in Economics and Finance</td>
<td>90</td>
</tr>
</tbody>
</table>

The PhD in Business degree program offers a wide range of areas of specialization, depending on each student’s interests and goals. Students are encouraged to contact the Jones Graduate School of Business for additional details regarding the areas of specialization available.

Students pursuing the PhD degree programs in the fields of Business or Economics have the option to participate in a unique program of study, one recognized with a formal major concentration in Economics and Finance. To participate, students in either PhD degree program (Business or Economics) have the option to declare the major concentration in Economics and Finance.

Policies for the PhD Degree in the field of Business

Jones Graduate School of Business Graduate Program Handbook
The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Jones Graduate School of Business publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Class_of_2021/Graduate_Programs/Faculty_and_Schools/Jones_Graduate_School_of_Business/Graduate_Programs/Doctoral/Guides_and_Handbooks/Jones_Graduate_School_of_Business_Graduate_Program_Handbook.pdf

Additional Information
For additional information, please see the Jones Graduate School of Business website: https://business.rice.edu/

Oppotunities for the PhD Degree in the field of Business

Additional Information
For additional information, please see the Jones Graduate School of Business website: https://business.rice.edu/

Master of Business Administration (MBA) Degree / Doctor of Medicine (MD) Degree with Baylor College of Medicine

Program Learning Outcomes for the MBA/MD Dual Degree Program

Upon completing the MBA/MD dual degree program, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including
accounting, finance, marketing, organizational behavior, and strategic management.

2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.

3. Function effectively in a team setting both as a leader and contributor.

Requirements for the MBA/MD Dual Degree Program

As part of the coordinated dual degree program, students have the opportunity to earn both the (Rice) MBA degree and the (Baylor College of Medicine) MD degree in 5 years. The program is structured as follows:

- **Years 1, 2, and 3**—Medical training at Baylor College of Medicine.
- **Year 4**—First-year MBA core courses at Rice including 2 custom core courses and 2 electives.
- **Summer**—Students are encouraged to do an internship. To ensure that the internship is a combination of business/management and health care, approval is required from both schools. The internship does not count toward credit for either degree.
- **Year 5**—Second-year MBA elective courses in fall including US Health Care Management, MGMT 678 and medical training at Baylor College of Medicine in the spring semester.

Students are expected to follow the requirements for the health care concentration as the blueprint for their MBA studies, to the extent possible and in consultation with the Program Director of the Health Care Initiative at Jones Graduate School of Business. To obtain the concentration, students take US Health Care Management, MGMT 678 and medical training at Baylor College of Medicine in their second year and complete 12 credits from a suite of health care courses offered throughout the year.

Students are eligible to receive their MBA degree from Rice i.) after they have completed 45 credit hour of approved business coursework, and ii.) after they have completed the MD degree requirements specified by the Baylor College of Medicine.

Policies for the MBA/MD Dual Degree Program

Additional Information

For additional information, please see the Jones Graduate School of Business website: [https://business.rice.edu/](https://business.rice.edu/)

Opportunities for the MBA/MD Dual Degree Program

Additional Information

For additional information, please see the Jones Graduate School of Business website: [https://business.rice.edu/](https://business.rice.edu/)

Master of Business Administration (MBA) Degree / Master of Chemical Engineering (MChE) Degree

Program Learning Outcomes for the MBA Degree

Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.

2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.

3. Function effectively in a team setting both as a leader and a contributor.

Program Learning Outcomes for the MChE Degree

Upon completing the MChE degree, students will be able to:

1. Identify, formulate, and solve complex engineering problems that require synthesis of advanced knowledge in chemical engineering fundamentals.

2. Demonstrate broad advanced knowledge in science and math, and depth in one chemical engineering sub-discipline (energy engineering, biomolecular engineering, materials science).

3. Demonstrate knowledge of business policies and practices in the current business environment in identifying, formulating, and solving engineering challenges in a problem/engineering challenge they undertake to solve as part of independent study.

4. Demonstrate effective oral and written communication skills.

Requirements for the MBA/MChE Coordinated Degrees Program

Students may earn a coordinated MBA degree and a non-thesis Master of Engineering degree from the George R. Brown School of Engineering in the following fields:

- Chemical Engineering (MChE)
- Computational and Applied Mathematics (MCAAM)
- Computer Science (MCS)
- Industrial Engineering (MIE)
- Materials Science and Nanoengineering (MMSNE)
- Mechanical Engineering (MME)
- Statistics (MStat)

For the coordinated MBA/Master of Engineering degrees, students must complete:

- A minimum of 69 credit hours in approved coursework*, including:
  - A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the Master of Engineering degree requirements
  - A minimum of 24 credit hours in the corresponding engineering discipline
  - A minimum of 6 credit hours in elective requirements*
  - A minimum of 45 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the MBA degree requirements
• A minimum of 45 credit hours of business coursework
• All MBA core requirements, the global field experience, custom core requirements, and coordinated elective requirements
• *Note: A maximum of 6 credit hours of the Master of Engineering degree elective requirements may be selected from business course offerings (MGMP, MGMT, or MICO) and used to fulfill the requirements for both the MBA and the Master of Engineering degrees.

Students plan their course schedules in consultation with the George R. Brown School of Engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department. Coordinated degrees candidates can fulfill requirements for both degrees within 2 academic years.

For general university requirements, see Graduate Degrees (p. 49). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Candidates in the MBA/Master of Engineering coordinated degrees program must complete all requirements as listed for both degrees, and must apply and be accepted in both degree programs.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Credit Hours Required for the Coordinated Master of Engineering Degree</td>
<td>Minimum of 30</td>
<td></td>
</tr>
<tr>
<td>Total Credit Hours Required for the Coordinated MBA Degree</td>
<td>Minimum of 45</td>
<td></td>
</tr>
</tbody>
</table>

Coordinated MBA Degree Requirements

Students in the coordinated MBA/Master of Engineering degrees program or in the coordinated MBA/Master of Science degree from the Professional Science Master's (PSM) degrees program must complete the Core Requirements, Global Field Experience, and Custom Core Requirements of the full-time MBA degree program (p. 214) and the Coordinated MBA Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-time MBA Core Requirements</td>
<td></td>
<td>25.5</td>
</tr>
<tr>
<td>Full-time MBA Global Field Experience Requirement</td>
<td></td>
<td>1.5</td>
</tr>
<tr>
<td>Full-time MBA Custom Core Courses</td>
<td></td>
<td>3-6</td>
</tr>
<tr>
<td>Coordinated MBA Elective Requirements</td>
<td>Select an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours.</td>
<td>12-15</td>
</tr>
</tbody>
</table>

Total Credit Hours 45

Footnotes and Additional Information

1 To fulfill the remaining requirements for the coordinated MBA degree program, students must complete an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours. (MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.) The second year of the program is dedicated entirely to MBA elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. MBA electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.

Coordinated MChE Degree Requirements

Students in the coordinated MBA/MChE degrees program must complete the Core Requirements of the MChE degree program (p. 283) and Coordinated MChE Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MChE Core Requirements</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>Coordinated MChE Elective Requirements</td>
<td>Select a minimum of 9 credit hours from approved departmental (CHBE) course offerings at the 500-level or above</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Select a maximum of 6 credit hours from approved course offerings (MGMP, MGMT, or MICO) from the Jones Graduate School of Business at the 500-level or above</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours 30

Policies for the MBA/MChE Coordinated Degrees Program

Additional Information

For additional information on these two degrees:

1. Please see the Jones Graduate School of Business website: https://business.rice.edu/
2. Please see the Chemical and Biomolecular Engineering website: https://chbe.rice.edu/

Opportunities for the MBA/MChE Coordinated Degrees Program

Additional Information

For additional information on these two degrees:

1. Please see the Jones Graduate School of Business website: https://business.rice.edu/
2. Please see the Chemical and Biomolecular Engineering website: https://chbe.rice.edu/

Master of Business Administration (MBA) Degree / Master of Computational and Applied Mathematics (MCAAM) Degree
Program Learning Outcomes for the MBA Degree

Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Program Learning Outcomes for the MCAAM Degree

Upon completing the MCAAM degree, students will be able to:

1. Acquire broad, advanced knowledge in Computational and Applied Mathematics that is also deep within a major sub-discipline.
2. Demonstrate an ability to gain employment or advancement in a technical field related to Computational and Applied Mathematics.

Requirements for the MBA/MCAAM Coordinated Degrees Program

Students may earn a coordinated MBA degree and a non-thesis Master of Engineering degree from the George R. Brown School of Engineering in the following fields:

- Chemical Engineering (MChE)
- Computational and Applied Mathematics (MCAAM)
- Computer Science (MCS)
- Industrial Engineering (MIE)
- Materials Science and Nanoengineering (MMSNE)
- Mechanical Engineering (MME)
- Statistics (MStat)

For the coordinated MBA/Master of Engineering degrees, students must complete:

- A minimum of 69 credit hours in approved coursework*, including:
  - A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the Master of Engineering degree requirements
  - A minimum of 24 credit hours in the corresponding engineering discipline
  - A minimum of 6 credit hours in elective requirements*  
  - A minimum of 45 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the MBA degree requirements  
  - A minimum of 45 credit hours of business coursework  
  - All MBA core requirements, the global field experience, custom core requirements, and coordinated elective requirements

*Note: A maximum of 6 credit hours of the Master of Engineering degree elective requirements may be selected from business course offerings (MGMP, MGMT, or MICO) and used to fulfill the requirements for both the MBA and the Master of Engineering degrees.

Students plan their course schedules in consultation with the George R. Brown School of Engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department. Coordinated degrees candidates can fulfill requirements for both degrees within 2 academic years.

For general university requirements, see Graduation Degrees (p. 49). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Candidates in the MBA/Master of Engineering coordinated degrees program must complete all requirements as listed for both degrees, and must apply and be accepted in both degree programs.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Coordinated Master of Engineering Degree</td>
<td>Minimum of 30</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the Coordinated MBA Degree</td>
<td>Minimum of 45</td>
</tr>
</tbody>
</table>

Coordinated MBA Degree Requirements

Students in the coordinated MBA/Master of Engineering degrees program or in the coordinated MBA/Master of Science degree from the Professional Science Master’s (PSM) degrees program must complete the Core Requirements, Global Field Experience, and Custom Core Requirements of the full-time MBA degree program (p. 214) and the Coordinated MBA Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Full-time MBA Core Requirements 25.5</td>
</tr>
<tr>
<td></td>
<td>Full-time MBA Global Field Experience Requirement 1.5</td>
</tr>
<tr>
<td></td>
<td>Full-time MBA Custom Core Courses 3-6</td>
</tr>
</tbody>
</table>

Coordinated MBA Elective Requirements

Select an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours. ¹

Total Credit Hours 45
Footnotes and Additional Information

To fulfill the remaining requirements for the coordinated MBA degree program, students must complete an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours. (MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.) The second year of the program is dedicated entirely to MBA elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. MBA electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.

Coordinated MCAAM Degree Requirements

Students in the coordinated MBA/MCAAM degrees program must complete the Core Requirements of the MCAAM degree program (p. 338) and the Coordinated MCAAM Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCAAM Core Requirements</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Coordinated MCAAM Elective Requirements</td>
<td>Select a minimum of 18 credit hours from approved departmental (CAAM) course offerings at the 500-level or above</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Select a maximum of 6 credit hours from approved course offerings (MGMP, MGMT, or MICO) from the Jones Graduate School of Business at the 500-level or above</td>
<td></td>
</tr>
<tr>
<td>Total Credit Hours</td>
<td></td>
<td>30</td>
</tr>
</tbody>
</table>

Program Learning Outcomes for the MBA Degree

Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Program Learning Outcomes for the MCS Degree

Upon completing the MCS degree, students will be able to:

1. Solve advanced Computer Science problems. Students will acquire and apply a graduate-level understanding of material in sub-areas of Computer Science.
2. Design and implement complex software systems. Students will demonstrate skill in their design and implementation and function effectively in teams.
3. Communicate effectively to a client and user.

Requirements for the MBA/MCS Coordinated Degrees Program

Students may earn a coordinated MBA degree and a non-thesis Master of Engineering degree from the George R. Brown School of Engineering in the following fields:

- Chemical Engineering (MChE)
- Computational and Applied Mathematics (MCAAM)
- Computer Science (MCS)
- Industrial Engineering (MIE)
- Materials Science and Nanoengineering (MMSNE)
- Mechanical Engineering (MME)
- Statistics (MStat)

For the coordinated MBA/Master of Engineering degrees, students must complete:

- A minimum of 69 credit hours in approved coursework*, including:
  - A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the Master of Engineering degree requirements
  - A minimum of 24 credit hours in the corresponding engineering discipline
  - A minimum of 6 credit hours in elective requirements*
- A minimum of 45 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the MBA degree requirements
  - A minimum of 45 credit hours of business coursework
  - All MBA core requirements, the global field experience, custom core requirements, and coordinated elective requirements
• **Note**: A maximum of 6 credit hours of the Master of Engineering degree elective requirements may be selected from business course offerings (MGMP, MGMT, or MICO) and used to fulfill the requirements for both the MBA and the Master of Engineering degrees.

Students plan their course schedules in consultation with the George R. Brown School of Engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department. Coordinated degrees candidates can fulfill requirements for both degrees within 2 academic years.

For general university requirements, see [Graduate Degrees](p. 49). For additional requirements, regulations, and procedures for all graduate programs, please see [All Graduate Students](p. 55). Candidates in the MBA/Master of Engineering coordinated degrees program must complete all requirements as listed for both degrees, and must apply and be accepted in both degree programs.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's [Official Certifier](https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Coordinated Master of Engineering Degree</td>
<td>Minimum of 30</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the Coordinated MBA Degree</td>
<td>Minimum of 45</td>
</tr>
</tbody>
</table>

### Coordinated MBA Degree Requirements

Students in the coordinated MBA/Master of Engineering degrees program or in the coordinated MBA/Master of Science degree from the Professional Science Master's (PSM) degrees program must complete the Core Requirements, Global Field Experience, and Custom Core Requirements of the [full-time MBA degree program](p. 214) and the Coordinated MBA Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Full-time MBA Core Requirements</td>
<td>25.5</td>
</tr>
<tr>
<td></td>
<td>Full-time MBA Global Field Experience Requirement</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>Full-time MBA Custom Core Courses</td>
<td>3-6</td>
</tr>
<tr>
<td></td>
<td>Coordinated MBA Elective Requirements</td>
<td>12-15</td>
</tr>
</tbody>
</table>

Select an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours.¹

Total Credit Hours | 45

### Footnotes and Additional Information

¹ To fulfill the remaining requirements for the coordinated MBA degree program, students must complete an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours. (MGMT 703, MGMT 704, and MGMT 705 are **not** accepted as electives.) The second year of the program is dedicated entirely to MBA elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. MBA electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.

### Coordinated MCS Degree Requirements

Students in the coordinated MBA/MCS degrees program must complete the Core Requirements, Area of Specialization, and Design Project of the [MCS degree program](p. 352) and Coordinated MCS Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MCS Core Requirements</td>
<td>9-12</td>
</tr>
<tr>
<td></td>
<td>MCS Area of Specialization</td>
<td>6-8</td>
</tr>
<tr>
<td></td>
<td>MCS Design Project</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Coordinated MCS Elective Requirements</td>
<td>6-11</td>
</tr>
</tbody>
</table>

Select a minimum of 0-5 credit hours from departmental (COMP) course offerings at the 500-level or above

Select a maximum of 6 credit hours from approved course offerings (MGMP, MGMT, or MICO) from the Jones Graduate School of Business at the 500-level or above

Total Credit Hours | 30

### Policies for the MBA/MCS Coordinated Degrees Program

**Additional Information**

For additional information on these two degrees:

1. Please see the Jones Graduate School of Business website: [https://business.rice.edu/](https://business.rice.edu/)
2. Please see the Computer Science website: [https://www.cs.rice.edu/](https://www.cs.rice.edu/)

### Opportunities for the MBA/MCS Coordinated Degrees Program

**Additional Information**

For additional information on these two degrees:

1. Please see the Jones Graduate School of Business website: [https://business.rice.edu/](https://business.rice.edu/)
2. Please see the Computer Science website: [https://www.cs.rice.edu/](https://www.cs.rice.edu/)
Program Learning Outcomes for the MBA Degree

Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Program Learning Outcomes for the MIE Degree

Upon completing the MIE degree, students will be able to:

1. Build physical and mathematical models of complex systems that arise in real-world situations.
2. Understand the flow of material from manufacturing to warehouses to customers through physical or mathematical models.
3. Produce data-driven and implementable solutions that improve the efficiency of real-world systems.
4. Communicate the solutions and insights generated by the models to a non-technical audience.

Requirements for the MBA/MIE Coordinated Degrees Program

Students may earn a coordinated MBA degree and a non-thesis Master of Engineering degree from the George R. Brown School of Engineering in the following fields:

- Chemical Engineering (MChE)
- Computational and Applied Mathematics (MCAAM)
- Computer Science (MCS)
- Industrial Engineering (MIE)
- Materials Science and Nanoengineering (MMSNE)
- Mechanical Engineering (MME)
- Statistics (MStat)

For the coordinated MBA/Master of Engineering degrees, students must complete:

- A minimum of 69 credit hours in approved coursework*, including:
  - A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the Master of Engineering degree requirements
  - A minimum of 24 credit hours in the corresponding engineering discipline
  - A minimum of 6 credit hours in elective requirements*
- A minimum of 45 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the MBA degree requirements

- A minimum of 45 credit hours of business coursework
- All MBA core requirements, the global field experience, custom core requirements, and coordinated elective requirements

*Note: A maximum of 6 credit hours of the Master of Engineering degree elective requirements may be selected from business course offerings (MGMP, MGMT, or MICO) and used to fulfill the requirements for both the MBA and the Master of Engineering degrees.

Students plan their course schedules in consultation with the George R. Brown School of Engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department. Coordinated degrees candidates can fulfill requirements for both degrees within 2 academic years.

For general university requirements, see Graduate Degrees (p. 49). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Candidates in the MBA/Master of Engineering coordinated degrees program must complete all requirements as listed for both degrees, and must apply and be accepted in both degree programs.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
<td>Total Credit Hours Required for the Coordinated Master of Engineering Degree</td>
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</tr>
<tr>
<td>Total Credit Hours Required for the Coordinated MBA Degree</td>
<td>Minimum of 45</td>
<td></td>
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</table>

Coordinated MBA Degree Requirements

Students in the coordinated MBA/Master of Engineering degrees program or in the coordinated MBA/Master of Science degree from the Professional Science Master's (PSM) degrees program must complete the Core Requirements, Global Field Experience, and Custom Core Requirements of the full-time MBA degree program (p. 214) and the Coordinated MBA Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-time MBA Core Requirements</td>
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<tr>
<td>Full-time MBA Global Field Experience Requirement</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Full-time MBA Custom Core Courses</td>
<td>3-6</td>
<td></td>
</tr>
</tbody>
</table>

Coordinated MBA Elective Requirements

Select an additional 12-15 credit hours from departmental (MGMP, MGMT, MICO) course offerings at the 500-level or above to reach 45 total credit hours.  

Total Credit Hours 45
Footnotes and Additional Information

1 To fulfill the remaining requirements for the coordinated MBA degree program, students must complete an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours. (MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.) The second year of the program is dedicated entirely to MBA elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. MBA electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.

Coordinated MIE Degree Requirements

Students in the coordinated MBA/MIE degrees program must complete the Core Requirements and Capstone Requirement of the MIE degree program (p. 482) and Coordinated MIE Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MIE Core Requirements</td>
<td>24</td>
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<tr>
<td></td>
<td>MIE Capstone Requirement</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Coordinated MIE Elective Requirements</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Select a maximum of 6 credit hours from approved course offerings (MGMP, MGMT, or MICO) from the Jones Graduate School of Business at the 500-level or above</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours 31

Program Learning Outcomes for the MBA Degree

Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Program Learning Outcomes for the MMSNE Degree

Upon completing the MMSNE degree, students will be able to:

1. Acquire broad, advanced knowledge within either Materials Science or NanoEngineering, which is also in-depth in one major sub-discipline of the field.
2. Conduct research at an advanced level in at least one area of Materials Science and Nanoengineering.
3. Communicate scientific ideas effectively in writing and when speaking.

Requirements for the MBA/MMSNE Coordinated Degrees Program

Students may earn a coordinated MBA degree and a non-thesis Master of Engineering degree from the George R. Brown School of Engineering in the following fields:

- Chemical Engineering (MChE)
- Computational and Applied Mathematics (MCAAM)
- Computer Science (MCS)
- Industrial Engineering (MIE)
- Materials Science and Nanoengineering (MMSNE)
- Mechanical Engineering (MME)
- Statistics (MStat)

For the coordinated MBA/Master of Engineering degrees, students must complete:

- A minimum of 69 credit hours in approved coursework*, including:
  - A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the Master of Engineering degree requirements
  - A minimum of 24 credit hours in the corresponding engineering discipline
  - A minimum of 6 credit hours in elective requirements*
- A minimum of 45 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the MBA degree requirements
  - A minimum of 45 credit hours of business coursework
  - All MBA core requirements, the global field experience, custom core requirements, and coordinated elective requirements
• **Note**: A maximum of 6 credit hours of the Master of Engineering degree elective requirements may be selected from business course offerings (MGMP, MGMT, or MICO) and used to fulfill the requirements for both the MBA and the Master of Engineering degrees.

Students plan their course schedules in consultation with the George R. Brown School of Engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department. Coordinated degrees candidates can fulfill requirements for both degrees within 2 academic years.

For general university requirements, see [Graduate Degrees](#) (p. 49). For additional requirements, regulations, and procedures for all graduate programs, please see [All Graduate Students](#) (p. 55). Candidates in the MBA/Master of Engineering coordinated degrees program must complete all requirements as listed for both degrees, and must apply and be accepted in both degree programs.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier ([https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/](https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/)). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Coordinated Master of Engineering Degree</td>
<td>Minimum of 30</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the Coordinated MBA Degree</td>
<td>Minimum of 45</td>
</tr>
</tbody>
</table>

### Coordinated MBA Degree Requirements

Students in the coordinated MBA/Master of Engineering degrees program or in the coordinated MBA/Master of Science degree from the Professional Science Master's (PSM) degrees program must complete the Core Requirements, Global Field Experience, and Custom Core Requirements of the full-time MBA degree program (p. 214) and the Coordinated MBA Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Full-time MBA Core Requirements</td>
<td>25.5</td>
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<tr>
<td></td>
<td>Full-time MBA Global Field Experience Requirement</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>Full-time MBA Custom Core Courses</td>
<td>3-6</td>
</tr>
<tr>
<td></td>
<td>Coordinated MBA Elective Requirements</td>
<td>12-15</td>
</tr>
</tbody>
</table>

Select an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours.

Total Credit Hours 45

### Policies for the MBA/MMSNE Coordinated Degrees Program

**Additional Information**

For additional information on these two degrees:

1. Please see the Jones Graduate School of Business website: [https://business.rice.edu/](https://business.rice.edu/)
2. Please see the Materials Science and Nanoengineering website: [https://msne.rice.edu/](https://msne.rice.edu/)

### Opportunities for the MBA/MMSNE Coordinated Degrees Program

**Additional Information**

For additional information on these two degrees:

1. Please see the Jones Graduate School of Business website: [https://business.rice.edu/](https://business.rice.edu/)
2. Please see the Materials Science and Nanoengineering website: [https://msne.rice.edu/](https://msne.rice.edu/)

### Master of Business Administration (MBA) Degree / Master of Mechanical Engineering (MME) Degree

To fulfill the remaining requirements for the coordinated MBA degree program, students must complete an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours. (MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.) The second year of the program is dedicated entirely to MBA elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. MBA electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.

### Coordinated MMSNE Degree Requirements

Students in the coordinated MBA/MMSNE degrees program must complete the Core Requirements, Technical Electives, Research Project, and Professional Development of the MMSNE degree program (p. 539) and Coordinated MMSNE Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MMSNE Core Requirements</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>MMSNE Technical Electives</td>
<td>9</td>
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<tr>
<td></td>
<td>MMSNE Research Project</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MMSNE Professional Development</td>
<td>3-6</td>
</tr>
<tr>
<td></td>
<td>Coordinated MMSNE Elective Requirements</td>
<td>3-6</td>
</tr>
</tbody>
</table>

Select a maximum of 6 credit hours from approved course offerings (MGMP, MGMT, or MICO) from the Jones Graduate School of Business at the 500-level or above.

Total Credit Hours 30
Program Learning Outcomes for the MBA Degree
Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Program Learning Outcomes for the MME Degree
Upon completing the MME degree, students will be able to:

1. Demonstrate an advanced command of Mechanical Engineering fieldwork.
2. Communicate scientific ideas effectively in writing and when speaking.

Requirements for the MBA/MME Coordinated Degrees Program
Students may earn a coordinated MBA degree and a non-thesis Master of Engineering degree from the George R. Brown School of Engineering in the following fields:

- Chemical Engineering (MChE)
- Computational and Applied Mathematics (MCAAM)
- Computer Science (MCS)
- Industrial Engineering (MIE)
- Materials Science and Nanoengineering (MMSNE)
- Mechanical Engineering (MME)
- Statistics (MStat)

For the coordinated MBA/Master of Engineering degrees, students must complete:

- A minimum of 69 credit hours in approved coursework*, including:
  - A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the Master of Engineering degree requirements
  - A minimum of 24 credit hours in the corresponding engineering discipline
  - A minimum of 6 credit hours in elective requirements*
  - A minimum of 45 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the MBA degree requirements
  - A minimum of 45 credit hours of business coursework
  - All MBA core requirements, the global field experience, custom core requirements, and coordinated elective requirements

  *Note: A minimum of 6 credit hours of the Master of Engineering degree elective requirements may be selected from business course offerings (MGMP, MGMT, or MICO) and used to fulfill the requirements for both the MBA and the Master of Engineering degrees.

Students plan their course schedules in consultation with the George R. Brown School of Engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department. Coordinated degrees candidates can fulfill requirements for both degrees within 2 academic years.

For general university requirements, see Graduate Degrees (p. 49). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Candidates in the MBA/Master of Engineering coordinated degrees program must complete all requirements as listed for both degrees, and must apply and be accepted in both degree programs.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Coordinated Master of Engineering Degree</td>
<td>Minimum of 30</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the Coordinated MBA Degree</td>
<td>Minimum of 45</td>
</tr>
</tbody>
</table>

### Coordinated MBA Degree Requirements

Students in the coordinated MBA/Master of Engineering degrees program or in the coordinated MBA/Master of Science degree from the Professional Science Master’s (PSM) degrees program must complete the Core Requirements, Global Field Experience, and Custom Core Requirements of the full-time MBA degree program (p. 214) and the Coordinated MBA Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Full-time MBA Core Requirements</td>
<td>25.5</td>
</tr>
<tr>
<td></td>
<td>Full-time MBA Global Field Experience Requirement</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>Full-time MBA Custom Core Courses</td>
<td>3-6</td>
</tr>
<tr>
<td></td>
<td>Coordinated MBA Elective Requirements</td>
<td>12-15</td>
</tr>
</tbody>
</table>

Select an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours.

Total Credit Hours: 45
Footnotes and Additional Information

To fulfill the remaining requirements for the coordinated MBA degree program, students must complete an additional 12-15 credit hours from departmental (MEMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours. (MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.) The second year of the program is dedicated entirely to MBA elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. MBA electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.

Coordinated MME Degree Requirements

Students in the coordinated MBA/MME degrees program must complete the Core Requirements of the MME degree program (p. 560) and Coordinated MME Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>MME Core Requirements</td>
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<tr>
<td>Coordinated MME Elective Requirements</td>
<td></td>
<td>12</td>
</tr>
</tbody>
</table>

Select a minimum of 6 credit hours from approved departmental (MECH) course offerings at the 500-level or above

Select a maximum of 6 credit hours from approved course offerings (MEMP, MGMT, or MICO) from the Jones Graduate School of Business at the 500-level or above

Total Credit Hours | 30 |

Program Learning Outcomes for the MBA Degree

Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Program Learning Outcomes for the MSBHP Degree

Upon completing the MSBHP degree, students will be able to:

1. Become knowledgeable in current advanced bioscience and health policy topics affecting society.
2. Integrate science knowledge into policies and practices.
3. Demonstrate written, oral, and visual communication strategies required to work effectively across science, business, and government.

Requirements for the MBA/MSBHP Coordinated Degrees Program

Students may earn a coordinated MBA degree and a Master of Science degree from the Wiess School of Natural Sciences Professional Science Master's (PSM) program in the following fields:

- Bioscience and Health Policy (MSBHP)
- Environmental Analysis (MSEA)
- Space Studies (MSSPS)
- Subsurface Geoscience (MSSG)

For the coordinated MBA/Master of Science degree from the Professional Science Master's (PSM) program, students must complete:

- A minimum of 75 credit hours in approved coursework, including:
  - A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the Professional Science Master's (PSM) degree requirements
  - A minimum of 30 credit hours in the corresponding science discipline
  - All PSM degree-specific requirements
  - A three to six month internship
  - A minimum of 45 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the MBA degree requirements
  - A minimum of 45 credit hours of business coursework
  - All MBA core requirements, the global field experience, custom core requirements, and coordinated elective requirements

Master of Business Administration (MBA) Degree / Master of Science in Bioscience and Health Policy (MSBHP) Degree

For additional information on these two degrees:

1. Please see the Jones Graduate School of Business website: https://business.rice.edu/
2. Please see the Mechanical Engineering website: https://mech.rice.edu/

Opportunities for the MBA/MME Coordinated Degrees Program

For additional information on these two degrees:

1. Please see the Jones Graduate School of Business website: https://business.rice.edu/
2. Please see the Mechanical Engineering website: https://mech.rice.edu/
candidates can fulfill requirements for both degrees within 3 academic years.

For general university requirements, see Graduate Degrees (p. 49). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Candidates in the MBA/Master of Science degree from the Professional Science Master’s (PSM) program must complete all requirements as listed for both degrees, and must apply and be accepted in both degree programs.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facestaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

<table>
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<tr>
<th>Code</th>
<th>Title</th>
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<td>Total Credit Hours</td>
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<tr>
<td></td>
<td></td>
<td>Required for the Coordinated MBA Degree</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Minimum of 45</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total Credit Hours</td>
</tr>
</tbody>
</table>

**Coordinated MBA Degree Requirements**

Students in the coordinated MBA/Master of Engineering degrees program or in the coordinated MBA/Master of Science degree from the Professional Science Master’s (PSM) degrees program must complete the Core Requirements, Global Field Experience, and Custom Core Requirements of the full-time MBA degree program (p. 214) and the Coordinated MBA Elective Requirements below.

**Coordinated MSBHP Degree Requirements**

Students in the coordinated MBA/MSBHP degrees program must complete the Core Requirements and Three to Six Month Internship of the MSBHP degree program (p. 185) and Coordinated MSBHP Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>MSBHP Core Requirements</td>
<td>33-34</td>
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<tr>
<td></td>
<td>MSBHP Three to Six Month Internship</td>
<td></td>
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<tr>
<td></td>
<td>Coordinated MSBHP Elective Requirements</td>
<td>6</td>
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<tr>
<td></td>
<td>Select a maximum of 6 credit hours from approved course offerings (MGMP, MGMT, MICO) from the Jones Graduate School of Business at the 500-level or above</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>39-40</td>
</tr>
</tbody>
</table>

**Policies for the MBA/MSBHP Coordinated Degrees Program**

**Additional Information**

For additional information on these two degrees:

1. Please see the Jones Graduate School of Business website: https://business.rice.edu/
2. Please see the Bioscience and Health Policy website: https://profms.rice.edu/

**Opportunities for the MBA/MSBHP Coordinated Degrees Program**

**Additional Information**

For additional information on these two degrees:

1. Please see the Jones Graduate School of Business website: https://business.rice.edu/
2. Please see the Bioscience and Health Policy website: https://profms.rice.edu/

**Master of Business Administration (MBA) Degree / Master of Science in Environmental Analysis (MSEA) Degree**

**Program Learning Outcomes for the MBA Degree**

Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.
Program Learning Outcomes for the MSEA Degree

Upon completing the MSEA Degree, students will be able to:

1. Apply technical and analytical skills and scientific evaluation methods to help solve problems affecting the environment.
2. Demonstrate written, oral, and visual communication strategies required to work effectively across science, business, and government.
3. Possess business and management skills and professional ethics to be effective in a business environment.

Requirements for the MBA/MSEA Coordinated Degrees Program

Students may earn a coordinated MBA degree and a Master of Science degree from the Wiess School of Natural Sciences Professional Science Master’s (PSM) program in the following fields:

- Bioscience and Health Policy (MSBHP)
- Environmental Analysis (MSEA)
- Space Studies (MSSPS)
- Subsurface Geoscience (MSSG)

For the coordinated MBA/Master of Science degree from the Professional Science Master’s (PSM) program, students must complete:

- A minimum of 75 credit hours in approved coursework, including:
  - A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the Professional Science Master’s (PSM) degree requirements
  - A minimum of 30 credit hours in the corresponding science discipline
  - All PSM degree-specific requirements
  - A three to six month internship
- A minimum of 45 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the MBA degree requirements
  - A minimum of 45 credit hours of business coursework
  - All MBA core requirements, the global field experience, custom core requirements, and coordinated elective requirements

Students plan their course schedules in consultation with the Wiess School of Natural Sciences PSM program director and with the Jones Graduate School of Business Registrar Department. Coordinated degrees candidates can fulfill requirements for both degrees within 3 academic years.

For general university requirements, see Graduate Degrees (p. 49). For additional requirements, regulations, and procedures for all graduate programs, see All Graduate Students (p. 55). Candidates in the MBA/Master of Science degree from the Professional Science Master’s (PSM) program must complete all requirements as listed for both degrees, and must apply and be accepted in both degree programs.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/dreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<th>Code</th>
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<th>Credit Hours</th>
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<tr>
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<tr>
<td></td>
<td>Total Credit Hours Required for the Coordinated MBA Degree</td>
<td>Minimum of 45</td>
</tr>
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</table>

Coordinated MBA Degree Requirements

Students in the coordinated MBA/Master of Engineering degrees program or in the coordinated MBA/Master of Science degree from the Professional Science Master’s (PSM) degrees program must complete the Core Requirements, Global Field Experience, and Custom Core Requirements of the full-time MBA degree program (p. 214) and the Coordinated MBA Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tr>
<td></td>
<td>Full-time MBA Core Requirements</td>
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<td></td>
<td>Full-time MBA Global Field Experience Requirement</td>
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<td></td>
<td>Full-time MBA Custom Core Courses</td>
<td>3-6</td>
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<tr>
<td></td>
<td>Coordinated MBA Elective Requirements</td>
<td>12-15</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>45</td>
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</table>

Footnotes and Additional Information

1 To fulfill the remaining requirements for the coordinated MBA degree program, students must complete an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours. (MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.) The second year of the program is dedicated entirely to MBA elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. MBA electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.

Coordinated MSEA Degree Requirements

Students in the coordinated MBA/MSEA degrees program must complete the Core Requirements and Three to Six Month Internship of the MSEA degree program (p. 425) and the Coordinated MSEA Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
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<tr>
<td></td>
<td>MSEA Core Requirements</td>
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<tr>
<td></td>
<td>MSEA Three to Six Month Internship</td>
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<td></td>
<td>Coordinated MSEA Elective Requirements</td>
<td>21</td>
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<tr>
<td></td>
<td>Select a minimum of 15 credit hours from approved departmental (CEVE, EBI0, ESCI, or STAT) course offerings at the 500-level or above</td>
<td></td>
</tr>
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</table>
Select a maximum of 6 credit hours from approved course offerings (MGMP, MGMT, or MICO) from the Jones Graduate School of Business at the 500-level or above.

Total Credit Hours 39

Policies for the MBA/MSEA Coordinated Degrees Program

Additional Information
For additional information on these two degrees:

1. Please see the Jones Graduate School of Business website: https://business.rice.edu/
2. Please see the Environmental Analysis website: https://profms.rice.edu/

Opportunities for the MBA/MSEA Coordinated Degrees Program

Additional Information
For additional information on these two degrees:

1. Please see the Jones Graduate School of Business website: https://business.rice.edu/
2. Please see the Environmental Analysis website: https://profms.rice.edu/

Master of Business Administration (MBA) Degree / Master of Science in Space Studies (MSSpS) Degree

Program Learning Outcomes for the MBA Degree

Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Program Learning Outcomes for the MSSpS Degree

Upon completing the MSSpS Degree, students will be able to:

1. Achieve advanced science, engineering, and computational skills and a broad understanding of the methodologies applied in the space industry.
2. Gain real life experience in solving technical problems in a science and technology environment.
3. Develop business and communication skills to bridge the gap between science and business.

Requirements for the MBA/MSSpS Coordinated Degrees Program

Students may earn a coordinated MBA degree and a Master of Science degree from the Wiess School of Natural Sciences Professional Science Master's (PSM) program in the following fields:

- Bioscience and Health Policy (MSBHP)
- Environmental Analysis (MSEA)
- Space Studies (MSSpS)
- Subsurface Geoscience (MSSG)

For the coordinated MBA/Master of Science degree from the Professional Science Master’s (PSM) program, students must complete:

- A minimum of 75 credit hours in approved coursework, including:
  - A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the Professional Science Master’s (PSM) degree requirements
  - A minimum of 30 credit hours in the corresponding science discipline
  - All PSM degree-specific requirements
  - A three to six month internship
- A minimum of 45 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the MBA degree requirements
  - A minimum of 45 credit hours of business coursework
  - All MBA core requirements, the global field experience, custom core requirements, and coordinated elective requirements

Students plan their course schedules in consultation with the Wiess School of Natural Sciences PSM program director and with the Jones Graduate School of Business Registrar Department. Coordinated degrees candidates can fulfill requirements for both degrees within 3 academic years.

For general university requirements, see Graduate Degrees (p. 49). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Candidates in the MBA/Master of Science degree from the Professional Science Master’s (PSM) program must complete all requirements as listed for both degrees, and must apply and be accepted in both degree programs.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/degeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours Minimum</th>
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<tbody>
<tr>
<td>Total Credit Hours Required for the Coordinated Master of Science Degree</td>
<td></td>
<td>of 30</td>
</tr>
</tbody>
</table>
Total Credit Hours Required for the Coordinated MBA Degree | Minimum of 45
--- | ---

Coordinated MBA Degree Requirements

Students in the coordinated MBA/Master of Engineering degrees program or in the coordinated MBA/Master of Science degree from the Professional Science Master’s (PSM) degrees program must complete the Core Requirements, Global Field Experience, and Custom Core Requirements of the full-time MBA degree program (p. 214) and the Coordinated MBA Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Full-time MBA Core Requirements</td>
<td>25.5</td>
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<tr>
<td></td>
<td>Full-time MBA Global Field Experience Requirement</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>Full-time MBA Custom Core Courses</td>
<td>3-6</td>
</tr>
<tr>
<td></td>
<td>Coordinated MBA Elective Requirements</td>
<td>12-15</td>
</tr>
</tbody>
</table>

Select an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours. ¹

Total Credit Hours | 45

Footnotes and Additional Information

¹ To fulfill the remaining requirements for the coordinated MBA degree program, students must complete an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours. (MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.) The second year of the program is dedicated entirely to MBA elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. MBA electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.

Coordinated MBA/MSSpS Degree Requirements

Students in the coordinated MBA/MSSpS degrees program must complete the Core Requirements and Three to Six Month Internship of the MSSpS degree program (p. 818) and the Coordinated MSSpS Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tr>
<td></td>
<td>MSSpS Core Requirements</td>
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<tr>
<td></td>
<td>MSSpS Three to Six Month Internship</td>
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<tr>
<td></td>
<td>Coordinated MSSpS Elective Requirements</td>
<td>9</td>
</tr>
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</table>

Select a minimum of 3 credit hours from approved departmental (ASTR, BIOC, CEVE, COMP, ENGI, ESGI, or MECH) course offerings at the 500-level or above.

Select a maximum of 6 credit hours from approved course offerings (MGMP, MGMT, or MICO) from the Jones Graduate School of Business at the 500-level or above.

Total Credit Hours | 39

Policies for the MBA/MSSpS Coordinated Degrees Program

Additional Information

For additional information on these two degrees:

1. Please see the Jones Graduate School of Business website: https://business.rice.edu/
2. Please see the Space Studies website: https://profms.rice.edu/

Opportunities for the MBA/MSSpS Coordinated Degrees Program

Additional Information

For additional information on these two degrees:

1. Please see the Jones Graduate School of Business website: https://business.rice.edu/
2. Please see the Space Studies website: https://profms.rice.edu/

Master of Business Administration (MBA) Degree / Master of Science in Subsurface Geoscience (MSSG) Degree

Program Learning Outcomes for the MBA Degree

Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Program Learning Outcomes for the MSSG Degree

Upon completing the MSSG degree, students will be able to:

1. Become proficient in applying geological and geophysical knowledge and data management methods.
2. Develop business and management skills, and obtain practical skills valuable to the energy industry.
3. Develop written, oral, and visual communication skills to bridge the gap between science and business.

Requirements for the MBA/MSSG Coordinated Degrees Program

Students may earn a coordinated MBA degree and a Master of Science degree from the Wiess School of Natural Sciences Professional Science Master’s (PSM) program in the following fields:
For the coordinated MBA/Master of Science degree from the Professional Science Master’s (PSM) program, students must complete:

- A minimum of 75 credit hours in approved coursework, including:
  - A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the Professional Science Master’s (PSM) degree requirements
  - A minimum of 30 credit hours in the corresponding science discipline
  - All PSM degree-specific requirements
  - A three to six month internship
  - A minimum of 45 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the MBA degree requirements
  - A minimum of 45 credit hours of business coursework
  - All MBA core requirements, the global field experience, custom core requirements, and coordinated elective requirements

Students plan their course schedules in consultation with the Wiess School of Natural Sciences PSM program director and with the Jones Graduate School of Business Registrar Department. Coordinated degrees candidates can fulfill requirements for both degrees within 3 academic years.

For general university requirements, see Graduate Degrees (p. 49). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Candidates in the MBA/Master of Science degree from the Professional Science Master’s (PSM) program must complete all requirements as listed for both degrees, and must apply and be accepted in both degree programs.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

**Footnotes and Additional Information**

1. To fulfill the remaining requirements for the coordinated MBA degree program, students must complete an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours. (MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.) The second year of the program is dedicated entirely to MBA elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. MBA electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.

**Coordinated MBA/MSSG Degree Requirements**

Students in the coordinated MBA/MSSG degrees program must complete the Core Requirements and Three to Six Internship of the MSSG degree program (p. 847) and the Coordinated Area of Specialization below.

**Policies for the MBA/MSSG Coordinated Degrees Program**

**Additional Information**

For additional information on these two degrees:

1. Please see the Jones Graduate School of Business website: https://business.rice.edu/
2. Please see the Subsurface Geoscience website: https://profms.rice.edu/
Opportunities for the MBA/MSSG Coordinated Degrees Program

Additional Information
For additional information on these two degrees:
1. Please see the Jones Graduate School of Business website: https://business.rice.edu/
2. Please see the Subsurface Geoscience website: https://profms.rice.edu/

Master of Business Administration (MBA) Degree / Master of Statistics (MStat) Degree

Program Learning Outcomes for the MBA Degree
Upon completing the MBA degree, students will be able to:
1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Program Learning Outcomes for the MStat Degree
Upon completing the MStat degree, students will be able to:
1. Master fundamental theory in probability and statistics.
2. Become familiar with a broad range of statistical methods for applications.
4. Develop effective communication skills as a professional statistician.

Requirements for the MBA/MStat Coordinated Degrees Program
Students may earn a coordinated MBA degree and a non-thesis Master of Engineering degree from the George R. Brown School of Engineering in the following fields:

- Chemical Engineering (MChE)
- Computational and Applied Mathematics (MCAAM)
- Computer Science (MCS)
- Industrial Engineering (MIE)
- Materials Science and Nanoengineering (MMSNE)
- Mechanical Engineering (MME)
- Statistics (MStat)

For the coordinated MBA/Master of Engineering degrees, students must complete:

- A minimum of 69 credit hours in approved coursework*, including:
  - A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the Master of Engineering degree requirements
  - A minimum of 24 credit hours in the corresponding engineering discipline
  - A minimum of 6 credit hours in elective requirements*
  - A minimum of 45 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the MBA degree requirements
  - A minimum of 45 credit hours of business coursework
  - All MBA core requirements, the global field experience, custom core requirements, and coordinated elective requirements

*Note: A maximum of 6 credit hours of the Master of Engineering degree elective requirements may be selected from business course offerings (MGMP, MGMT, or MICO) and used to fulfill the requirements for both the MBA and the Master of Engineering degrees.

Requirements for the MBA/MStat Coordinated Degrees Program

Students plan their course schedules in consultation with the George R. Brown School of Engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department. Coordinated degrees candidates can fulfill requirements for both degrees within 2 academic years.

For general university requirements, see Graduate Degrees (p. 49). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Candidates in the MBA/Master of Engineering coordinated degrees program must complete all requirements as listed for both degrees, and must apply and be accepted in both degree programs.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https:// registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<th>Code</th>
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</thead>
<tbody>
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<td>Total Credit Hours Required for the Coordinated Master of Engineering Degree</td>
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<tr>
<td></td>
<td>Total Credit Hours Required for the Coordinated MBA Degree</td>
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Coordinated MBA Degree Requirements

Students in the coordinated MBA/Master of Engineering degrees program or in the coordinated MBA/Master of Science degree from the Professional Science Master's (PSM) degrees program must complete the Core Requirements, Global Field Experience, and Custom Core Requirements of the full-time MBA degree program (p. 214) and the Coordinated MBA Elective Requirements below.
Master of Business Administration (MBA) Degree, Executive Program

Program Learning Outcomes for the MBA Degree

Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MBA Degree, Executive Program

The MBA degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the Executive MBA degree must complete:

- A minimum of 54 credit hours to satisfy degree requirements.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A minimum overall GPA of 3.00 or higher in all Rice coursework.
- A minimum overall GPA of 3.00 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree with a minimum grade of C (2.00 grade points) in each course.

The program is a lock-step progression in which students take required courses in sequence. The program includes four 5-day intensive executive forums that focus on leadership, strategy, critical decision-making and global management.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<th>Code</th>
<th>Title</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MBA Degree, Executive Program</td>
<td>54</td>
</tr>
</tbody>
</table>

Policies for the MBA/MStat Coordinated Degrees Program

For additional information on these two degrees:

1. Please see the Jones Graduate School of Business website: https://business.rice.edu/
2. Please see the Statistics website: https://statistics.rice.edu/

Opportunities for the MBA/MStat Coordinated Degrees Program

For additional information on these two degrees:

1. Please see the Jones Graduate School of Business website: https://business.rice.edu/
2. Please see the Statistics website: https://statistics.rice.edu/
### Degree Requirements

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<tbody>
<tr>
<td>EMBA 911</td>
<td>EXECUTIVE SEMINAR I</td>
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</tr>
<tr>
<td>EMBA 912</td>
<td>EXECUTIVE SEMINAR II</td>
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<td>EMBA 913</td>
<td>EXECUTIVE SEMINAR III</td>
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<td>EXECUTIVE SEMINAR IV</td>
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<td>EMBA 920</td>
<td>MANAGING THE GLOBAL FIRM: MICRO FOUNDATIONS</td>
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<tr>
<td>EMBA 922</td>
<td>MANAGING THE GLOBAL FIRM: STRATEGY</td>
<td>1.5</td>
</tr>
<tr>
<td>EMBA 991</td>
<td>EXECUTIVE FORUM I: STRATEGY AND LEADERSHIP</td>
<td>3</td>
</tr>
<tr>
<td>EMBA 992</td>
<td>EXECUTIVE FORUM II: CRITICAL DECISION MAKING</td>
<td>3</td>
</tr>
<tr>
<td>EMBA 993</td>
<td>EXECUTIVE FORUM III: ENTERPRISE STRATEGY AND LEADERSHIP</td>
<td>3</td>
</tr>
<tr>
<td>EMBA 994</td>
<td>EXECUTIVE FORUM IV</td>
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</tr>
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<td>MGMT 801</td>
<td>FINANCIAL ACCOUNTING</td>
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</tr>
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<td>MGMT 802</td>
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<td>MGMT 840</td>
<td>ECONOMICS FOR BUSINESS</td>
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</tr>
<tr>
<td>MGMT 843</td>
<td>CORPORATE FINANCIAL MANAGEMENT</td>
<td>3</td>
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<tr>
<td>MGMT 874</td>
<td>OPERATIONS MANAGEMENT</td>
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<td>MGMT 880</td>
<td>STRATEGIC MARKETING</td>
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<tr>
<td>MGMT 895</td>
<td>BUSINESS ANALYTICS</td>
<td>3</td>
</tr>
<tr>
<td>MGMT 919</td>
<td>CORPORATE GOVERNANCE</td>
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</tr>
<tr>
<td></td>
<td>Elective Requirements</td>
<td></td>
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<tr>
<td></td>
<td>Select an additional 12 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>54</td>
</tr>
</tbody>
</table>

### Policies for the MBA Degree, Executive Program

#### MBA Admission Requirements

Admission to the MBA degree program is open to students regardless of their undergraduate major, but the program is highly selective and access is limited to those who have performed with distinction across all areas of the application. A bachelor’s degree (or equivalent) from an accredited undergraduate institution is required. All applicants submit an interview as part of their admission requirements.

All applicants to the MBA degree program must submit the following:

- an online application and application fee
- scores from the Graduate Management Admission Test (GMAT), the Graduate Record Examination (GRE),* or the Executive Assessment (EA)**
- transcripts from all previously-attended and/or degree-granting institutions
- resume with complete work history
- essays
- letter(s) of recommendation

**Notes:**

*Scores from the TOEFL, PTE, or IELTS are also required for international applicants, whose undergraduate degree was from an institution where the primary language of instruction was not English.

**The Executive Assessment (EA) is only accepted for MBA Degree, Executive Program applicants.

#### Executive MBA Degree Program

In addition to meeting the standards for admission to the other MBA programs, students admitted to the Executive MBA degree program typically have between 15-20 years of relevant work experience with 10 of those being at the management level.

#### Academic and Professional Standards

Students must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the MBA program, all students agree to be governed by the standards and procedures for dismissal or disciplinary action stated below.

**Academic Standards**

A minimum overall grade point average of 3.00 (B) is required for graduation. All courses taken for the MBA degree (including approved courses taken at the university, but outside the JGSB) are counted in the overall grade point average calculation.

Students with an overall grade point average lower than 3.00 at the end of any semester will be notified of academic standing. Students not meeting the 3.00 requirement will be provided specific instruction and guidance on the next steps specific to their academic situation. In some cases, students may submit an appeal to the JGSB Academic Standards Committee, requesting to be placed on academic probation.

The committee reviews all academic cases, and may consult with the dean’s office for counsel and/or suggestions on proposed handling of the case. The committee will decide, based on the circumstances of the appeal, whether the student may resume studies on academic probation; is to be

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1. To fulfill the remaining requirements for the degree program, students must complete an additional 12 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 54 total credit hours. (MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.) 9 credit hours (of the 12 credit hours of Elective Requirements) are to be completed during the 3rd semester of the student's program of study along with EMBA 913 and EMBA 993. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. If students wish to apply courses that are offered outside of the Jones Graduate School of Business (MGMP, MGMT, or MICO course offerings), the student must obtain permission from the Jones Graduate School of Business registrar department. Electives are offered on the weekend schedule, the evening schedule, and the daytime schedule.

2. Students participate in a required global experience during the second year of the program. Additional costs apply toward this global experience.
academically suspended for one semester or an academic year; or is to be dismissed from the MBA program.

Students proposing to return after a period of academic suspension must follow the appropriate procedures outlined in the General Announcements by the Office of Graduate and Postdoctoral Studies to receive permission to be readmitted. If permitted to return, the student will pay the current rate of tuition, based upon the class of students s/he is joining.

Only courses in which a grade of C or above is earned will be counted for credit toward graduation. If students receive a grade below C in a course required for graduation, they must repeat the course. If students receive a grade lower than C in an elective course, they need not repeat the specific course, but they must make up the credit hours. If the required course is not offered again prior to graduation, the student will be permitted to take the course the following academic year, but will be charged the current pro-rated tuition for the program in which the additional coursework is completed.

Students on academic probation must complete all future courses with a grade of C or above and may be considered candidates for student offices by permission only. Students are removed from probation only upon achieving an overall grade point average of at least 3.00.

JGSB students may not take courses pass/fail to count toward their degree requirements. JGSB students may audit courses with departmental and professor approval. The courses will not count toward the MBA, but will appear on the transcript.

Professional Standards
MBA students are held to the highest standards of professional conduct expected of managers—standards substantially exceeding those expected of them simply as students. Students may be dismissed or suspended for failure to meet professional standards, as defined in the University Code of Conduct (p. 82). The dean may place a student on disciplinary probation for unacceptable conduct, giving oral and written notice that future misconduct will lead to filing specific charges. This probationary notice, however, is not required as a precondition for filing specific charges.

Class Attendance Policy
Students are expected to be in class on the first day of each term. The instructor reserves the right to exclude a student from their course who is absent on the first day. Students should refer to the specific attendance policy for each program. This information can be found in the Jones Graduate School of Business Student Handbook, which is referenced below. For special circumstances, students should see the Director of Advising in the Student Program Office and the instructor.

Guidelines for Appealing Academic Dismissal
The Process
A student who wishes to appeal a dismissal should address the following issues in a letter to the Academic Standards Committee. The student must send the letter to the chair of the Academic Standards Committee.

1. What circumstances led to your academic performance last semester and to what degree were those circumstances beyond your control?
2. If your performance in a particular course(s) last semester was below par, describe any circumstances specific to that course that explain your performance.
3. Do you expect the circumstances that created the problems for you last semester to change next semester? If so, how?

Students may include any additional information they deem relevant in the appeal letter.

Timing
If the student intends to appeal, the letter to the committee must be filed within one week after receiving a dismissal letter. If a student plans to appeal, he/she should continue to attend classes. It is important to keep up with studies during the appeal process. If the appeal is accepted, the student may continue progress towards the completion of their degree.

Appeals
Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.

Confidentiality
The Family Educational Rights and Privacy Act of 1974 and amendments govern the records of actions related to appeals.

Grade Appeal Process
Once a course grade has been assigned by an instructor, it is generally considered final and is rarely changed for any reason other than calculation or transcription errors. The procedure below outlines the process by which a student may appeal a course grade.

1. The student should first pursue any grading question with the instructor following the formal or informal process the instructor has outlined for the course.
2. If the matter is not resolved in step 1 above, the student must file a written appeal to the instructor and send a copy to the senior associate dean of degree programs. This written appeal must be filed no later than two weeks after the final grade for a course was assigned.
3. The instructor must schedule a meeting with the student within two weeks of receiving the written appeal to further discuss the appeal with the student. Notice of the appeal time and date will be provided by the instructor to the senior associate dean of degree programs.
4. If step 3 does not resolve the issue to the satisfaction of both parties, the student may appeal to the Academic Standards Committee by sending a written notice describing the grounds for the appeal within two weeks of the date of the scheduled meeting in step 3.
5. The Academic Standards Committee will seek out information on the appeal from the instructor and the student and, at its discretion, hold a hearing to further consider the matter. The decision of the Academic Standards Committee will be rendered within 4 weeks of receiving a written notice of appeal (step 4).
6. Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.
7. In the event that the protested grade is necessary for the student to graduate, an accelerated schedule will be followed.

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MBA Elective Course Add/Drop Policy and Procedures
Due to the unique term schedule followed by the Jones Graduate School of Business MBA programs, MBA students have special procedures they must follow to make schedule changes. The Jones Graduate School of Business Registrar Department administers an add/drop policy which allows students to add/drop elective courses at various times throughout the semester. For all elective courses, student may not add/drop a course after the deadline for the appropriate term.

Withdrawal Policy
A Jones Graduate School of Business student, participating in any offered program, may voluntarily withdraw from school at any time. Upon withdrawal, Rice University applies a sliding scale to tuition, which is noted in the university's Academic Calendar posted on the Rice Office of the Registrar website (https://registrar.rice.edu/calendars/).

Jones Graduate School of Business Student Handbook
Generally, the Jones Graduate School of Business adheres to the academic regulations of Rice University. However, the Jones Graduate School of Business MBA program has unique policies and procedures that vary from the Office of Graduate and Postdoctoral Studies regarding, but not limited to, leave of absence, withdrawals, and academic dismissal. A copy of the handbook is available on Campus Groups.

Financial Aid
Jones Graduate School of Business scholarships are awarded at the point of admission and are based on the merit of the application. Financial assistance is generally awarded one academic year at a time. Continuation of assistance depends on Satisfactory Academic Progress (SAP) in accordance with Academic and Professional Standards of performance, professional behavior, and is subject to the availability of funds. Academic or disciplinary probation, suspension, or general failure to maintain academic pace will result in the removal of all forms of financial assistance (i.e., scholarship, employment, Federal/State student loans, etc.). Students have the right to appeal the suspension. All appeals will be reviewed by a committee.

Additional Information
For additional information, please see the Jones Graduate School of Business website: https://business.rice.edu/

Opportunities for the MBA Degree, Executive Program
Independent Study
Minimum Hours Requirement
Each credit of independent study should contain approximately as much time content as a one-credit course at Jones Graduate School of Business, which is 12 hours of class time, plus an average of at least 24–36 outside-class hours, for a minimum total of 36–48 hours of work. Independent study projects can be accommodated in increments of 1.0, 1.5, 2.0, or 3.0 credit hours; 3.0 credit independent study projects are rarely approved. Occasionally, a group independent study project may arise, though most independent studies are undertaken by individual students.

The number of credits for an independent study must be determined at the beginning of a project. Increases to the number of project credit hours after the project overview has been filed with the Jones Graduate School of Business associate registrar must be approved by the Academic Standards Committee. The committee will rely on input from sponsoring faculty in making its decision about ex post credit increases. Requests to increase the number of project credit hours must be made before the end of the second week of classes in the term in which the project begins.

Restrictions
No student may take more than three credit hours of independent study during the course of the MBA program without the approval of the Academic Standards Committee. If an independent study is proposed that would cause a student to exceed the 3.0 credit limit, the Academic Standards Committee will select two faculty members, other than the faculty member who will supervise the project, within the area most closely related to the study's academic content to review and approve the study. Independent study exceeding 3.0 credits in total should consider current policies restricting use of independent study as well as the incremental value of additional independent study in light of past independent studies. If the study does not align with any of the Jones Graduate School of Business academic groups, the Academic Standards Committee will perform the review and make the final approval decision.

Independent study projects are for academic credit, not for hire. Students may not earn credit for paid work.

Faculty Sponsorship
Independent study projects normally are sponsored only by full-time Jones Graduate School of Business faculty; faculty typically sponsor projects only in their area of expertise. Students wanting sponsorship by a part-time faculty member must submit a project overview to the Academic Standards Committee and obtain the committee's approval before the term in which the project is to begin.

Common Requirements
The goal of independent study projects is to advance or deepen a student's knowledge or competency in a business discipline or activity. To facilitate these goals, independent study projects generally fall into two broad categories:

1. directed reading and study resulting in a research paper, or
2. an experiential or hands-on project resulting in an outcome such as an empirical analysis with an executive summary of the "deliverable."

While the content of individual independent study projects are at the discretion of a student and the sponsoring faculty member to ensure relatively equal workloads per unit of independent study credit and some common requirements across independent study projects, students and/or sponsoring faculty should:

1. Prepare and submit to the Jones Graduate School of Business associate registrar an overview of the independent study project with number of project credits, anticipated final results, and a broad timeline of anticipated project milestones.
2. Meet to discuss the project, after the initial agreement on the project scope, at least once every two to three weeks.
3. Prepare a final paper (in the case of directed reading and research projects) or complete a concrete deliverable (for example, computer program, survey results, empirical analyses, etc.) together with an executive summary of the project (in the case of experiential projects).
4. File a copy of each student's final paper, or executive summary, with the Jones Graduate School of Business associate registrar.
Applications
Independent study applications are available for interested students on Campus Groups. Completed independent study applications must be approved by the senior associate dean of academic affairs. Completed and approved applications are due to the Jones Graduate School of Business associate registrar by the first week of the term in which the project will be completed. The student will be registered for MGMT 700/MGMT 800 independent study for the appropriate credit amount, only when the appropriate permissions have been obtained.

Additional Information
For additional information, please see the Jones Graduate School of Business website: https://business.rice.edu/.

Master of Business Administration (MBA) Degree, Full-Time Program

Program Learning Outcomes for the MBA Degree

Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.

2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.

3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MBA Degree, Full-Time Program

The MBA degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the full-time MBA degree program must complete:

- A minimum of 60 credit hours to satisfy degree requirements.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A Global Field Experience (during the first year of enrollment in the degree program).
- A maximum of 6 credit hours from graduate-level coursework as transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab. Information regarding Exchange Program transfer credit can be found in the Student Handbook under Campus Groups.
- A minimum overall GPA of 3.00 or higher in all Rice coursework.
- A minimum overall GPA of 3.00 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree with a minimum grade of C (2.00 grade points) in each course.

Students who register for a standard course load of 9-18 credit hours per semester are considered full-time students. All registration and elective selection via add/drop is completed online through ESTHER (https://esther.rice.edu/). It is the responsibility of the student to monitor and maintain his or her schedule and academic record.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td>MGMT 789</td>
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Degree Requirements

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<td>MGMT 543</td>
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<td>MGMT 560</td>
<td>CORPORATE SOCIAL RESPONSIBILITY</td>
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<td>MGMT 570</td>
<td>COMPETITIVE AND INDUSTRY ANALYSIS</td>
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<td>MGMT 571</td>
<td>STRATEGY FORMULATION AND IMPLEMENTATION</td>
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<td>MGMT 574</td>
<td>OPERATIONS MANAGEMENT</td>
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<tr>
<td>MGMT 580</td>
<td>MARKETING</td>
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<tr>
<td>MGMT 594</td>
<td>STRATEGIC BUSINESS COMMUNICATION I</td>
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<tr>
<td>MGMT 595</td>
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<td>MGMT 596</td>
<td>STRATEGIC BUSINESS COMMUNICATION II</td>
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<td>NEGOTIATIONS ILE</td>
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Global Field Experience Requirement

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<td>1.5</td>
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Custom Core Courses: 4

Select 2 courses from the following:

- MGMT 503 MANAGEMENT CONTROL
- MGMT 541 ECONOMIC ENVIRONMENT OF BUSINESS
- MGMT 561 BUSINESS-GOVERNMENT RELATIONS
- MGMT 599 ACTION LEARNING PROJECT
- MGMT 621 THE NEW ENTERPRISE
- MGMT 721 BUSINESS LAW

Elective Requirements
Students have the option of selecting up to 2 functional or professional major concentrations. Completing a major concentration is not required to complete the requirements for the MBA degree; it is optional. Students must officially declare the major concentration through the Jones Graduate School of Business associate registrar.

Major concentrations typically consist of 9 to 12 credit hours of course work. If a student completes 2 concentrations, a maximum of 3 credit hours can be shared between the 2 concentrations. Similarly, a custom core course listed in the Core Requirements above can be counted toward the completion of a concentration only if the student has taken 3.0 credit hours of custom core which can be counted toward the custom core requirement. Specific concentration requirements for the academic year are available on Campus Groups. Students should know that the classes listed will likely not be offered each semester, and that the course offerings are subject to change. Students should see courses.rice.edu (http://courses.rice.edu) to review the course offerings each semester.

Major Concentration: Accounting
The major concentration in Accounting provides a broad understanding of the use and importance of accounting information to decision makers within the firm and to external users of financial statements. The core financial and management accounting courses provide a basic understanding of accounting principles. Completion of the concentration in accounting will serve to reinforce the fundamental concepts for the core, to provide additional insight into accounting processes and principles, and to enhance the ability to analyze and interpret accounting reports.

Major Concentration: Energy
The major concentration in Energy provides commercial acumen and leadership perspective to students with a technical background and develops their capability for taking additional responsibilities and higher-level management roles at companies in the energy sector. This is accomplished by engaging students in a curriculum that addresses three distinct, but inter-related, career paths which are widely regarded as conduits to leadership positions in energy industry midstream and upstream organizations: finance, operations, and product/customer focus.

Major Concentration: Entrepreneurship
The major concentration in Entrepreneurship provides students a framework for being an entrepreneur. The required courses equip students with the tools and processes for starting a business. The remaining courses allow students to select specific entrepreneurial topics suited to their objectives.

Major Concentration: Finance
The major concentration in Finance provides students with a broad foundation in financial management principles and an opportunity for further specialization. Students are required to complete the primary finance electives in the MBA program and Financial Statement Analysis. Students supplement these foundational courses with at least two specialized courses from a list of approved offerings.

Major Concentration: Health Care
The focus of the major concentration in Health Care is to provide students with an understanding of how management principles are interpreted and applied in the different inter-locking sectors (providers, hospitals/small practices, payers, pharmaceutical, biotechnology) of the health care industry, and how the different dynamics in these sectors make it uniquely health care.
Major Concentration: Marketing
The major concentration in Marketing prepares students for careers in strategic marketing across a wide range of organizations, markets and industries. It provides critical knowledge for understanding and analyzing customers, and emphasizes the development of requisite quantitative and conceptual skills to contribute to the firm’s overall success. Among the career trajectories for which students will be prepared are product management, customer analytics and customer insights, and management consulting.

Major Concentration: Operations Management
The major concentration in Operations Management presents students with a framework for design, planning, control, coordination, and improvement of business processes, systems, and resources essential to meet consumers’ needs. Instead of the technical engineering view of operations, the focus is on managing the business well.

Major Concentration: Real Estate
The major concentration in Real Estate prepares students for a career in the real estate industry. The required course introduces a series of basic business concepts commonly used in the real estate industry, and it covers in detail the application of the discounted cash flow model to real estate decisions. The elective courses provide for both a depth and breadth of understanding of the industry.

Major Concentration: Strategic Management
The major concentration in Strategic Management prepares students for careers in strategic planning, management consulting, and global business management across a variety of industries such as health care, energy, high technologies, consumer products, and professional services. It provides knowledge and analytic tools for students to understand why some companies are financially much more successful than others and to analyze how executives (at different levels) can devise a set of strategies and design processes that allow companies to achieve competitive advantage.

Policies for the MBA Degree Programs
MBA Admission Requirements
Admission to the MBA degree program is open to students regardless of their undergraduate major, but the program is highly selective and access is limited to those who have performed with distinction across all areas of the application. A bachelor’s degree (or equivalent) from an accredited undergraduate institution is required. All applicants submit an interview as part of their admission requirements.

All applicants to the MBA degree program must submit the following:
• an online application and application fee
• scores from the Graduate Management Admission Test (GMAT), the Graduate Record Examination (GRE),* or the Executive Assessment (EA)**
• transcripts from all previously-attended and/or degree-granting institutions
• resume with complete work history
• essays
• letter(s) of recommendation

Notes:
*Scores from the TOEFL, PTE, or IELTS are also required for international applicants, whose undergraduate degree was from an institution where the primary language of instruction was not English.
**The Executive Assessment (EA) is only accepted for MBA Degree, Executive Program applicants.

MBA/Master of Engineering Program
To enter this coordinated degree program, applicants apply separately and be accepted by both the Jones Graduate School of Business and the engineering department in which they wish to pursue graduate study. The program requires the Jones Graduate School of Business application, one letter of recommendation, if it is from the applicant’s direct supervisor, (otherwise two letters of recommendation), and the GMAT or GRE.

MBA/Professional Science Master's Program
To enter this coordinated degree program, applicants must be accepted by both the Jones Graduate School of Business and one of the following Weiss School of Natural Sciences Professional Science Master’s (PSM) programs: Environmental Analysis, Nanoscale Science, Space Studies or, Subsurface Geoscience. The program requires the Jones Graduate School of Business application, one letter of recommendations if from the applicant’s direct supervisor (otherwise two letters of recommendation are required), and the GMAT or GRE.

MBA/Doctor of Medicine (MD) Program
To enter this coordinated degree program, applicants must first be accepted by Baylor College of Medicine and apply separately to the Jones Graduate School of Business. The MCAT is accepted rather than the GMAT or GRE, but the GMAT is required for scholarship consideration. Three years of medical school are required before starting MBA classes.

Academic and Professional Standards
Students must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the MBA program, all students agree to be governed by the standards and procedures for dismissal or disciplinary action stated below.

Academic Standards
A minimum overall grade point average of 3.00 (B) is required for graduation. All courses taken for the MBA degree (including approved courses taken at the university, but outside the JGSB) are counted in the overall grade point average calculation.

Students with an overall grade point average lower than 3.00 at the end of any semester will be notified of academic standing. Students not meeting the 3.00 requirement will be provided specific instruction and guidance on the next steps specific to their academic situation. In some cases, students may submit an appeal to the JGSB Academic Standards Committee, requesting to be placed on academic probation. The committee reviews all academic cases, and may consult the dean’s office for counsel and/or suggestions on proposed handling of the case. The committee will decide, based on the circumstances of the appeal, whether the student may resume studies on academic probation; is to be academically suspended for one semester or an academic year; or is to be dismissed from the MBA program.

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will pay the current rate of tuition, based upon the class of students s/he is joining.

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Students on academic probation must complete all future courses with a grade of C or above and may be considered candidates for student offices by permission only. Students are removed from probation only upon achieving an overall grade point average of at least 3.00.

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MBA students are held to the highest standards of professional conduct expected of managers—standards substantially exceeding those expected of them simply as students. Students may be dismissed or suspended for failure to meet professional standards, as defined in the University Code of Conduct (p. 82). The dean may place a student on disciplinary probation for unacceptable conduct, giving oral and written notice that future misconduct will lead to filing specific charges. This probationary notice, however, is not required as a precondition for filing specific charges.

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**The Process**

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1. What circumstances led to your academic performance last semester and to what degree were those circumstances beyond your control?
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**Timing**

If the student intends to appeal, the letter to the committee must be filed within one week after receiving a dismissal letter. If a student plans to appeal, he/she should continue to attend classes. It is important to keep up with studies during the appeal process. If the appeal is accepted, the student may continue progress towards the completion of their degree.

**Appeals**

Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.

**Confidentiality**

The Family Educational Rights and Privacy Act of 1974 and amendments govern the records of actions related to appeals.

**Grade Appeal Process**

Once a course grade has been assigned by an instructor, it is generally considered final and is rarely changed for any reason other than calculation or transcription errors. The procedure below outlines the process by which a student may appeal a course grade.

1. The student should first pursue any grading question with the instructor following the formal or informal process the instructor has outlined for the course.
2. If the matter is not resolved in step 1 above, the student must file a written appeal to the instructor and send a copy to the senior associate dean of degree programs. This written appeal must be filed no later than two weeks after the final grade for a course was assigned.
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5. The Academic Standards Committee will seek out information on the appeal from the instructor and the student and, at its discretion, hold a hearing to further consider the matter. The decision of the Academic Standards Committee will be rendered within 4 weeks of receiving a written notice of appeal (step 4).
6. Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.
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**MBA Elective Course Add/Drop Policy and Procedures**

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A Jones Graduate School of Business student, participating in any offered program, may voluntarily withdraw from school at any time. Upon withdrawal, Rice University applies a sliding scale to tuition, which is noted in the university's Academic Calendar posted on the Rice Office of the Registrar website (https://registrar.rice.edu/calendars/).

JGSB Student Handbook
Generally, the Jones Graduate School of Business adheres to the academic regulations of Rice University. However, the Jones Graduate School of Business MBA program has unique policies and procedures that vary from the Office of Graduate and Postdoctoral Studies regarding, but not limited to, leave of absence, withdrawals and readmission, add/drop, and academic dismissal. A copy of the handbook is available on Campus Groups.

Financial Aid
Jones Graduate School of Business scholarships are awarded at the point of admission and are based on the merit of the application. Financial assistance is generally awarded one academic year at a time. Continuation of assistance depends on Satisfactory Academic Progress (SAP) in accordance with Academic and Professional Standards of performance, professional behavior, and is subject to the availability of funds. Academic or disciplinary probation, suspension, or general failure to maintain academic pace will result in the removal of all forms of financial assistance (i.e. scholarship, employment, Federal/State student loans, etc.). Students have the right to appeal the suspension. All appeals will be reviewed by a committee.

Additional Information
For additional information, please see the Jones Graduate School of Business website: https://business.rice.edu/

Opportunities for the MBA Degree Programs

Independent Study

Minimum Hours Requirement
Each credit of independent study should contain approximately as much time content as a one-credit course at Jones Graduate School of Business, which is 12 hours of class time, plus an average of at least 24–36 outside-class hours, for a minimum total of 36–48 hours of work. Independent study projects can be accommodated in increments of 1.0, 1.5, 2.0, or 3.0 credit hours; 3.0 credit independent study projects are rarely approved. Occasionally, a group independent study project may arise, though most independent studies are undertaken by individual students.

The number of credits for an independent study must be determined at the beginning of a project. Increases to the number of project credit hours after the project overview has been filed with the Jones Graduate School of Business associate registrar must be approved by the Academic Standards Committee. The committee will rely on input from sponsoring faculty in making its decision about ex post credit increases. Requests to increase the number of project credit hours must be made before the end of the second week of classes in the term in which the project begins.

Restrictions
No student may take more than three credit hours of independent study during the course of the MBA program without the approval of the Academic Standards Committee. If an independent study is proposed that would cause a student to exceed the 3.0 credit limit, the Academic Standards Committee will select two faculty members, other than the faculty member who will supervise the project, within the area most closely related to the study's academic content to review and approve the study. Independent study exceeding 3.0 credits in total should consider current policies restricting use of independent study as well as the incremental value of additional independent study in light of past independent studies. If the study does not align with any of the Jones Graduate School of Business academic groups, the Academic Standards Committee will perform the review and make the final approval decision.

Independent study projects are for academic credit, not for hire. Students may not earn credit for paid work.

Faculty Sponsorship
Independent study projects normally are sponsored only by full-time Jones Graduate School of Business faculty; faculty typically sponsor projects only in their area of expertise. Students wanting sponsorship by a part-time faculty member must submit a project overview to the Academic Standards Committee and obtain the committee's approval before the term in which the project is to begin.

Common Requirements
The goal of independent study projects is to advance or deepen a student's knowledge or competency in a business discipline or activity. To facilitate these goals, independent study projects generally fall into two broad categories:

1. directed reading and study resulting in a research paper, or
2. an experiential or hands-on project resulting in an outcome such as an empirical analysis with an executive summary of the "deliverable."

While the content of individual independent study projects are at the discretion of a student and the sponsoring faculty member, to ensure relatively equal workloads per unit of independent study credit and some common requirements across independent study projects, students and/or sponsoring faculty should:

1. Prepare and submit to the Jones Graduate School of Business associate registrar an overview of the independent study project with number of project credits, anticipated final results, and a broad timeline of anticipated project milestones.
2. Meet to discuss the project, after the initial agreement on the project scope, at least once every two to three weeks.
3. Prepare a final paper (in the case of directed reading and research projects) or complete a concrete deliverable (for example, computer program, survey results, empirical analyses, etc.) together with an executive summary of the project (in the case of experiential projects).
4. File a copy of each student's final paper, or executive summary, with the Jones Graduate School of Business associate registrar.

Applications
Independent study applications are available for interested students on Campus Groups. Completed independent study applications must be approved by the senior associate dean of academic affairs. Completed and approved applications are due to the Jones Graduate School of Business associate registrar by the first week of the term in which the project will be completed. The student will be registered for MGMT 700/MGMT 800 independent study for the appropriate credit amount, only when the appropriate permissions have been obtained.
Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Accounting

Program Learning Outcomes for the MBA Degree

Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.

2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.

3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MBA Degree, Full-Time Program

The MBA degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the full-time MBA degree program must complete:

- A minimum of 60 credit hours to satisfy degree requirements.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A Global Field Experience (during the first year of enrollment in the degree program).
- A maximum of 6 credit hours from graduate-level coursework as transfer credit. For additional program guidelines regarding Exchange Program transfer credit, see the Policies tab. Information regarding Exchange Program transfer credit can be found in the Student Handbook under Campus Groups.
- A minimum overall GPA of 3.00 or higher in all Rice coursework.
- A minimum overall GPA of 3.00 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree with a minimum grade of C (2.00 grade points) in each course.

Students who register for a standard course load of 9-18 credit hours per semester are considered full-time students. All registration and elective selection via add/drop is completed online through ESTHER (https://esther.rice.edu/). It is the responsibility of the student to monitor and maintain his or her schedule and academic record.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<th>Code</th>
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Degree Requirements

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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| Core Requirements 1
| MGMT 501 | FINANCIAL ACCOUNTING                         | 3            |
| MGMT 502 | MANAGERIAL ACCOUNTING                        | 1.5          |
| MGMT 510 | ORGANIZATIONAL BEHAVIOR                      | 1.5          |
| MGMT 512 | LEADING CHANGE                               | 0.75         |
| MGMT 540 | MANAGERIAL ECONOMICS                         | 1.5          |
| MGMT 543 | FINANCE                                      | 3            |
| MGMT 560 | CORPORATE SOCIAL RESPONSIBILITY              | 0.75         |
| MGMT 570 | COMPETITIVE AND INDUSTRY ANALYSIS            | 1.5          |
| MGMT 571 | STRATEGY FORMULATION AND IMPLEMENTATION     | 1.5          |
| MGMT 574 | OPERATIONS MANAGEMENT                        | 1.5          |
| MGMT 580 | MARKETING                                    | 3            |
| MGMT 594 | STRATEGIC BUSINESS COMMUNICATION             | 0.75         |
| MGMT 595 | DATA ANALYSIS I                              | 1.5          |
| MGMT 596 | STRATEGIC BUSINESS COMMUNICATION II          | 0.75         |
| MGMT 597 | DATA ANALYSIS II                             | 1.5          |
| MGMT 710 | LEADERSHIP ILE                              | 0.75         |
| MGMT 711 | NEGOTIATIONS ILE                            | 0.75         |
| Global Field Experience Requirement
| MGMT 789 | GLOBAL FIELD EXPERIENCE                      | 1.5          |
| Custom Core Courses: 4
| Select 2 courses from the following:          | 3-6          |
| MGMT 503 | MANAGEMENT CONTROL                          |              |
| MGMT 541 | ECONOMIC ENVIRONMENT OF BUSINESS             |              |
| MGMT 561 | BUSINESS-GOVERNMENT RELATIONS                |              |
| MGMT 599 | ACTION LEARNING PROJECT                     |              |
| MGMT 621 | THE NEW ENTERPRISE                           |              |
| MGMT 721 | BUSINESS LAW                                 |              |
| Elective Requirements
| Select an additional 27-30 credit hours from departmental (MOMP, MGMT, or MICO) course offerings at the 500-level or above to reach 60 total credit hours 5, 6 | 27-30 |
| Total Credit Hours |                                      | 60           |

Footnotes and Additional Information

1. The first year of the program is primarily dedicated to core courses in the basic functional areas of business.
Students pursuing the major concentration in Accounting must complete:

• A minimum of 9 credit hours as listed below to satisfy major concentration requirements*

### Core Requirement

<table>
<thead>
<tr>
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<tr>
<td>MGMT 601</td>
<td>FINANCIAL STATEMENT ANALYSIS</td>
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### Elective Requirements

**Select 6 credit hours from the following:**

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<td>ISSUES IN FINANCIAL REPORTING II</td>
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<td>MACC 514</td>
<td>FAIR VALUE ACCOUNTING</td>
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<td>MACC 541</td>
<td>ACCOUNTING CONTROL SYSTEMS</td>
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<td>MACC 542</td>
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<tr>
<td>MACC 562</td>
<td>ACCOUNTING AND DATA ANALYTICS</td>
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<td>MACC 581</td>
<td>GOVERNMENT AND NOT-FOR-PROFIT ACCOUNTING</td>
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<td>MGMT 503</td>
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<td>MGMT 591</td>
<td>ACCOUNTING THEORY</td>
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<td>MGMT 603</td>
<td>INCOME TAXATION AND BUSINESS DECISIONS</td>
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<td>MGMT 605</td>
<td>BUSINESS TAXATION II</td>
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<td>MGMT 606</td>
<td>CORPORATE FINANCIAL REPORTING: US GAAP &amp; IFRS PART I</td>
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<tr>
<td>MGMT 617</td>
<td>THE INFORMATION ECONOMY: THEORY AND APPLICATIONS</td>
<td></td>
</tr>
<tr>
<td>MACC 573</td>
<td>COST ANALYSIS IN HEALTHCARE</td>
<td></td>
</tr>
</tbody>
</table>

### Total Credit Hours

9

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**Footnotes and Additional Information**

* The courses listed are approved to satisfy the requirements for the Accounting concentration for the current academic year only. Courses not on this official list may be substituted upon approval of the Jones Graduate School of Business Associate Registrar. Students and their academic advisors should identify and clearly document the courses to be taken with the Jones Graduate School of Business Associate Registrar.

1 Contact the Jones Graduate School of Business Registrar Department to determine if Master of Accounting (MAcc) electives open to MBA student enrollment can be counted towards this concentration.

2 MGMT 503 only counts towards the concentration if it is not used to satisfy the Custom Core requirement.

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**Policies for the MBA Degree Programs**

### MBA Admission Requirements

Applicants to the MBA programs must submit scores on the Graduate Management Admission Test (GMAT) or the Graduate Record Examination (GRE). International applicants, who did not earn an undergraduate degree from an institution where the primary language of instruction was English must submit a valid score report from either TOEFL, PTE, or IELTS. Admission to the MBA programs is open to students regardless of their undergraduate major, but it is highly selective and limited to those who have performed with distinction in their previous academic work and on the GMAT or GRE.

### Academic and Professional Standards

Students must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the...
MBA program, all students agree to be governed by the standards and procedures for dismissal or disciplinary action stated below.

**Academic Standards**
A minimum overall grade point average of 3.00 (B) is required for graduation. All courses taken for the MBA degree (including approved courses taken at the university, but outside the JGSB) are counted in the overall grade point average calculation.

Students with an overall grade point average lower than 3.00 at the end of any semester will be notified of academic standing. Students not meeting the 3.00 requirement will be provided specific instruction and guidance on the next steps specific to their academic situation. In some cases, students may submit an appeal to the JGSB Academic Standards Committee, requesting to be placed on academic probation. The committee reviews all academic cases, and may consult the dean’s office for counsel and/or suggestions on proposed handling of the case. The committee will decide, based on the circumstances of the appeal, whether the student may resume studies on academic probation; is to be academically suspended for one semester or an academic year; or is to be dismissed from the MBA program.

Students proposing to return after a period of academic suspension must follow the appropriate procedures outlined in the General Announcements by the Office of Graduate and Postdoctoral Studies to receive permission to be readmitted. If permitted to return, the student will pay the current rate of tuition, based upon the class of students s/he is joining.

Only courses in which a grade of C or above is earned will be counted for credit toward graduation. If students receive a grade below C in a course required for graduation, they must repeat the course. If students receive a grade lower than C in an elective course, they need not repeat the specific course, but they must make up the credit hours. If the required course is not offered again prior to graduation, the student will be permitted to take the course the following academic year, but will be charged the current pro-rated tuition for the program in which the additional coursework is completed.

Students on academic probation must complete all future courses with a grade of C or above and may be considered candidates for student offices by permission only. Students are removed from probation only upon achieving an overall grade point average of at least 3.00.

JGSB students may not take courses pass/fail to count toward their degree requirements. JGSB students may audit courses with departmental and professor approval. The courses will not count toward the MBA, but will appear on the transcript.

**Professional Standards**
MBA students are held to the highest standards of professional conduct expected of managers—standards substantially exceeding those expected of them simply as students. Students may be dismissed or suspended for failure to meet professional standards, as defined in the University Code of Conduct (p. 82). The dean may place a student on disciplinary probation for unacceptable conduct, giving oral and written notice that future misconduct will lead to filing specific charges. This probationary notice, however, is not required as a precondition for filing specific charges.

**Class Attendance Policy**
Students are expected to be in class on the first day of each term. The instructor reserves the right to exclude a student from their course who is absent on the first day. Students should refer to the specific attendance policy for each program. This information can be found in the Jones Graduate School of Business Student Handbook, which is referenced below. For special circumstances, students should see the Director of Advising in the Student Program Office and the instructor.

**Guidelines for Appealing Academic Dismissal**

**The Process**
A student who wishes to appeal a dismissal should address the following issues in a letter to the Academic Standards Committee. The student must send the letter to the chair of the Academic Standards Committee.

1. What circumstances led to your academic performance last semester and to what degree were those circumstances beyond your control?
2. If your performance in a particular course(s) last semester was below par, describe any circumstances specific to that course that explain your performance.
3. Do you expect the circumstances that created the problems for your last semester to change next semester? If so, how?

Students may include any additional information they deem relevant in the appeal letter.

**Timing**
If the student intends to appeal, the letter to the committee must be filed within one week after receiving a dismissal letter. If a student plans to appeal, he/she should continue to attend classes. It is important to keep up with studies during the appeal process. If the appeal is accepted, the student may continue progress towards the completion of their degree.

**Appeals**
Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.

**Confidentiality**
The Family Educational Rights and Privacy Act of 1974 and amendments govern the records of actions related to appeals.

**Grade Appeal Process**
Once a course grade has been assigned by an instructor, it is generally considered final and is rarely changed for any reason other than calculation or transcription errors. The procedure below outlines the process by which a student may appeal a course grade.

1. The student should first pursue any grading question with the instructor following the formal or informal process the instructor has outlined for the course.
2. If the matter is not resolved in step 1 above, the student must file a written appeal to the instructor and send a copy to the senior associate dean of degree programs. This written appeal must be filed no later than two weeks after the final grade for a course was assigned.
3. The instructor must schedule a meeting with the student within two weeks of receiving the written appeal to further discuss the appeal with the student. Notice of the appeal time and date will be provided by the instructor to the senior associate dean of degree programs.
4. If step 3 does not resolve the issue to the satisfaction of both parties, the student may appeal to the Academic Standards Committee by sending a written notice describing the grounds for the appeal within two weeks of the date of the scheduled meeting in step 3.
5. The Academic Standards Committee will seek out information on the appeal from the instructor and the student and, at its discretion, hold a hearing to further consider the matter. The decision of the Academic Standards Committee will be rendered within 4 weeks of receiving a written notice of appeal (step 4).

6. Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.

7. In the event that the protested grade is necessary for the student to graduate, an accelerated schedule will be followed.

The Family Educational Rights and Privacy Act of 1974 and amendments govern records of these actions.

**MBA Elective Course Add/Drop Policy and Procedures**

Due to the unique term schedule followed by the Jones Graduate School of Business MBA programs, MBA students have special procedures they must follow to make schedule changes. The Jones Graduate School of Business Registrar Department administers an add/drop policy which allows students to add/drop elective courses at various times throughout the semester. For all elective courses, student may not add/drop a course after the deadline for the appropriate term.

**Withdrawal Policy**

A Jones Graduate School of Business student, participating in any offered program, may voluntarily withdraw from school at any time. Upon withdrawal, Rice University applies a sliding scale to tuition, which is noted in the university's Academic Calendar posted on the Rice Office of the Registrar website (https://registrar.rice.edu/calendars/).

**Jones Graduate School of Business Student Handbook**

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**Additional Information**

For additional information, please see the Jones Graduate School of Business website: https://business.rice.edu/

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**Opportunities for the MBA Degree Programs**

**Independent Study**

**Minimum Hours Requirement**

Each credit of independent study should contain approximately as much time content as a one-credit course at Jones Graduate School of Business, which is 12 hours of class time, plus an average of at least 24–36 outside-class hours, for a minimum total of 36–48 hours of work. Independent study projects can be accommodated in increments of 1.0, 1.5, 2.0, or 3.0 credit hours; 3.0 credit independent study projects are rarely approved. Occasionally, a group independent study project may arise, though most independent studies are undertaken by individual students.

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**Restrictions**

No student may take more than three credit hours of independent study during the course of the MBA program without the approval of the Academic Standards Committee. If an independent study is proposed that would cause a student to exceed the 3.0 credit limit, the Academic Standards Committee will select two faculty members, other than the faculty member who will supervise the project, within the area most closely related to the study's academic content to review and approve the study. Independent study exceeding 3.0 credits in total should consider current policies restricting use of independent study as well as the incremental value of additional independent study in light of past independent studies. If the study does not align with any of the Jones Graduate School of Business academic groups, the Academic Standards Committee will perform the review and make the final approval decision.

Independent study projects are for academic credit, not for hire. Students may not earn credit for paid work.

**Faculty Sponsorship**

Independent study projects normally are sponsored only by full-time Jones Graduate School of Business faculty; faculty typically sponsor projects only in their area of expertise. Students wanting sponsorship by a part-time faculty member must submit a project overview to the Academic Standards Committee and obtain the committee's approval before the term in which the project is to begin.

**Common Requirements**

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To facilitate these goals, independent study projects generally fall into two broad categories:

1. directed reading and study resulting in a research paper, or
2. an experiential or hands-on project resulting in an outcome such as an empirical analysis with an executive summary of the “deliverable.”

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relatively equal workloads per unit of independent study credit and some common requirements across independent study projects, students and/or sponsoring faculty should:

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2. Meet to discuss the project, after the initial agreement on the project scope, at least once every two to three weeks.
3. Prepare a final paper (in the case of directed reading and research projects) or complete a concrete deliverable (for example, computer program, survey results, empirical analyses, etc.) together with an executive summary of the project (in the case of experiential projects).
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Additional Information
For additional information, please see the Jones Graduate School of Business website: https://business.rice.edu/

Master of Business Administration (MBA) Degree, Full-Time Program,
and a Major Concentration in Energy
Program Learning Outcomes for the MBA Degree

Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MBA Degree, Full-Time Program

The MBA degree is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the full-time MBA degree program must complete:

- A minimum of 60 credit hours to satisfy degree requirements.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A Global Field Experience (during the first year of enrollment in the degree program).
- A maximum of 6 credit hours from graduate-level coursework as transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab. Information regarding Exchange Program transfer credit can be found in the Student Handbook under Campus Groups.
- A minimum overall GPA of 3.00 or higher in all Rice coursework.
- A minimum overall GPA of 3.00 or higher in all Rice coursework that satisfies requirements for the non-thesis master's degree with a minimum grade of C (2.00 grade points) in each course.

Students who register for a standard course load of 9-18 credit hours per semester are considered full-time students. All registration and elective selection via add/drop is completed online through ESTHER (https://esther.rice.edu/). It is the responsibility of the student to monitor and maintain his or her schedule and academic record.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

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Students in the coordinated MBA/Master of Science degree from the PSM (professional science master’s) program or in the coordinated MBA/Master of Engineering degree program must complete the Core Requirements, Global Field Experience, and Custom Core Requirements as listed above for the full-time MBA degree program. For students in those coordinated programs, the Elective Requirements are 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach the total of 45 credit hours. (MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.) The second year of the program is dedicated entirely to MBA elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. MBA electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.

### Major Concentration: Energy

The major concentration in Energy provides commercial acumen and leadership perspective to students with a technical background and develops their capability for taking additional responsibilities and higher-level management roles at companies in the energy sector. This is accomplished by engaging students in a curriculum that addresses three distinct, but inter-related, career paths which are widely regarded as conduits to leadership positions in energy industry midstream and upstream organizations: finance, operations, and product/customer focus.

Students pursuing the major concentration in Energy must complete:

- A minimum of 9 credit hours as listed below to satisfy major concentration requirements*

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGMT 610</td>
<td>FUNDAMENTALS OF THE ENERGY INDUSTRY</td>
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<tr>
<td>MGMT 611</td>
<td>GEOPOLITICS OF ENERGY</td>
<td>1.5</td>
</tr>
</tbody>
</table>

### Environment Courses 1

Select 1 course from the following:

- MGMT 541 ECONOMIC ENVIRONMENT OF BUSINESS
- MGMT 561 BUSINESS-GOVERNMENT RELATIONS
- MGMT 604 MINDFULNESS AND PERFORMANCE IN THE WORKPLACE
- MICO 605 MANAGING FOREIGN MARKET ENTRY FOR THE ENERGY INDUSTRY

### Application and Context Courses 1

Select 4.5 credit hours from the following:

- MGMT 609 MANAGING ENERGY TRANSITIONS
- MGMT 616 ENERGY MARKET ORGANIZATION
- MGMT 656 ENERGY DERIVATIVES
- MGMT 708 PRICING STRATEGIES: OIL & GAS INDUSTRY
- MGMT 712 PROCESS MANAGEMENT AND QUALITY IMPROVEMENT
- MGMT 739 CAPITAL FORMATION IN ENERGY AND INFRASTRUCTURE
- MGMT 745 INTERNATIONAL ENERGY DEVELOPMENT

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1. The first year of the program is primarily dedicated to core courses in the basic functional areas of business.

2. MGMT 594, MGMT 596, MGMT 710, and MGMT 711 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade. As S/U courses, they do not apply to the requirement of a minimum grade of C (2.00 grade points) in each required course.

3. Students participate in a required global field experience during the first year of enrollment in the degree program. Additional costs apply towards this global experience.

4. The custom core courses are taken during the second semester of the first year.

5. To fulfill the remaining requirements for the full-time MBA degree program, students must complete an additional 27-30 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 60 total credit hours. (MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.) Students take two elective courses during the spring semester of the first year. The second year of the program is dedicated entirely to elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. If students wish to apply courses that are offered outside of the Jones Graduate School of Business (MGMP, MGMT, or MICO course offerings), the student must obtain permission from the Jones Graduate School associate registrar. Electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.

6. Students pursuing the major concentration in Energy must complete:
Footnotes and Additional Information
* The courses listed are approved to satisfy the requirements for the Energy concentration for the current academic year only. Courses not on this official list may be substituted upon approval of the Jones Graduate School of Business Associate Registrar. Students and their academic advisors should identify and clearly document the courses to be taken with the Jones Graduate School of Business Associate Registrar.

1 Students may complete Integrative Course Offerings as substitutes for the credit hours required as Foundational, Environment, or Application and Context coursework. These courses include: MGMT 604, MICO 602, MICO 603, or MICO 605.

2 MGMT 541 or MGMT 561 can be applied if the course is not used to satisfy the Core Requirement.

Policies for the MBA Degree Programs

MBA Admission Requirements
Applicants to the MBA programs must submit scores on the Graduate Management Admission Test (GMAT) or the Graduate Record Examination (GRE). International applicants, who did not earn an undergraduate degree from an institution where the primary language of instruction was English must submit a valid score report from either TOEFL, PTE, or IELTS. Admission to the MBA programs is open to students regardless of their undergraduate major, but it is highly selective and limited to those who have performed with distinction in their previous academic work and on the GMAT or GRE.

Academic and Professional Standards
Students must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the MBA program, all students agree to be governed by the standards and procedures for dismissal or disciplinary action stated below.

Academic Standards
A minimum overall grade point average of 3.00 (B) is required for graduation. All courses taken for the MBA degree (including approved courses taken at the university, but outside the JGSB) are counted in the overall grade point average calculation.

Students with an overall grade point average lower than 3.00 at the end of any semester will be notified of academic standing. Students not meeting the 3.00 requirement will be provided specific instruction and guidance on the next steps specific to their academic situation. In some cases, students may submit an appeal to the JGSB Academic Standards Committee, requesting to be placed on academic probation. The committee reviews all academic cases, and may consult the dean’s office for counsel and/or suggestions on proposed handling of the case. The committee will decide, based on the circumstances of the appeal, whether the student may resume studies on academic probation; is to be academically suspended for one semester or an academic year; or is to be dismissed from the MBA program.

Students proposing to return after a period of academic suspension must follow the appropriate procedures outlined in the General Announcements by the Office of Graduate and Postdoctoral Studies to receive permission to be readmitted. If permitted to return, the student will pay the current rate of tuition, based upon the class of students s/he is joining.

Only courses in which a grade of C or above is earned will be counted for credit toward graduation. If students receive a grade below C in a course required for graduation, they must repeat the course. If students receive a grade lower than C in an elective course, they need not repeat the specific course, but they must make up the credit hours. If the required course is not offered again prior to graduation, the student will be permitted to take the course the following academic year, but will be charged the current pro-rated tuition for the program in which the additional coursework is completed.

Students on academic probation must complete all future courses with a grade of C or above and may be considered candidates for student offices by permission only. Students are removed from probation only upon achieving an overall grade point average of at least 3.00.

JGSB students may not take courses pass/fail to count toward their degree requirements. JGSB students may audit courses with departmental and professor approval. The courses will not count toward the MBA, but will appear on the transcript.

Professional Standards
MBA students are held to the highest standards of professional conduct expected of managers—standards substantially exceeding those expected of them simply as students. Students may be dismissed or suspended for failure to meet professional standards, as defined in the University Code of Conduct (p. 82). The dean may place a student on disciplinary probation for unacceptable conduct, giving oral and written notice that future misconduct will lead to filing specific charges. This probationary notice, however, is not required as a precondition for filing specific charges.

Class Attendance Policy
Students are expected to be in class on the first day of each term. The instructor reserves the right to exclude a student from their course who is absent on the first day. Students should refer to the specific attendance policy for each program. This information can be found in the Jones Graduate School of Business Student Handbook, which is referenced below. For special circumstances, students should see the Director of Advising in the Student Program Office and the instructor.

Guidelines for Appealing Academic Dismissal

The Process
A student who wishes to appeal a dismissal should address the following issues in a letter to the Academic Standards Committee. The student must send the letter to the chair of the Academic Standards Committee.

1. What circumstances led to your academic performance last semester and to what degree were those circumstances beyond your control?
2. If your performance in a particular course(s) last semester was below par, describe any circumstances specific to that course that explain your performance.
3. Do you expect the circumstances that created the problems for you last semester to change next semester? If so, how?

Students may include any additional information they deem relevant in the appeal letter.

Timing
If the student intends to appeal, the letter to the committee must be filed within one week after receiving a dismissal letter. If a student plans to
appeal, he/she should continue to attend classes. It is important to keep up with studies during the appeal process. If the appeal is accepted, the student may continue progress towards the completion of their degree.

**Appeals**

Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.

**Confidentiality**

The Family Educational Rights and Privacy Act of 1974 and amendments govern the records of actions related to appeals.

**Grade Appeal Process**

Once a course grade has been assigned by an instructor, it is generally considered final and is rarely changed for any reason other than calculation or transcription errors. The procedure below outlines the process by which a student may appeal a course grade.

1. The student should first pursue any grading question with the instructor following the formal or informal process the instructor has outlined for the course.
2. If the matter is not resolved in step 1 above, the student must file a written appeal to the instructor and send a copy to the senior associate dean of degree programs. This written appeal must be filed no later than two weeks after the final grade for a course was assigned.
3. The instructor must schedule a meeting with the student within two weeks of receiving the written appeal to further discuss the appeal with the student. Notice of the appeal time and date will be provided by the instructor to the senior associate dean of degree programs.
4. If step 3 does not resolve the issue to the satisfaction of both parties, the student may appeal to the Academic Standards Committee by sending a written notice describing the grounds for the appeal within two weeks of the date of the scheduled meeting in step 3.
5. The Academic Standards Committee will seek out information on the appeal from the instructor and the student and, at its discretion, hold a hearing to further consider the matter. The decision of the Academic Standards Committee will be rendered within 4 weeks of receiving a written notice of appeal (step 4).
6. Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.
7. If the protested grade is necessary for the student to graduate, an accelerated schedule will be followed.

**MBA Elective Course Add/Drop Policy and Procedures**

Due to the unique term schedule followed by the Jones Graduate School of Business MBA programs, MBA students have special procedures they must follow to make schedule changes. The Jones Graduate School of Business Registrar Department administers an add/drop policy which allows students to add/drop elective courses at various times throughout the semester. For all elective courses, student may not add/drop a course after the deadline for the appropriate term.

**Withdrawal Policy**

A Jones Graduate School of Business student, participating in any offered program, may voluntarily withdraw from school at any time. Upon withdrawal, Rice University applies a sliding scale to tuition, which is noted in the university’s Academic Calendar posted on the Rice Office of the Registrar website (https://registrar.rice.edu/calendars/).

**Jones Graduate School of Business Student Handbook**

Generally, the Jones Graduate School of Business adheres to the academic regulations of Rice University. However, the Jones Graduate School of Business MBA program has unique policies and procedures that vary from the Office of Graduate and Postdoctoral Studies regarding, but not limited to, leave of absence, withdrawals and readmission, add/drop, and academic dismissal. A copy of the handbook is available on Campus Groups.

**Financial Aid**

Jones Graduate School of Business scholarships are awarded at the point of admission and are based on the merit of the application. Financial assistance is generally awarded one academic year at a time. Continuation of assistance depends on Satisfactory Academic Progress (SAP) in accordance with Academic and Professional Standards of performance, professional behavior, and is subject to the availability of funds. Academic or disciplinary probation, suspension, or general failure to maintain academic pace will result in the removal of all forms of financial assistance (i.e. scholarship, employment, Federal/State student loans, etc.). Students have the right to appeal the suspension. All appeals will be reviewed by a committee.

**Additional Information**

For additional information, please see the Jones Graduate School of Business website: https://business.rice.edu/

**Opportunities for the MBA Degree Programs**

**Independent Study**

**Minimum Hours Requirement**

Each credit of independent study should contain approximately as much time content as a one-credit course at Jones Graduate School of Business, which is 12 hours of class time, plus an average of at least 24–36 outside-class hours, for a minimum total of 36–48 hours of work. Independent study projects can be accommodated in increments of 1.0, 1.5, 2.0, or 3.0 credit hours; 3.0 credit independent study projects are rarely approved. Occasionally, a group independent study project may arise, though most independent studies are undertaken by individual students.

The number of credits for an independent study must be determined at the beginning of a project. Increases to the number of project credit hours after the project overview has been filed with the Jones Graduate School of Business associate registrar must be approved by the Academic Standards Committee. The committee will rely on input from sponsoring faculty in making its decision about ex post credit increases. Requests to increase the number of project credit hours must be made before the end of the second week of classes in the term in which the project begins.

**Restrictions**

No student may take more than three credit hours of independent study during the course of the MBA program without the approval of the Academic Standards Committee. If an independent study is proposed
that would cause a student to exceed the 3.0 credit limit, the Academic Standards Committee will select two faculty members, other than the faculty member who will supervise the project, within the area most closely related to the study’s academic content to review and approve the study. Independent study exceeding 3.0 credits in total should consider current policies restricting use of independent study as well as the incremental value of additional independent study in light of past independent studies. If the study does not align with any of the Jones Graduate School of Business academic groups, the Academic Standards Committee will perform the review and make the final approval decision.

Independent study projects are for academic credit, not for hire. Students may not earn credit for paid work.

**Faculty Sponsorship**

Independent study projects normally are sponsored only by full-time Jones Graduate School of Business faculty; faculty typically sponsor projects only in their area of expertise. Students wanting sponsorship by a part-time faculty member must submit a project overview to the Academic Standards Committee and obtain the committee’s approval before the term in which the project is to begin.

**Common Requirements**

The goal of independent study projects is to advance or deepen a student’s knowledge or competency in a business discipline or activity.

To facilitate these goals, independent study projects generally fall into two broad categories:

1. directed reading and study resulting in a research paper, or
2. an experiential or hands-on project resulting in an outcome such as an empirical analysis with an executive summary of the “deliverable.”

While the content of individual independent study projects are at the discretion of a student and the sponsoring faculty member, to ensure relatively equal workloads per unit of independent study credit and some common requirements across independent study projects, students and/or sponsoring faculty should:

1. Prepare and submit to the Jones Graduate School of Business associate registrar an overview of the independent study project with number of project credits, anticipated final results, and a broad timeline of anticipated project milestones.
2. Meet to discuss the project, after the initial agreement on the project scope, at least once every two to three weeks.
3. Prepare a final paper (in the case of directed reading and research projects) or complete a concrete deliverable (for example, computer program, survey results, empirical analyses, etc.) together with an executive summary of the project (in the case of experiential projects).
4. File a copy of each student’s final paper, or executive summary, with the Jones Graduate School of Business associate registrar.

**Applications**

Independent study applications are available for interested students on Campus Groups. Completed independent study applications must be approved by the senior associate dean of academic affairs. Completed and approved applications are due to the Jones Graduate School of Business associate registrar by the first week of the term in which the project will be completed. The student will be registered for MGMT 700/MGMT 800 independent study for the appropriate credit amount, only when the appropriate permissions have been obtained.

**Additional Information**

For additional information, please see the Jones Graduate School of Business website: [https://business.rice.edu/](https://business.rice.edu/)

**Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Entrepreneurship**

**Program Learning Outcomes for the MBA Degree**

Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

**Requirements for the MBA Degree, Full-Time Program**

The MBA degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the full-time MBA degree program must complete:

- A minimum of 60 credit hours to satisfy degree requirements.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A Global Field Experience (during the first year of enrollment in the degree program).
- A maximum of 6 credit hours from graduate-level coursework as transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab. Information regarding Exchange Program transfer credit can be found in the Student Handbook under Campus Groups.
- A minimum overall GPA of 3.00 or higher in all Rice coursework.
- A minimum overall GPA of 3.00 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree with a minimum grade of C (2.00 grade points) in each course.

Students who register for a standard course load of 9-18 credit hours per semester are considered full-time students. All registration and elective selection via add/drop is completed online through ESTHER ([https://esther.rice.edu/](https://esther.rice.edu/)). It is the responsibility of the student to monitor and maintain his or her schedule and academic record.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into
Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/gradeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

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<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<td>Total Credit Hours Required for the MBA Degree, Full-Time Program</td>
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### Degree Requirements

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<td>MGMT 502</td>
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<td>MGMT 510</td>
<td>ORGANIZATIONAL BEHAVIOR</td>
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<td>MGMT 512</td>
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<td>MGMT 540</td>
<td>MANAGERIAL ECONOMICS</td>
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<td>MGMT 543</td>
<td>FINANCE</td>
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<tr>
<td>MGMT 560</td>
<td>CORPORATE SOCIAL RESPONSIBILITY</td>
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<tr>
<td>MGMT 570</td>
<td>COMPETITIVE AND INDUSTRY ANALYSIS</td>
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<tr>
<td>MGMT 571</td>
<td>STRATEGY FORMULATION AND IMPLEMENTATION</td>
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<tr>
<td>MGMT 574</td>
<td>OPERATIONS MANAGEMENT</td>
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<tr>
<td>MGMT 580</td>
<td>MARKETING</td>
<td>3</td>
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<tr>
<td>MGMT 594</td>
<td>STRATEGIC BUSINESS COMMUNICATION I*</td>
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<tr>
<td>MGMT 595</td>
<td>DATA ANALYSIS I</td>
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<tr>
<td>MGMT 596</td>
<td>STRATEGIC BUSINESS COMMUNICATION II*</td>
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<td>DATA ANALYSIS II</td>
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<td>MGMT 710</td>
<td>LEADERSHIP ILE</td>
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<td>MGMT 711</td>
<td>NEGOTIATIONS ILE</td>
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<tr>
<td>MGMT 789</td>
<td>GLOBAL FIELD EXPERIENCE 3</td>
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</table>

**Core Requirements**

**Elective Requirements**

Select an additional 27-30 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 60 total credit hours.

Total Credit Hours: 60

### Footnotes and Additional Information

1. The first year of the program is primarily dedicated to core courses in the basic functional areas of business.
2. MGMT 594, MGMT 596, MGMT 710, and MGMT 711 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade. As S/U courses, they do not apply to the requirement of a minimum grade of C (2.00 grade points) in each required course.
3. Students participate in a required global field experience during the first year of enrollment in the degree program. Additional costs apply towards this global experience.
4. The custom core courses are taken during the second semester of the first year.
5. To fulfill the remaining requirements for the full-time MBA degree program, students must complete an additional 27-30 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 60 total credit hours. (MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.) Students take two elective courses during the spring semester of the first year. The second year of the program is dedicated entirely to elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. If students wish to apply courses that are offered outside of the Jones Graduate School of Business (MGMP, MGMT, or MICO course offerings), the student must obtain permission from the Jones Graduate School associate registrar. Electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.
6. Students in the coordinated MBA/Master of Science degree from the PSM (professional science master’s) program or in the coordinated MBA/Master of Engineering degree program must complete the Core Requirements, Global Field Experience, and Custom Core Requirements as listed above for the full-time MBA degree program. For students in those coordinated programs, the Elective Requirements are 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach the total of 45 credit hours. (MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.) The second year of the program is dedicated entirely to MBA elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. MBA electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.

### Major Concentration: Entrepreneurship

The major concentration in Entrepreneurship provides students a framework for being an entrepreneur. The required courses equip students with the tools and processes for starting a business. The remaining courses allow students to select specific entrepreneurial topics suited to their objectives.

Students pursuing the major concentration in Entrepreneurship must complete:

- A minimum of 12 credit hours as listed below to satisfy major concentration requirements

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<tr>
<td>MGMP 626</td>
<td>FINANCING THE STARTUP VENTURE</td>
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### Experiential Learning

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</table>
Select a minimum of 1.5 credit hours from the following: 1.5

- MGMT 734 TECHNOLOGY ENTREPRENEURSHIP
- MGMT 740 STUDENT VENTURE FUND: EVALUATING STARTUP INVESTMENT OPPORTUNITIES
- MGMT 760 E-LAB: VENTURE CAPITAL
- MGMT 761 E-LAB: ENTERPRISE ACQUISITION
- MGMT 762 E-LAB: NEW ENTERPRISE
- MGMT 766 HEALTHCARE INNOVATION AND ENTREPRENEURSHIP LAB

Elective Requirements
Select 6 credit hours from the following: 6

- MGMT 613 SYSTEMS THINKING IN INNOVATION AND ENTREPRENEURSHIP
- MGMT 623 EARLY DEVELOPMENT AND ENTREPRENEURSHIP IN A BIOTECH/ MEDTECH STARTUP
- MGMT 625 DESIGN THINKING
- MGMT 627 ENTERPRISE ACQUISITION
- MGMT 633 ROLES OF PHYSICIANS, SCIENTISTS, ENGINEERS AND MBA’S IN HIGH-TECH STARTUPS
- MGMT 637 DILEMMAS IN FOUNDING NEW VENTURES
- MGMT 641 ENTREPRENEURIAL STRATEGY
- MGMT 676 SOCIAL ENTREPRENEURSHIP
- MGMT 724 SOCIAL ENTREPRENEURSHIP – PRACTICAL BUSINESS PLANNING
- MGMT 734 TECHNOLOGY ENTREPRENEURSHIP
- MGMT 799 HEALTHCARE INNOVATION AND ENTREPRENEURSHIP
- MGMT 833 STRATEGY IN TECHNOLOGY ECOSYSTEMS

Total Credit Hours 12

Footnotes and Additional Information

* The courses listed are approved to satisfy the requirements for the Entrepreneurship concentration for the current academic year only. Courses not on this official list may be substituted upon approval of the Jones Graduate School of Business Associate Registrar. Students and their academic advisors should identify and clearly document the courses to be taken with the Jones Graduate School of Business Associate Registrar.

1 MGMT 761, MGMT 762, and MGMT 766 are taken for a Satisfactory/ Unsatisfactory grade and must be completed with a Satisfactory grade. As S/U courses, they do not apply to the requirement of a minimum grade of C (2.00 grade points) in each required course.

Academic and Professional Standards

Students must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the MBA program, all students agree to be governed by the standards and procedures for dismissal or disciplinary action stated below.

Academic Standards

A minimum overall grade point average of 3.00 (B) is required for graduation. All courses taken for the MBA degree (including approved courses taken at the university, but outside the JGSB) are counted in the overall grade point average calculation.

Students with an overall grade point average lower than 3.00 at the end of any semester will be notified of academic standing. Students not meeting the 3.00 requirement will be provided specific instruction and guidance on the next steps specific to their academic situation. In some cases, students may submit an appeal to the JGSB Academic Standards Committee, requesting to be placed on academic probation. The committee reviews all academic cases, and may consult the dean’s office for counsel and/or suggestions on proposed handling of the case. The committee will decide, based on the circumstances of the appeal, whether the student may require studies on academic probation; to be academically suspended for one semester or an academic year; or is to be dismissed from the MBA program.

Students proposing to return after a period of academic suspension must follow the appropriate procedures outlined in the General Announcements by the Office of Graduate and Postdoctoral Studies to receive permission to be readmitted. If permitted to return, the student will pay the current rate of tuition, based upon the class of students s/he is joining.

Only courses in which a grade of C or above is earned will be counted for credit toward graduation. If students receive a grade below C in a course required for graduation, they must repeat the course. If students receive a grade lower than C in an elective course, they need not repeat the specific course, but they must make up the credit hours. If the required course is not offered again prior to graduation, the student will be permitted to take the course the following academic year, but will be charged the current pro-rated tuition for the program in which the additional coursework is completed.

Students on academic probation must complete all future courses with a grade of C or above and may be considered candidates for student offices by permission only. Students are removed from probation only upon achieving an overall grade point average of at least 3.00.

JGSB students may not take courses pass/fail to count toward their degree requirements. JGSB students may audit courses with departmental and professor approval. The courses will not count toward the MBA, but will appear on the transcript.

Professional Standards

MBA students are held to the highest standards of professional conduct expected of managers—standards substantially exceeding those expected of them simply as students. Students may be dismissed or suspended for failure to meet professional standards, as defined in the University Code of Conduct (p. 82). The dean may place a student on disciplinary probation for unacceptable conduct, giving oral and written notice that future misconduct will lead to filing specific charges. This probationary notice, however, is not required as a precondition for filing specific charges.

MBA Admission Requirements

Applicants to the MBA programs must submit scores on the Graduate Management Admission Test (GMAT) or the Graduate Record Examination (GRE). International applicants, who did not earn an undergraduate degree from an institution where the primary language of instruction was English must submit a valid score report from either TOEFL, PTE, or IELTS. Admission to the MBA programs is open to students regardless of their undergraduate major, but it is highly selective and limited to those who have performed with distinction in their previous academic work and on the GMAT or GRE.


Class Attendance Policy

Students are expected to be in class on the first day of each term. The instructor reserves the right to exclude a student from their course who is absent on the first day. Students should refer to the specific attendance policy for each program. This information can be found in the Jones Graduate School of Business Student Handbook, which is referenced below. For special circumstances, students should see the Director of Advising in the Student Program Office and the instructor.

Guidelines for Appealing Academic Dismissal

The Process

A student who wishes to appeal a dismissal should address the following issues in a letter to the Academic Standards Committee. The student must send the letter to the chair of the Academic Standards Committee.

1. What circumstances led to your academic performance last semester and to what degree were those circumstances beyond your control?
2. If your performance in a particular course(s) last semester was below par, describe any circumstances specific to that course that explain your performance.
3. Do you expect the circumstances that created the problems for you last semester to change next semester? If so, how?

Students may include any additional information they deem relevant in the appeal letter.

Timing

If the student intends to appeal, the letter to the committee must be filed within one week after receiving a dismissal letter. If a student plans to appeal, he/she should continue to attend classes. It is important to keep up with studies during the appeal process. If the appeal is accepted, the student may continue progress towards the completion of their degree.

Appeals

Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.

Confidentiality

The Family Educational Rights and Privacy Act of 1974 and amendments govern the records of actions related to appeals.

Grade Appeal Process

Once a course grade has been assigned by an instructor, it is generally considered final and is rarely changed for any reason other than calculation or transcription errors. The procedure below outlines the process by which a student may appeal a course grade.

1. The student should first pursue any grading question with the instructor following the formal or informal process the instructor has outlined for the course.
2. If the matter is not resolved in step 1 above, the student must file a written appeal to the instructor and send a copy to the senior associate dean of degree programs. This written appeal must be filed no later than two weeks after the final grade for a course was assigned.
3. The instructor must schedule a meeting with the student within two weeks of receiving the written appeal to further discuss the appeal with the student. Notice of the appeal time and date will be provided by the instructor to the senior associate dean of degree programs.
4. If step 3 does not resolve the issue to the satisfaction of both parties, the student may appeal to the Academic Standards Committee by sending a written notice describing the grounds for the appeal within two weeks of the date of the scheduled meeting in step 3.
5. The Academic Standards Committee will seek out information on the appeal from the instructor and the student and, at its discretion, hold a hearing to further consider the matter. The decision of the Academic Standards Committee will be rendered within 4 weeks of receiving a written notice of appeal (step 4).
6. Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.
7. In the event that the protested grade is necessary for the student to graduate, an accelerated schedule will be followed.

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MBA Elective Course Add/Drop Policy and Procedures

Due to the unique term schedule followed by the Jones Graduate School of Business MBA programs, MBA students have special procedures they must follow to make schedule changes. The Jones Graduate School of Business Registrar Department administers an add/drop policy which allows students to add/drop elective courses at various times throughout the semester. For all elective courses, student may not add/drop a course after the deadline for the appropriate term.

Withdrawal Policy

A Jones Graduate School of Business student, participating in any offered program, may voluntarily withdraw from school at any time. Upon withdrawal, Rice University applies a sliding scale to tuition, which is noted in the university’s Academic Calendar posted on the Rice Office of the Registrar website (https://registrar.rice.edu/calendars/).

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Generally, the Jones Graduate School of Business adheres to the academic regulations of Rice University. However, the Jones Graduate School of Business MBA program has unique policies and procedures that vary from the Office of Graduate and Postdoctoral Studies regarding, but not limited to, leave of absence, withdrawals and readmission, add/drop, and academic dismissal. A copy of the handbook is available on Campus Groups.

Financial Aid

Jones Graduate School of Business scholarships are awarded at the point of admission and are based on the merit of the application. Financial assistance is generally awarded one academic year at a time. Continuation of assistance depends on Satisfactory Academic Progress (SAP) in accordance with Academic and Professional Standards of performance, professional behavior, and is subject to the availability of funds. Academic or disciplinary probation, suspension, or general failure to maintain academic pace will result in the removal of all forms of financial assistance (i.e. scholarship, employment, Federal/State student loans, etc.). Students have the right to appeal the suspension. All appeals will be reviewed by a committee.

Additional Information

For additional information, please see the Jones Graduate School of Business website: https://business.rice.edu/
Opportunities for the MBA Degree Programs

Independent Study

Minimum Hours Requirement
Each credit of independent study should contain approximately as much time content as a one-credit course at Jones Graduate School of Business, which is 12 hours of class time, plus an average of at least 24–36 outside-class hours, for a minimum total of 36–48 hours of work. Independent study projects can be accommodated in increments of 1.0, 1.5, 2.0, or 3.0 credit hours; 3.0 credit independent study projects are rarely approved. Occasionally, a group independent study project may arise, though most independent studies are undertaken by individual students.

The number of credits for an independent study must be determined at the beginning of a project. Increases to the number of project credit hours after the project overview has been filed with the Jones Graduate School of Business associate registrar must be approved by the Academic Standards Committee. The committee will rely on input from sponsoring faculty in making its decision about ex post credit increases. Requests to increase the number of project credit hours must be made before the end of the second week of classes in the term in which the project begins.

Restrictions
No student may take more than three credit hours of independent study during the course of the MBA program without the approval of the Academic Standards Committee. If an independent study is proposed that would cause a student to exceed the 3.0 credit limit, the Academic Standards Committee will select two faculty members, other than the faculty member who will supervise the project, within the area most closely related to the study’s academic content to review and approve the study. Independent study exceeding 3.0 credits in total should consider current policies restricting use of independent study as well as the incremental value of additional independent study in light of past independent studies. If the study does not align with any of the Jones Graduate School of Business academic groups, the Academic Standards Committee will perform the review and make the final approval decision.

Independent study projects are for academic credit, not for hire. Students may not earn credit for paid work.

Faculty Sponsorship
Independent study projects normally are sponsored only by full-time Jones Graduate School of Business faculty; faculty typically sponsor projects only in their area of expertise. Students wanting sponsorship by a part-time faculty member must submit a project overview to the Academic Standards Committee and obtain the committee’s approval before the term in which the project is to begin.

Common Requirements
The goal of independent study projects is to advance or deepen a student’s knowledge or competency in a business discipline or activity.

To facilitate these goals, independent study projects generally fall into two broad categories:

1. directed reading and study resulting in a research paper, or
2. an experiential or hands-on project resulting in an outcome such as an empirical analysis with an executive summary of the “deliverable.”

While the content of individual independent study projects are at the discretion of a student and the sponsoring faculty member, to ensure relatively equal workloads per unit of independent study credit and some common requirements across independent study projects, students and/or sponsoring faculty should:

1. Prepare and submit to the Jones Graduate School of Business associate registrar an overview of the independent study project with number of project credits, anticipated final results, and a broad timeline of anticipated project milestones.
2. Meet to discuss the project, after the initial agreement on the project scope, at least once every two to three weeks.
3. Prepare a final paper (in the case of directed reading and research projects) or complete a concrete deliverable (for example, computer program, survey results, empirical analyses, etc.) together with an executive summary of the project (in the case of experiential projects).
4. File a copy of each student’s final paper, or executive summary, with the Jones Graduate School of Business associate registrar.

Applications
Independent study applications are available for interested students on Campus Groups. Completed independent study applications must be approved by the senior associate dean of academic affairs. Completed and approved applications are due to the Jones Graduate School of Business associate registrar by the first week of the term in which the project will be completed. The student will be registered for MGMT 700/MGMT 800 independent study for the appropriate credit amount, only when the appropriate permissions have been obtained.

Additional Information
For additional information, please see the Jones Graduate School of Business website: https://business.rice.edu/

Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Finance Program Learning Outcomes for the MBA Degree

Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MBA Degree, Full-Time Program

The MBA degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the full-time MBA degree program must complete:
• A minimum of 60 credit hours to satisfy degree requirements.
• A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
• A Global Field Experience (during the first year of enrollment in the degree program).
• A maximum of 6 credit hours from graduate-level coursework as transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab. Information regarding Exchange Program transfer credit can be found in the Student Handbook under Campus Groups.
• A minimum overall GPA of 3.00 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree with a minimum grade of C (2.00 grade points) in each course.

Students who register for a standard course load of 9-18 credit hours per semester are considered full-time students. All registration and elective selection via add/drop is completed online through ESTHER (https://esther.rice.edu/). It is the responsibility of the student to monitor and maintain his or her schedule and academic record.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MBA Degree, Full-Time Program</td>
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Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Requirements</td>
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<td></td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1 The first year of the program is primarily dedicated to core courses in the basic functional areas of business.
2 MGMT 594, MGMT 596, MGMT 710, and MGMT 711 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade. As S/U courses, they do not apply to the requirement of a minimum grade of C (2.00 grade points) in each required course.
3 Students participate in a required global field experience during the first year of enrollment in the degree program. Additional costs apply towards this global experience.
4 The custom core courses are taken during the second semester of the first year.
5 To fulfill the remaining requirements for the full-time MBA degree program, students must complete an additional 27-30 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 60 total credit hours. (MGMP, MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.) Students take two elective courses during the spring semester of the first year. The second year of the program is dedicated entirely to elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. If students wish to apply courses that are offered outside of the Jones Graduate School of Business (MGMP, MGMT, or MICO course offerings), the student must obtain permission from the Jones Graduate School associate registrar. Electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.
Students in the coordinated MBA/Master of Science degree from the PSM (professional science master’s) program or in the coordinated MBA/Master of Engineering degree program must complete the Core Requirements, Global Field Experience, and Custom Core Requirements as listed above for the full-time MBA degree program. For students in those coordinated programs, the Elective Requirements are 12-15 credit hours from departmental (MGMR, MGMT, or MICO) course offerings at the 500-level or above to reach the total of 45 credit hours. (MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.) The second year of the program is dedicated entirely to MBA elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. MBA electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.

**Major Concentration: Finance**

The major concentration in Finance provides students with a broad foundation in financial management principles and an opportunity for further specialization. Students are required to complete the primary finance electives in the MBA program and Financial Statement Analysis. Students supplement these foundational courses with at least two specialized courses from a list of approved offerings.

Students pursuing the major concentration in Finance must complete:

- A minimum of 12-14 credit hours as listed below to satisfy major concentration requirements*

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
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<tr>
<td>MGMT 601</td>
<td>FINANCIAL STATEMENT ANALYSIS</td>
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<tr>
<td>MGMT 642</td>
<td>FUTURES AND OPTIONS I</td>
<td>1.5</td>
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<tr>
<td>MGMT 645</td>
<td>PORTFOLIO MANAGEMENT</td>
<td>1.5</td>
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<tr>
<td>MGMT 646</td>
<td>CORPORATE INVESTMENT POLICY</td>
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<tr>
<td>MGMT 648</td>
<td>APPLIED FINANCE</td>
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</table>

**Elective Requirements**

Select 2 courses from the following: 3-5

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGMT 630</td>
<td>FINANCIAL MARKETS AND INSTRUMENTS</td>
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<tr>
<td>MGMT 638</td>
<td>QUANTITATIVE INVESTMENT STRATEGIES</td>
<td></td>
</tr>
<tr>
<td>MGMT 643</td>
<td>EQUITY PRACTICUM I - WRIGHT FUND ¹</td>
<td></td>
</tr>
<tr>
<td>MGMT 644</td>
<td>EQUITY PRACTICUM II - WRIGHT FUND ¹</td>
<td></td>
</tr>
<tr>
<td>MGMT 647</td>
<td>CORPORATE FINANCIAL POLICY</td>
<td></td>
</tr>
<tr>
<td>MGMT 650</td>
<td>FUTURES AND OPTIONS II</td>
<td></td>
</tr>
<tr>
<td>MGMT 651</td>
<td>FIXED INCOME MANAGEMENT</td>
<td></td>
</tr>
<tr>
<td>MGMT 652</td>
<td>MERGERS AND ACQUISITIONS</td>
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<tr>
<td>MGMT 656</td>
<td>ENERGY DERIVATIVES</td>
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<tr>
<td>MGMT 657</td>
<td>INTERNATIONAL FINANCE</td>
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<tr>
<td>MGMT 658</td>
<td>APPLIED RISK MANAGEMENT</td>
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<tr>
<td>MGMT 659</td>
<td>REAL ESTATE FINANCE: ASSET VALUATION</td>
<td></td>
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<tr>
<td>MGMT 674</td>
<td>REAL ESTATE FINANCE: SECURITIES</td>
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<tr>
<td>MGMT 726</td>
<td>FIXED INCOME PRACTICUM I - RICE FI FUND ¹</td>
<td></td>
</tr>
<tr>
<td>MGMT 727</td>
<td>FIXED INCOME PRACTICUM II - RICE FI FUND ¹</td>
<td></td>
</tr>
</tbody>
</table>

**Footnotes and Additional Information**

- The courses listed are approved to satisfy the requirements for the Finance concentration for the current academic year only. Courses not on this official list may be substituted upon approval of the Jones Graduate School of Business Associate Registrar. Students and their academic advisors should identify and clearly document the courses to be taken with the Jones Graduate School of Business Associate Registrar.

1 Only 3 credit hours from an investment practicum course will count as elective hours toward the major concentration in finance. These 3 credit hours may come from either a) three of the four credit hours from the Wright Fund curriculum (MGMT 643 plus one credit hour from MGMT 644) or b) the two 1.5 credit hour courses in the Zions Portfolio curriculum (MGMT 726 and MGMT 727).

**Policies for the MBA Degree Programs**

**MBA Admission Requirements**

All applicants to the MBA program must complete an online application. In addition, they must have or provide:

- Bachelor’s Degree or equivalent from an accredited undergraduate institution
- Submit scores on the Graduate Management Admission Test (GMAT) or the Graduate Record Examination (GRE). International applicants, who did not earn an undergraduate degree from an institution where the primary language of instruction was English must submit a valid score report from either TOEFL, PTE, or IELTS. Admission to the MBA programs is open to students regardless of their undergraduate major, but it is highly selective and limited to those who have performed with distinction in their previous academic work and on the GMAT or GRE.

**Academic and Professional Standards**

Students must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the MBA program, all students agree to be governed by the standards and procedures for dismissal or disciplinary action stated below.

**Academic Standards**

A minimum overall grade point average of 3.00 (B) is required for graduation. All courses taken for the MBA degree (including approved courses taken at the university, but outside the JGSB) are counted in the overall grade point average calculation.

Students with an overall grade point average lower than 3.00 at the end of any semester will be notified of academic standing. Students not meeting the 3.00 requirement will be provided specific instruction and guidance on the next steps specific to their academic situation. In some cases, students may submit an appeal to the JGSB Academic Standards Committee, requesting to be placed on academic probation. The committee reviews all academic cases, and may consult the dean’s office for counsel and/or suggestions on proposed handling of the case. The committee will decide, based on the circumstances of the appeal,
whether the student may resume studies on academic probation; is to be academically suspended for one semester or an academic year; or is to be dismissed from the MBA program.

Students proposing to return after a period of academic suspension must follow the appropriate procedures outlined in the General Announcements by the Office of Graduate and Postdoctoral Studies to receive permission to be readmitted. If permitted to return, the student will pay the current rate of tuition, based upon the class of students s/he is joining.

Only courses in which a grade of C or above is earned will be counted for credit toward graduation. If students receive a grade below C in a course required for graduation, they must repeat the course. If students receive a grade lower than C in an elective course, they need not repeat the specific course, but they must make up the credit hours. If the required course is not offered again prior to graduation, the student will be permitted to take the course the following academic year, but will be charged the current pro-rated tuition for the program in which the additional coursework is completed.

Students on academic probation must complete all future courses with a grade of C or above and may be considered candidates for student offices by permission only. Students are removed from probation only upon achieving an overall grade point average of at least 3.00.

JGSB students may not take courses pass/fail to count toward their degree requirements. JGSB students may audit courses with departmental and professor approval. The courses will not count toward the MBA, but will appear on the transcript.

Professional Standards
MBA students are held to the highest standards of professional conduct expected of managers—standards substantially exceeding those expected of them simply as students. Students may be dismissed or suspended for failure to meet professional standards, as defined in the University Code of Conduct (p. 82). The dean may place a student on disciplinary probation for unacceptable conduct, giving oral and written notice that future misconduct will lead to filing specific charges. This probationary notice, however, is not required as a precondition for filing specific charges.

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Additional Information

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Opportunities for the MBA Degree Programs

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Minimum Hours Requirement

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Independent study applications are available for interested students on Campus Groups. Completed independent study applications must be approved by the senior associate dean of academic affairs. Completed and approved applications are due at the Jones Graduate School of Business associate registrar by the first week of the term in which the project will be completed. The student will be registered for MGMT 700/MGMT 800 independent study for the appropriate credit amount, only when the appropriate permissions have been obtained.

Additional Information
For additional information, please see the Jones Graduate School of Business website: https://business.rice.edu/

Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Health Care

Program Learning Outcomes for the MBA Degree

Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MBA Degree, Full-Time Program

The MBA degree is a non-thesis master’s degree. For general university requirements, see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the full-time MBA degree program must complete:

- A minimum of 60 credit hours to satisfy degree requirements.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A Global Field Experience (during the first year of enrollment in the degree program).
- A maximum of 6 credit hours from graduate-level coursework as transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab. Information regarding Exchange Program transfer credit can be found in the Student Handbook under Campus Groups.
- A minimum overall GPA of 3.00 or higher in all Rice coursework.
- A minimum overall GPA of 3.00 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree with a minimum grade of C (2.00 grade points) in each course.

Students who register for a standard course load of 9-18 credit hours per semester are considered full-time students. All registration and elective selection via add/drop is completed online through ESTHER (https://esther.rice.edu). It is the responsibility of the student to monitor and maintain his or her schedule and academic record.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degeworks/officialcertifier). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<th>Code</th>
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Degree Requirements

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<th>Code</th>
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<td>MGMT 501</td>
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<td>MGMT 570</td>
<td>COMPETITIVE AND INDUSTRY ANALYSIS</td>
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<td>MGMT 571</td>
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<td>DATA ANALYSIS I</td>
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<td>MGMT 596</td>
<td>STRATEGIC BUSINESS COMMUNICATION II</td>
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<td>MGMT 541</td>
<td>ECONOMIC ENVIRONMENT OF BUSINESS</td>
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<td>MGMT 561</td>
<td>BUSINESS-GOVERNMENT RELATIONS</td>
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<td>MGMT 599</td>
<td>ACTION LEARNING PROJECT</td>
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<td>MGMT 621</td>
<td>THE NEW ENTERPRISE</td>
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Program Transfer Credit

Program transfer credit can be found in the Student Handbook under Program Transfer Credit (p. 55). Students pursuing the MBA degree program can transfer up to 6 credit hours, only when the appropriate permissions have been obtained.
Students pursuing the major concentration in Health Care must complete:

- A minimum of 12 credit hours as listed below to satisfy the major concentration requirements*

### Code Title Credit Hours

**Core Requirement**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>MGMT 678</td>
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**Elective Requirements**

Select a minimum of 10.5 credit hours from the following:

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<td>MGMT 623</td>
<td>EARLY DEVELOPMENT AND ENTREPRENEURSHIP IN A BIOTECH/MEDTECH STARTUP</td>
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<tr>
<td>MGMT 631</td>
<td>HEALTH INSURANCE IN THE U.S.: THE ESSENTIALS</td>
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<td>MGMT 633</td>
<td>ROLES OF PHYSICIANS, SCIENTISTS, ENGINEERS AND MBA’S IN HIGH-TECH STARTUPS</td>
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<td>MGMT 691</td>
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<td>MGMT 699</td>
<td>CAPITAL INVESTMENT IN HEALTHCARE</td>
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<td>MGMT 712</td>
<td>PROCESS MANAGEMENT AND QUALITY IMPROVEMENT</td>
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<td>MGMT 744</td>
<td>SERVICES OPERATIONS</td>
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<td>MGMT 751</td>
<td>ECONOMICS OF HEALTH CARE SECTORS</td>
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<tr>
<td>MGMT 753</td>
<td>OPERATIONS LAB: HEALTH CARE 1 or MGMT 76:HEALTHCARE INNOVATION AND ENTREPRENEURSHIP LAB</td>
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<td>MGMT 778</td>
<td>CUSTOMER EXPERIENCE MANAGEMENT</td>
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<tr>
<td>MGMT 799</td>
<td>HEALTHCARE INNOVATION AND ENTREPRENEURSHIP</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours 12

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**Footnotes and Additional Information**

* The courses listed are approved to satisfy the requirements for the Health Care concentration for the current academic year only. Courses not on this official list may be substituted upon approval of the Jones Graduate School of Business Associate Registrar. Students and their academic advisors should identify and clearly document the courses to be taken with the Jones Graduate School of Business Associate Registrar.

1 MGMT 776 is taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade. As a S/U course, it does not apply to the requirement of a minimum grade of C (2.00 grade points) in each required course.

---

**Major Concentration: Health Care**

The focus of the major concentration in Health Care is to provide students with an understanding of how management principles are interpreted and applied in the different inter-locking sectors (providers, hospitals/small practices, payers, pharmaceutical, biotechnology) of the health care industry, and how the different dynamics in these sectors make it uniquely health care.
undergraduate degree from an institution where the primary language of instruction was English must submit a valid score report from either TOEFL, PTE, or IELTS. Admission to the MBA programs is open to students regardless of their undergraduate major, but it is highly selective and limited to those who have performed with distinction in their previous academic work and on the GMAT or GRE.

**Academic and Professional Standards**

Students must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the MBA program, all students agree to be governed by the standards and procedures for dismissal or disciplinary action stated below.

**Academic Standards**

A minimum overall grade point average of 3.00 (B) is required for graduation. All courses taken for the MBA degree (including approved courses taken at the university, but outside the JGSB) are counted in the overall grade point average calculation.

Students with an overall grade point average lower than 3.00 at the end of any semester will be notified of academic standing. Students not meeting the 3.00 requirement will be provided specific instruction and guidance on the next steps specific to their academic situation. In some cases, students may submit an appeal to the JGSB Academic Standards Committee, requesting to be placed on academic probation. The committee reviews all academic cases, and may consult the dean's office for counsel and/or suggestions on proposed handling of the case. The committee will decide, based on the circumstances of the appeal, whether the student may resume studies on academic probation; is to be academically suspended for one semester or an academic year; or is to be dismissed from the MBA program.

Students proposing to return after a period of academic suspension must follow the appropriate procedures outlined in the General Announcements by the Office of Graduate and Postdoctoral Studies to receive permission to be readmitted. If permitted to return, the student will pay the current rate of tuition, based upon the class of students s/he is joining.

Only courses in which a grade of C or above is earned will be counted toward graduation. If students receive a grade below C in a course required for graduation, they must repeat the course. If students receive a grade lower than C in an elective course, they need not repeat the specific course, but they must make up the credit hours. If the required course is not offered again prior to graduation, the student will be permitted to take the course the following academic year, but will be charged the current pro-rated tuition for the program in which the additional coursework is completed.

Students on academic probation must complete all future courses with a grade of C or above and may be considered candidates for student offices by permission only. Students are removed from probation only upon achieving an overall grade point average of at least 3.00.

JGSB students may not take courses pass/fail to count toward their degree requirements. JGSB students may audit courses with departmental and professor approval. The courses will not count toward the MBA, but will appear on the transcript.

**Professional Standards**

MBA students are held to the highest standards of professional conduct expected of managers—standards substantially exceeding those expected of them simply as students. Students may be dismissed or suspended for failure to meet professional standards, as defined in the University Code of Conduct (p. 82). The dean may place a student on disciplinary probation for unacceptable conduct, giving oral and written notice that future misconduct will lead to filing specific charges. This probationary notice, however, is not required as a precondition for filing specific charges.

**Class Attendance Policy**

Students are expected to be in class on the first day of each term. The instructor reserves the right to exclude a student from their course who is absent on the first day. Students should refer to the specific attendance policy for each program. This information can be found in the Jones Graduate School of Business Student Handbook, which is referenced below. For special circumstances, students should see the Director of Advising in the Student Program Office and the instructor.

**Guidelines for Appealing Academic Dismissal**

**The Process**

A student who wishes to appeal a dismissal should address the following issues in a letter to the Academic Standards Committee. The student must send the letter to the chair of the Academic Standards Committee.

1. What circumstances led to your academic performance last semester and to what degree were those circumstances beyond your control?
2. If your performance in a particular course(s) last semester was below par, describe any circumstances specific to that course that explain your performance.
3. Do you expect the circumstances that created the problems for you last semester to change next semester? If so, how?

Students may include any additional information they deem relevant in the appeal letter.

**Timing**

If the student intends to appeal, the letter to the committee must be filed within one week after receiving a dismissal letter. If a student plans to appeal, he/she should continue to attend classes. It is important to keep up with studies during the appeal process. If the appeal is accepted, the student may continue progress towards the completion of their degree.

**Appeals**

Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.

**Confidentiality**

The Family Educational Rights and Privacy Act of 1974 and amendments govern the records of actions related to appeals.

**Grade Appeal Process**

Once a course grade has been assigned by an instructor, it is generally considered final and is rarely changed for any reason other than calculation or transcription errors. The procedure below outlines the process by which a student may appeal a course grade.

1. The student should first pursue any grading question with the instructor following the formal or informal process the instructor has outlined for the course.
2. If the matter is not resolved in step 1 above, the student must file a written appeal to the instructor and send a copy to the senior associate dean of degree programs. This written appeal must be
filed no later than two weeks after the final grade for a course was assigned.

3. The instructor must schedule a meeting with the student within two weeks of receiving the written appeal to further discuss the appeal with the student. Notice of the appeal time and date will be provided by the instructor to the senior associate dean of degree programs.

4. If step 3 does not resolve the issue to the satisfaction of both parties, the student may appeal to the Academic Standards Committee by sending a written notice describing the grounds for the appeal within two weeks of the date of the scheduled meeting in step 3.

5. The Academic Standards Committee will seek out information on the appeal from the instructor and the student and, at its discretion, hold a hearing to further consider the matter. The decision of the Academic Standards Committee will be rendered within 4 weeks of receiving a written notice of appeal (step 4).

6. Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.

7. In the event that the protested grade is necessary for the student to graduate, an accelerated schedule will be followed.

The Family Educational Rights and Privacy Act of 1974 and amendments govern records of these actions.

MBA Elective Course Add/Drop Policy and Procedures
Due to the unique term schedule followed by the Jones Graduate School of Business MBA programs, MBA students have special procedures they must follow to make schedule changes. The Jones Graduate School of Business Registrar Department administers an add/drop policy which allows students to add/drop elective courses at various times throughout the semester. For all elective courses, student may not add/drop a course after the deadline for the appropriate term.

Withdrawal Policy
A Jones Graduate School of Business student, participating in any offered program, may voluntarily withdraw from school at any time. Upon withdrawal, Rice University applies a sliding scale to tuition, which is noted in the university’s Academic Calendar posted on the Rice Office of the Registrar website (https://registrar.rice.edu/calendars/).

Jones Graduate School of Business Student Handbook
Generally, the Jones Graduate School of Business adheres to the academic regulations of Rice University. However, the Jones Graduate School of Business MBA program has unique policies and procedures that vary from the Office of Graduate and Postdoctoral Studies regarding, but not limited to, leave of absence, withdrawals and readmission, add/drop, and academic dismissal. A copy of the handbook is available on Campus Groups.

Financial Aid
Jones Graduate School of Business scholarships are awarded at the point of admission and are based on the merit of the application. Financial assistance is generally awarded one academic year at a time. Continuation of assistance depends on Satisfactory Academic Progress (SAP) in accordance with Academic and Professional Standards of performance, professional behavior, and is subject to the availability of funds. Academic or disciplinary probation, suspension, or general failure to maintain academic pace will result in the removal of all forms of financial assistance (i.e. scholarship, employment, Federal/State student loans, etc.). Students have the right to appeal the suspension. All appeals will be reviewed by a committee.

Additional Information
For additional information, please see the Jones Graduate School of Business website: https://business.rice.edu/

Opportunities for the MBA Degree Programs
Independent Study
Minimum Hours Requirement
Each credit of independent study should contain approximately as much time content as a one-credit course at Jones Graduate School of Business, which is 12 hours of class time, plus an average of at least 24–36 outside-class hours, for a minimum total of 36–48 hours of work. Independent study projects can be accommodated in increments of 1.0, 1.5, 2.0, or 3.0 credit hours; 3.0 credit independent study projects are rarely approved. Occasionally, a group independent study project may arise, though most independent studies are undertaken by individual students.

The number of credits for an independent study must be determined at the beginning of a project. Increases to the number of project credit hours after the project overview has been filed with the Jones Graduate School of Business associate registrar must be approved by the Academic Standards Committee. The committee will rely on input from sponsoring faculty in making its decision about ex post credit increases. Requests to increase the number of project credit hours must be made before the end of the second week of classes in the term in which the project begins.

Restrictions
No student may take more than three credit hours of independent study during the course of the MBA program without the approval of the Academic Standards Committee. If an independent study is proposed that would cause a student to exceed the 3.0 credit limit, the Academic Standards Committee will select two faculty members, other than the faculty member who will supervise the project, within the area most closely related to the study’s academic content to review and approve the study. Independent study exceeding 3.0 credits in total should consider current policies restricting use of independent study as well as the incremental value of additional independent study in light of past independent studies. If the study does not align with any of the Jones Graduate School of Business academic groups, the Academic Standards Committee will perform the review and make the final approval decision.

Independent study projects are for academic credit, not for hire. Students may not earn credit for paid work.

Faculty Sponsorship
Independent study projects normally are sponsored only by full-time Jones Graduate School of Business faculty; faculty typically sponsor projects only in their area of expertise. Students wanting sponsorship by a part-time faculty member must submit a project overview to the Academic Standards Committee and obtain the committee’s approval before the term in which the project is to begin.

Common Requirements
The goal of independent study projects is to advance or deepen a student’s knowledge or competency in a business discipline or activity.
To facilitate these goals, independent study projects generally fall into two broad categories:

1. directed reading and study resulting in a research paper, or
2. an experiential or hands-on project resulting in an outcome such as an empirical analysis with an executive summary of the “deliverable.”

While the content of individual independent study projects are at the discretion of a student and the sponsoring faculty member, to ensure relatively equal workloads per unit of independent study credit and some common requirements across independent study projects, students and/or sponsoring faculty should:

1. Prepare and submit to the Jones Graduate School of Business associate registrar an overview of the independent study project with number of project credits, anticipated final results, and a broad timeline of anticipated project milestones.
2. Meet to discuss the project, after the initial agreement on the project scope, at least once every two to three weeks.
3. Prepare a final paper (in the case of directed reading and research projects) or complete a concrete deliverable (for example, computer program, survey results, empirical analyses, etc.) together with an executive summary of the project (in the case of experiential projects).
4. File a copy of each student’s final paper, or executive summary, with the Jones Graduate School of Business associate registrar.

Applications
Independent study applications are available for interested students on Campus Groups. Completed independent study applications must be approved by the senior associate dean of academic affairs. Completed and approved applications are due to the Jones Graduate School of Business associate registrar by the first week of the term in which the project will be completed. The student will be registered for MGMT 700/MGMT 800 independent study for the appropriate credit amount, only when the appropriate permissions have been obtained.

Additional Information
For additional information, please see the Jones Graduate School of Business website: https://business.rice.edu/

Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Marketing

Program Learning Outcomes for the MBA Degree

Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MBA Degree, Full-Time Program

The MBA degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the full-time MBA degree program must complete:

- A minimum of 60 credit hours to satisfy degree requirements.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A Global Field Experience (during the first year of enrollment in the degree program).
- A maximum of 6 credit hours from graduate-level coursework as transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab. Information regarding Exchange Program transfer credit can be found in the Student Handbook under Campus Groups.
- A minimum overall GPA of 3.00 or higher in all Rice coursework.
- A minimum overall GPA of 3.00 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree with a minimum grade of C (2.00 grade points) in each course.

Students who register for a standard course load of 9-18 credit hours per semester are considered full-time students. All registration and elective selection via add/drop is completed online through ESTHER (https://esther.rice.edu/). It is the responsibility of the student to monitor and maintain his or her schedule and academic record.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degrowekjs/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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Degree Requirements

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<td>MGMT 512</td>
<td>LEADING CHANGE</td>
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<tr>
<td>MGMT 543</td>
<td>FINANCE</td>
<td>3</td>
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</tbody>
</table>

2019-2020 General Announcements
PDF Generated 1/29/2020
The first year of the program is primarily dedicated to core courses in the basic functional areas of business.

Students participate in a required global field experience during the first year of enrollment in the degree program. Additional costs apply towards this global experience.

The custom core courses are taken during the second semester of the first year.

To fulfill the remaining requirements for the full-time MBA degree program, students must complete an additional 27-30 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 60 total credit hours. (MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.) Students take two elective courses during the spring semester of the first year. The second year of the program is dedicated entirely to elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. If students wish to apply courses that are offered outside of the Jones Graduate School of Business (MGMP, MGMT, or MICO course offerings), the student must obtain permission from the Jones Graduate School associate registrar. Electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.

Students in the coordinated MBA/Master of Science degree from the PSM (professional science master's) program or in the coordinated MBA/Master of Engineering degree program must complete the Core Requirements, Global Field Experience, and Custom Core Requirements as listed above for the full-time MBA degree program. For students in those coordinated programs, the Elective Requirements are 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach the total of 45 credit hours. (MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.) The second year of the program is dedicated entirely to MBA elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. MBA electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.

**Major Concentration: Marketing**

The major concentration in Marketing prepares students for careers in strategic marketing across a wide range of organizations, markets and industries. It provides critical knowledge for understanding and analyzing customers, and emphasizes the development of requisite quantitative and conceptual skills to contribute to the firm’s overall success. Among the career trajectories for which students will be prepared are product management, customer analytics and customer insights, and management consulting.

Students pursuing the major concentration in Marketing must complete:

- A minimum of 12 credit hours as listed below to satisfy the major concentration requirements*
Select a minimum of 3 credit hours from the following:

<table>
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<td>MGMT 681</td>
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<td>MGMT 682</td>
<td>PRICING STRATEGIES</td>
</tr>
<tr>
<td>MGMT 684</td>
<td>BRAND STRATEGY</td>
</tr>
<tr>
<td>MGMT 688</td>
<td>BUYER BEHAVIOR</td>
</tr>
<tr>
<td>MGMT 692</td>
<td>CUSTOMER RELATIONSHIP MANAGEMENT</td>
</tr>
<tr>
<td>MGMT 693</td>
<td>NEW PRODUCTS</td>
</tr>
<tr>
<td>MGMT 701</td>
<td>MARKETING EXPERIMENTATION</td>
</tr>
<tr>
<td>MGMT 778</td>
<td>CUSTOMER EXPERIENCE MANAGEMENT</td>
</tr>
</tbody>
</table>

Marketing Applications

Select a minimum of 1.5 credit hours from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGMT 708</td>
<td>PRICING STRATEGIES: OIL &amp; GAS INDUSTRY</td>
</tr>
<tr>
<td>MGMT 718</td>
<td>MARKETING BASED PROJECT ANALYSIS</td>
</tr>
<tr>
<td>MGMT 735</td>
<td>MARKETING LAB</td>
</tr>
<tr>
<td>MGMT 770</td>
<td>CONSULTATIVE SELLING</td>
</tr>
<tr>
<td>MGMT 771</td>
<td>DIGITAL MARKETING</td>
</tr>
</tbody>
</table>

Elective Requirements

Select 4.5 additional credit hours from the courses listed in any of the categories above.

Total Credit Hours 12

Footnotes and Additional Information

- The courses listed are approved to satisfy the requirements for the Marketing concentration for the current academic year only. Courses not on this official list may be substituted upon approval of the Jones Graduate School of Business Associate Registrar. Students and their academic advisors should identify and clearly document the courses to be taken with the Jones Graduate School of Business Associate Registrar.

Policies for the MBA Degree Programs

MBA Admission Requirements

Applicants to the MBA programs must submit scores on the Graduate Management Admission Test (GMAT) or the Graduate Record Examination (GRE). International applicants, who did not earn an undergraduate degree from an institution where the primary language of instruction was English must submit a valid score report from either TOEFL, PTE, or IELTS. Admission to the MBA programs is open to students regardless of their undergraduate major, but it is highly selective and limited to those who have performed with distinction in their previous academic work and on the GMAT or GRE.

Academic and Professional Standards

Students must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the MBA program, all students agree to be governed by the standards and procedures for dismissal or disciplinary action stated below.

Academic Standards

A minimum overall grade point average of 3.00 (B) is required for graduation. All courses taken for the MBA degree (including approved courses taken at the university, but outside the JGSB) are counted in the overall grade point average calculation.

Students with an overall grade point average lower than 3.00 at the end of any semester will be notified of academic standing. Students not meeting the 3.00 requirement will be provided specific instruction and guidance on the next steps specific to their academic situation.

In some cases, students may submit an appeal to the JGSB Academic Standards Committee, requesting to be placed on academic probation. The committee reviews all academic cases, and may consult the dean’s office for counsel and/or suggestions on proposed handling of the case. The committee will decide, based on the circumstances of the appeal, whether the student may resume studies on academic probation; is to be academically suspended for one semester or an academic year; or is to be dismissed from the MBA program.

Students proposing to return after a period of academic suspension must follow the appropriate procedures outlined in the General Announcements by the Office of Graduate and Postdoctoral Studies to receive permission to be readmitted. If permitted to return, the student will pay the current rate of tuition, based upon the class of students s/he is joining.

Only courses in which a grade of C or above is earned will be counted for credit toward graduation. If students receive a grade below C in a course required for graduation, they must repeat the course. If students receive a grade lower than C in an elective course, they need not repeat the specific course, but they must make up the credit hours. If the required course is not offered again prior to graduation, the student will be permitted to take the course the following academic year, but will be charged the current pro-rated tuition for the program in which the additional coursework is completed.

Students on academic probation must complete all future courses with a grade of C or above and may be considered candidates for student offices by permission only. Students are removed from probation only upon achieving an overall grade point average of at least 3.00.

JGSB students may not take courses pass/fail to count toward their degree requirements. JGSB students may audit courses with departmental and professor approval. The courses will not count toward the MBA, but will appear on the transcript.

Professional Standards

MBA students are held to the highest standards of professional conduct expected of managers—standards substantially exceeding those expected of them simply as students. Students may be dismissed or suspended for failure to meet professional standards, as defined in the University Code of Conduct (p. 82). The dean may place a student on disciplinary probation for unacceptable conduct, giving oral and written notice that future misconduct will lead to filing specific charges. This probationary notice, however, is not required as a precondition for filing specific charges.

Class Attendance Policy

Students are expected to be in class on the first day of each term. The instructor reserves the right to exclude a student from their course who is absent on the first day. Students should refer to the specific attendance policy for each program. This information can be found in the Jones Graduate School of Business Student Handbook, which is referenced below. For special circumstances, students should see the Director of Advising in the Student Program Office and the instructor.
Guidelines for Appealing Academic Dismissal

The Process
A student who wishes to appeal a dismissal should address the following issues in a letter to the Academic Standards Committee. The student must send the letter to the chair of the Academic Standards Committee.

1. What circumstances led to your academic performance last semester and to what degree were those circumstances beyond your control?
2. If your performance in a particular course(s) last semester was below par, describe any circumstances specific to that course that explain your performance.
3. Do you expect the circumstances that created the problems for you last semester to change next semester? If so, how?

Students may include any additional information they deem relevant in the appeal letter.

Timing
If the student intends to appeal, the letter to the committee must be filed within one week after receiving a dismissal letter. If a student plans to appeal, he/she should continue to attend classes. It is important to keep up with studies during the appeal process. If the appeal is accepted, the student may continue progress towards the completion of their degree.

Appeals
Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.

Confidentiality
The Family Educational Rights and Privacy Act of 1974 and amendments govern the records of actions related to appeals.

Grade Appeal Process
Once a course grade has been assigned by an instructor, it is generally considered final and is rarely changed for any reason other than calculation or transcription errors. The procedure below outlines the process by which a student may appeal a course grade.

1. The student should first pursue any grading question with the instructor following the formal or informal process the instructor has outlined for the course.
2. If the matter is not resolved in step 1 above, the student must file a written appeal to the instructor and send a copy to the senior associate dean of degree programs. This written appeal must be filed no later than two weeks after the final grade for a course was assigned.
3. The instructor must schedule a meeting with the student within two weeks of receiving the written appeal to further discuss the appeal with the student. Notice of the appeal time and date will be provided by the instructor to the senior associate dean of degree programs.
4. If step 3 does not resolve the issue to the satisfaction of both parties, the student may appeal to the Academic Standards Committee by sending a written notice describing the grounds for the appeal within two weeks of the date of the scheduled meeting in step 3.
5. The Academic Standards Committee will seek out information on the appeal from the instructor and the student and, at its discretion, hold a hearing to further consider the matter. The decision of the Academic Standards Committee will be rendered within 4 weeks of receiving a written notice of appeal (step 4).

6. Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.
7. In the event that the protested grade is necessary for the student to graduate, an accelerated schedule will be followed.

The Family Educational Rights and Privacy Act of 1974 and amendments govern records of these actions.

MBA Elective Course Add/Drop Policy and Procedures
Due to the unique term schedule followed by the Jones Graduate School of Business MBA programs, MBA students have special procedures they must follow to make schedule changes. The Jones Graduate School of Business Registrar Department administers an add/drop policy which allows students to add/drop elective courses at various times throughout the semester. For all elective courses, student may not add/drop a course after the deadline for the appropriate term.

Withdrawal Policy
A Jones Graduate School of Business student, participating in any offered program, may voluntarily withdraw from school at any time. Upon withdrawal, Rice University applies a sliding scale to tuition, which is noted in the university's Academic Calendar posted on the Rice Office of the Registrar website (https://registrar.rice.edu/calendars/).

Jones Graduate School of Business Student Handbook
Generally, the Jones Graduate School of Business adheres to the academic regulations of Rice University. However, the Jones Graduate School of Business MBA program has unique policies and procedures that vary from the Office of Graduate and Postdoctoral Studies regarding, but not limited to, leave of absence, withdrawals and readmission, add/drop, and academic dismissal. A copy of the handbook is available on Campus Groups.

Financial Aid
Jones Graduate School of Business scholarships are awarded at the point of admission and are based on the merit of the application. Financial assistance is generally awarded one academic year at a time. Continuation of assistance depends on Satisfactory Academic Progress (SAP) in accordance with Academic and Professional Standards of performance, professional behavior, and is subject to the availability of funds. Academic or disciplinary probation, suspension, or general failure to maintain academic pace will result in the removal of all forms of financial assistance (i.e. scholarship, employment, Federal/State student loans, etc.). Students have the right to appeal the suspension. All appeals will be reviewed by a committee.

Additional Information
For additional information, please see the Jones Graduate School of Business website: https://business.rice.edu/

Opportunities for the MBA Degree Programs

Independent Study
Minimum Hours Requirement
Each credit of independent study should contain approximately as much time content as a one-credit course at Jones Graduate School of Business, which is 12 hours of class time, plus an average of at least 24–36 outside-class hours, for a minimum total of 36–48 hours of work.
Independent study projects can be accommodated in increments of 1.0, 1.5, 2.0, or 3.0 credit hours; 3.0 credit independent study projects are rarely approved. Occasionally, a group independent study project may arise, though most independent studies are undertaken by individual students.

The number of credits for an independent study must be determined at the beginning of a project. Increases to the number of project credit hours after the project overview has been filed with the Jones Graduate School of Business associate registrar must be approved by the Academic Standards Committee. The committee will rely on input from sponsoring faculty in making its decision about ex post credit increases. Requests to increase the number of project credit hours must be made before the end of the second week of classes in the term in which the project begins.

Restrictions
No student may take more than three credit hours of independent study during the course of the MBA program without the approval of the Academic Standards Committee. If an independent study is proposed that would cause a student to exceed the 3.0 credit limit, the Academic Standards Committee will select two faculty members, other than the faculty member who will supervise the project, within the area most closely related to the study’s academic content to review and approve the study. Independent study exceeding 3.0 credits in total should consider current policies restricting use of independent study as well as the incremental value of additional independent study in light of past independent studies. If the study does not align with any of the Jones Graduate School of Business academic groups, the Academic Standards Committee will perform the review and make the final approval decision.

Independent study projects are for academic credit, not for hire. Students may not earn credit for paid work.

Faculty Sponsorship
Independent study projects normally are sponsored only by full-time Jones Graduate School of Business faculty; faculty typically sponsor projects only in their area of expertise. Students wanting sponsorship by a part-time faculty member must submit a project overview to the Academic Standards Committee and obtain the committee’s approval before the term in which the project is to begin.

Common Requirements
The goal of independent study projects is to advance or deepen a student’s knowledge or competency in a business discipline or activity.

To facilitate these goals, independent study projects generally fall into two broad categories:

1. directed reading and study resulting in a research paper, or
2. an experiential or hands-on project resulting in an outcome such as an empirical analysis with an executive summary of the “deliverable.”

While the content of individual independent study projects are at the discretion of a student and the sponsoring faculty member, to ensure relatively equal workloads per unit of independent study credit and some common requirements across independent study projects, students and/or sponsoring faculty should:

1. Prepare and submit to the Jones Graduate School of Business associate registrar an overview of the independent study project with number of project credits, anticipated final results, and a broad timeline of anticipated project milestones.
2. Meet to discuss the project, after the initial agreement on the project scope, at least once every two to three weeks.

3. Prepare a final paper (in the case of directed reading and research projects) or complete a concrete deliverable (for example, computer program, survey results, empirical analyses, etc.) together with an executive summary of the project (in the case of experiential projects).
4. File a copy of each student’s final paper, or executive summary, with the Jones Graduate School of Business associate registrar.

Applications
Independent study applications are available for interested students on Campus Groups. Completed independent study applications must be approved by the senior associate dean of academic affairs. Completed and approved applications are due to the Jones Graduate School of Business associate registrar by the first week of the term in which the project will be completed. The student will be registered for MGMT 700/MGMT 800 independent study for the appropriate credit amount, only when the appropriate permissions have been obtained.

Additional Information
For additional information, please see the Jones Graduate School of Business website: https://business.rice.edu/

Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Operations Management

Program Learning Outcomes for the MBA Degree

Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MBA Degree, Full-Time Program

The MBA degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the full-time MBA degree program must complete:

- A minimum of 60 credit hours to satisfy degree requirements.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A Global Field Experience (during the first year of enrollment in the degree program).
- A maximum of 6 credit hours from graduate-level coursework as transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab. Information regarding Exchange
Program transfer credit can be found in the Student Handbook under Campus Groups.

- A minimum overall GPA of 3.00 or higher in all Rice coursework.
- A minimum overall GPA of 3.00 or higher in all Rice coursework that satisfies requirements for the non-thesis master's degree with a minimum grade of C (2.00 grade points) in each course.

Students who register for a standard course load of 9-18 credit hours per semester are considered full-time students. All registration and elective selection via add/drop is completed online through ESTHER (https://esther.rice.edu/). It is the responsibility of the student to monitor and maintain his or her schedule and academic record.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/degereeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MBA Degree, Full-Time Program</td>
<td>60</td>
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### Degree Requirements

#### Core Requirements

1. | Code     | Title                                      | Credit Hours |
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>MGMT 501</td>
<td>FINANCIAL ACCOUNTING</td>
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<td>MGMT 502</td>
<td>MANAGERIAL ACCOUNTING</td>
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<td>MGMT 510</td>
<td>ORGANIZATIONAL BEHAVIOR</td>
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<td>MGMT 512</td>
<td>LEADING CHANGE</td>
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<tr>
<td>MGMT 540</td>
<td>MANAGERIAL ECONOMICS</td>
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<tr>
<td>MGMT 543</td>
<td>FINANCE</td>
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<tr>
<td>MGMT 560</td>
<td>CORPORATE SOCIAL RESPONSIBILITY</td>
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<tr>
<td>MGMT 570</td>
<td>COMPETITIVE AND INDUSTRY ANALYSIS</td>
<td>1.5</td>
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<tr>
<td>MGMT 571</td>
<td>STRATEGY FORMULATION AND IMPLEMENTATION</td>
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<tr>
<td>MGMT 574</td>
<td>OPERATIONS MANAGEMENT</td>
<td>1.5</td>
</tr>
<tr>
<td>MGMT 580</td>
<td>MARKETING</td>
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<tr>
<td>MGMT 594</td>
<td>STRATEGIC BUSINESS COMMUNICATION I</td>
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<tr>
<td>MGMT 595</td>
<td>DATA ANALYSIS I</td>
<td>1.5</td>
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<tr>
<td>MGMT 596</td>
<td>STRATEGIC BUSINESS COMMUNICATION II</td>
<td>0.75</td>
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<tr>
<td>MGMT 597</td>
<td>DATA ANALYSIS II</td>
<td>1.5</td>
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<tr>
<td>MGMT 710</td>
<td>LEADERSHIP ILE</td>
<td>0.75</td>
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<tr>
<td>MGMT 711</td>
<td>NEGOTIATIONS ILE</td>
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</table>

Global Field Experience Requirement

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGMT 789</td>
<td>GLOBAL FIELD EXPERIENCE</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Custom Core Courses: 4

### Elective Requirements

Select 2 courses from the following:

- MGMT 503 MANAGEMENT CONTROL
- MGMT 541 ECONOMIC ENVIRONMENT OF BUSINESS
- MGMT 561 BUSINESS-GOVERNMENT RELATIONS
- MGMT 599 ACTION LEARNING PROJECT
- MGMT 621 THE NEW ENTERPRISE
- MGMT 721 BUSINESS LAW

Select an additional 27-30 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 60 total credit hours 5, 6

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>60</td>
</tr>
</tbody>
</table>

### Footnotes and Additional Information

1. The first year of the program is primarily dedicated to core courses in the basic functional areas of business.

2. MGMT 594, MGMT 596, MGMT 710, and MGMT 711 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade. As S/U courses, they do not apply to the requirement of a minimum grade of C (2.00 grade points) in each required course.

3. Students participate in a required global field experience during the first year of enrollment in the degree program. Additional costs apply towards this global experience.

4. The custom core courses are taken during the second semester of the first year.

5. To fulfill the remaining requirements for the full-time MBA degree program, students must complete an additional 27-30 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 60 total credit hours. (MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.) Students take two elective courses during the spring semester of the first year. The second year of the program is dedicated entirely to elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. If students wish to apply courses that are offered outside of the Jones Graduate School of Business (MGMP, MGMT, or MICO course offerings), the student must obtain permission from the Jones Graduate School associate registrar. Electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.

6. Students in the coordinated MBA/Master of Science degree from the PSM (professional science master's) program or in the coordinated MBA/Master of Engineering degree program must complete the Core Requirements, Global Field Experience, and Custom Core Requirements as listed above for the full-time MBA degree program. For students in those coordinated programs, the Elective Requirements are 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach the total of 45 credit hours. (MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.) The second year of the program is dedicated entirely to MBA elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. MBA electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.
Major Concentration: Operations Management

The major concentration in Operations Management presents students with a framework for design, planning, control, coordination, and improvement of business processes, systems, and resources essential to meet consumers’ needs. Instead of the technical engineering view of operations, the focus is on managing the business well.

Students pursuing the major concentration in Operations Management must complete:

- A minimum of 10.5 credit hours as listed below to satisfy the major concentration requirements*

### Core Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGMT 670</td>
<td>OPERATIONS STRATEGY</td>
<td>1.5</td>
</tr>
<tr>
<td>Select 1 course from the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MGMT 712</td>
<td>PROCESS MANAGEMENT AND QUALITY IMPROVEMENT</td>
<td>1.5</td>
</tr>
<tr>
<td>MGMT 719</td>
<td>SUPPLY CHAIN MANAGEMENT</td>
<td></td>
</tr>
<tr>
<td>MGMT 722</td>
<td>SUPPLY CHAIN MANAGEMENT: MAINTAINING AND OPTIMIZING VALUE</td>
<td></td>
</tr>
</tbody>
</table>

### Foundation Courses

Select a minimum of 2 courses from the following: 3

- MGMT 698 APPLIED BUSINESS PROCESS OPTIMIZATION
- MGMT 712 PROCESS MANAGEMENT AND QUALITY IMPROVEMENT
- MGMT 719 SUPPLY CHAIN MANAGEMENT
- MGMT 722 SUPPLY CHAIN MANAGEMENT: MAINTAINING AND OPTIMIZING VALUE
- MGMT 744 SERVICES OPERATIONS
- MGMT 752 SUPPLY CHAIN MANAGEMENT LAB
- MGMT 753 OPERATIONS LAB: HEALTH CARE

### Elective Requirements

Select a maximum of 2 courses from the following: 3

- MGMP 689 DECISION MODELS
  or MGMT 68: DECISION MODELS
- MGMT 604 MINDFULNESS AND PERFORMANCE IN THE WORKPLACE
- MGMT 653 BLOCKCHAIN AS ECONOMIC INFRASTRUCTURE: THE INTERNET OF VALUE
- MGMT 664 OPERATIONS LEADERSHIP LAB
- MGMT 682 PRICING STRATEGIES
- MGMT 715 STRATEGIC INNOVATION AND COMPETITIVE ADVANTAGE
- MGMT 717 PROJECT MANAGEMENT
- MGMT 729 MANAGEMENT OF INNOVATION AND TECHNOLOGY
- MGMT 743 MANAGING INNOVATION IN ENERGY TECHNOLOGIES
- MGMT 793 CREATING THE DATA DRIVEN BUSINESS

Total Credit Hours 10.5

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**Footnotes and Additional Information**

* The courses listed are approved to satisfy the requirements for the Operations Management concentration for the current academic year only. Courses not on this official list may be substituted upon approval of the Jones Graduate School of Business Associate Registrar. Students and their academic advisors should identify and clearly document the courses to be taken with the Jones Graduate School of Business Associate Registrar.

1 Course may be applied to the Foundation Courses requirement if it was not applied to the Core Requirements above.

2 MGMT 752 is taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade. As a S/U course, it does not apply to the requirement of a minimum grade of C (2.00 grade points) in each required course.

### Policies for the MBA Degree Programs

**MBA Admission Requirements**

Applicants to the MBA programs must submit scores on the Graduate Management Admission Test (GMAT) or the Graduate Record Examination (GRE). International applicants, who did not earn an undergraduate degree from an institution where the primary language of instruction was English must submit a valid score report from either TOEFL, PTE, or IELTS. Admission to the MBA programs is open to students regardless of their undergraduate major, but it is highly selective and limited to those who have performed with distinction in their previous academic work and on the GMAT or GRE.

**Academic and Professional Standards**

Students must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the MBA program, all students agree to be governed by the standards and procedures for dismissal or disciplinary action stated below.

**Academic Standards**

A minimum overall grade point average of 3.00 (B) is required for graduation. All courses taken for the MBA degree (including approved courses taken at the university, but outside the JGSB) are counted in the overall grade point average calculation.

Students with an overall grade point average lower than 3.00 at the end of any semester will be notified of academic standing. Students not meeting the 3.00 requirement will be provided specific instruction and guidance on the next steps specific to their academic situation. In some cases, students may submit an appeal to the JGSB Academic Standards Committee, requesting to be placed on academic probation. The committee reviews all academic cases, and may consult the dean’s office for counsel and/or suggestions on proposed handling of the case. The committee will decide, based on the circumstances of the appeal, whether the student may resume studies on academic probation; is to be academically suspended for one semester or an academic year; or is to be dismissed from the MBA program.

Students proposing to return after a period of academic suspension must follow the appropriate procedures outlined in the General Announcements by the Office of Graduate and Postdoctoral Studies to receive permission to be readmitted. If permitted to return, the student will pay the current rate of tuition, based upon the class of students s/he is joining.

Only courses in which a grade of C or above is earned will be counted for credit toward graduation. If students receive a grade below C in a course
required for graduation, they must repeat the course. If students receive a grade lower than C in an elective course, they need not repeat the specific course, but they must make up the credit hours. If the required course is not offered again prior to graduation, the student will be permitted to take the course the following academic year, but will be charged the current pro-rated tuition for the program in which the additional coursework is completed.

Students on academic probation must complete all future courses with a grade of C or above and may be considered candidates for student offices by permission only. Students are removed from probation only upon achieving an overall grade point average of at least 3.00.

JGSB students may not take courses pass/fail to count toward their degree requirements. JGSB students may audit courses with departmental and professor approval. The courses will not count toward the MBA, but will appear on the transcript.

Professional Standards
MBA students are held to the highest standards of professional conduct expected of managers—standards substantially exceeding those expected of them simply as students. Students may be dismissed or suspended for failure to meet professional standards, as defined in the University Code of Conduct (p. 82). The dean may place a student on disciplinary probation for unacceptable conduct, giving oral and written notice that future misconduct will lead to filing specific charges. This probationary notice, however, is not required as a precondition for filing specific charges.

Class Attendance Policy
Students are expected to be in class on the first day of each term. The instructor reserves the right to exclude a student from their course who is absent on the first day. Students should refer to the specific attendance policy for each program. This information can be found in the Jones Graduate School of Business Student Handbook, which is referenced below. For special circumstances, students should see the Director of Advising in the Student Program Office and the instructor.

Guidelines for Appealing Academic Dismissal

The Process
A student who wishes to appeal a dismissal should address the following issues in a letter to the Academic Standards Committee. The student must send the letter to the chair of the Academic Standards Committee.

1. What circumstances led to your academic performance last semester and to what degree were those circumstances beyond your control?
2. If your performance in a particular course(s) last semester was below par, describe any circumstances specific to that course that explain your performance.
3. Do you expect the circumstances that created the problems for you last semester to change next semester? If so, how?

Students may include any additional information they deem relevant in the appeal letter.

Timing
If the student intends to appeal, the letter to the committee must be filed within one week after receiving a dismissal letter. If a student plans to appeal, he/she should continue to attend classes. It is important to keep up with studies during the appeal process. If the appeal is accepted, the student may continue progress towards the completion of their degree.

Appeals
Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.

Confidentiality
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Grade Appeal Process
Once a course grade has been assigned by an instructor, it is generally considered final and is rarely changed for any reason other than calculation or transcription errors. The procedure below outlines the process by which a student may appeal a course grade.

1. The student should first pursue any grading question with the instructor following the formal or informal process the instructor has outlined for the course.
2. If the matter is not resolved in step 1 above, the student must file a written appeal to the instructor and send a copy to the senior associate dean of degree programs. This written appeal must be filed no later than two weeks after the final grade for a course was assigned.
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6. Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.
7. In the event that the protested grade is necessary for the student to graduate, an accelerated schedule will be followed.

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MBA Elective Course Add/Drop Policy and Procedures
Due to the unique term schedule followed by the Jones Graduate School of Business MBA programs, MBA students have special procedures they must follow to make schedule changes. The Jones Graduate School of Business Registrar Department administers an add/drop policy which allows students to add/drop elective courses at various times throughout the semester. For all elective courses, student may not add/drop a course after the deadline for the appropriate term.

Withdrawal Policy
A Jones Graduate School of Business student, participating in any offered program, may voluntarily withdraw from school at any time. Upon withdrawal, Rice University applies a sliding scale to tuition, which is
consider current policies restricting use of independent study as well as the incremental value of additional independent study in light of past independent studies. If the study does not align with any of the Jones Graduate School of Business academic groups, the Academic Standards Committee will perform the review and make the final approval decision. Independent study projects are for academic credit, not for hire. Students may not earn credit for paid work.

Faculty Sponsorship
Independent study projects normally are sponsored only by full-time Jones Graduate School of Business faculty; faculty typically sponsor projects only in their area of expertise. Students wanting sponsorship by a part-time faculty member must submit a project overview to the Academic Standards Committee and obtain the committee’s approval before the term in which the project is to begin.

Common Requirements
The goal of independent study projects is to advance or deepen a student’s knowledge or competency in a business discipline or activity. To facilitate these goals, independent study projects generally fall into two broad categories:

1. directed reading and study resulting in a research paper, or
2. an experiential or hands-on project resulting in an outcome such as an empirical analysis with an executive summary of the “deliverable.”

While the content of individual independent study projects are at the discretion of a student and the sponsoring faculty member, to ensure relatively equal workloads per unit of independent study credit and some common requirements across independent study projects, students and/or sponsoring faculty should:

1. Prepare and submit to the Jones Graduate School of Business associate registrar an overview of the independent study project with number of project credits, anticipated final results, and a broad timeline of anticipated project milestones.
2. Meet to discuss the project, after the initial agreement on the project scope, at least once every two to three weeks.
3. Prepare a final paper (in the case of directed reading and research projects) or complete a concrete deliverable (for example, computer program, survey results, empirical analyses, etc.) together with an executive summary of the project (in the case of experiential projects).
4. File a copy of each student’s final paper, or executive summary, with the Jones Graduate School of Business associate registrar.

Applications
Independent study applications are available for interested students on Campus Groups. Completed independent study applications must be approved by the senior associate dean of academic affairs. Completed and approved applications are due to the Jones Graduate School of Business associate registrar by the first week of the term in which the project will be completed. The student will be registered for MGMT 700/MGMT 800 independent study for the appropriate credit amount, only when the appropriate permissions have been obtained.

Additional Information
For additional information, please see the Jones Graduate School of Business website: https://business.rice.edu/
Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Real Estate

Program Learning Outcomes for the MBA Degree

Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MBA Degree, Full-Time Program

The MBA degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the full-time MBA degree program must complete:

- A minimum of 60 credit hours to satisfy degree requirements.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A Global Field Experience (during the first year of enrollment in the degree program).
- A maximum of 6 credit hours from graduate-level coursework as transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab. Information regarding Exchange Program transfer credit can be found in the Student Handbook under Campus Groups.
- A minimum overall GPA of 3.00 or higher in all Rice coursework.
- A minimum overall GPA of 3.00 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree with a minimum grade of C (2.00 grade points) in each course.

Students who register for a standard course load of 9-18 credit hours per semester are considered full-time students. All registration and elective selection via add/drop is completed online through ESTHER (https://esther.rice.edu/). It is the responsibility of the student to monitor and maintain his or her schedule and academic record.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td></td>
<td>Total Credit Hours Required for the MBA Degree, Full-Time Program</td>
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### Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
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<tr>
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<td>MGMT 501</td>
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<td>MGMT 571</td>
<td>STRATEGY FORMULATION AND IMPLEMENTATION</td>
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<tr>
<td>MGMT 574</td>
<td>OPERATIONS MANAGEMENT</td>
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</tr>
<tr>
<td>MGMT 580</td>
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</tr>
<tr>
<td>MGMT 596</td>
<td>STRATEGIC BUSINESS COMMUNICATION II</td>
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<tr>
<td>MGMT 597</td>
<td>DATA ANALYSIS II</td>
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<td>MGMT 710</td>
<td>LEADERSHIP ILE</td>
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<td>MGMT 711</td>
<td>NEGOTIATIONS ILE</td>
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<td>MGMT 789</td>
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<td>MGMT 503</td>
<td>MANAGEMENT CONTROL</td>
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<tr>
<td>MGMT 541</td>
<td>ECONOMIC ENVIRONMENT OF BUSINESS</td>
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<tr>
<td>MGMT 561</td>
<td>BUSINESS-GOVERNMENT RELATIONS</td>
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<tr>
<td>MGMT 599</td>
<td>ACTION LEARNING PROJECT</td>
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<td>MGMT 621</td>
<td>THE NEW ENTERPRISE</td>
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<td>MGMT 721</td>
<td>BUSINESS LAW</td>
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<td></td>
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<tr>
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<td>Select an additional 27-30 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 60 total credit hours</td>
<td>27-30</td>
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<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>60</td>
</tr>
</tbody>
</table>

### Footnotes and Additional Information

1. The first year of the program is primarily dedicated to core courses in the basic functional areas of business.
MGMT 594, MGMT 596, MGMT 710, and MGMT 711 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade. As S/U courses, they do not apply to the requirement of a minimum grade of C (2.00 grade points) in each required course.

Students participate in a required global field experience during the first year of enrollment in the degree program. Additional costs apply towards this global experience.

The custom core courses are taken during the second semester of the first year.

To fulfill the remaining requirements for the full-time MBA degree program, students must complete an additional 27-30 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 60 total credit hours. (MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.) Students take two elective courses during the spring semester of the first year. The second year of the program is dedicated entirely to elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. If students wish to apply courses that are offered outside of the Jones Graduate School of Business (MGMP, MGMT, or MICO course offerings), the student must obtain permission from the Jones Graduate School associate registrar. Electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.

Students in the coordinated MBA/Master of Science degree from the PSM (professional science master’s) program or in the coordinated MBA/Master of Engineering degree program must complete the Core Requirements, Global Field Experience, and Custom Core Requirements as listed above for the full-time MBA degree program. For students in those coordinated programs, the Elective Requirements are 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach the total of 45 credit hours. (MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.) The second year of the program is dedicated entirely to MBA elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. MBA electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.

Major Concentration: Real Estate

The major concentration in Real Estate prepares students for a career in the real estate industry. The required course introduces a series of basic business concepts commonly used in the real estate industry, and it covers in detail the application of the discounted cash flow model to real estate decisions. The elective courses provide for both a depth and breadth of understanding of the industry.

Students pursuing the MBA degree and a major concentration in Real Estate must complete:

- A minimum of 12 credit hours as listed below to satisfy the major concentration requirements*

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MGMT 659</td>
<td>REAL ESTATE FINANCE: ASSET VALUATION</td>
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Elective Requirements

Select 10.5 credit hours from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>MGMT 608</td>
<td>COMMERCIAL REAL ESTATE IN THE AMZN</td>
</tr>
<tr>
<td>MGMT 648</td>
<td>APPLIED FINANCE</td>
</tr>
<tr>
<td>MGMT 654</td>
<td>REAL ESTATE CAPITAL MARKETS: PUBLIC &amp; PRIVATE</td>
</tr>
<tr>
<td>MGMT 660</td>
<td>REAL ESTATE CONTRACT NEGOTIATIONS FOR BUSINESS PROFESSIONALS</td>
</tr>
<tr>
<td>MGMT 674</td>
<td>REAL ESTATE FINANCE: SECURITIES</td>
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<tr>
<td>MGMT 728</td>
<td>REAL ESTATE DEVELOPMENT</td>
</tr>
<tr>
<td>MGMT 742</td>
<td>INTERNATIONAL PRIVATE EQUITY REAL ESTATE</td>
</tr>
<tr>
<td>MGMT 746</td>
<td>REAL PROPERTY</td>
</tr>
<tr>
<td>MGMT 757 / ARCH 691</td>
<td>REAL ESTATE LAB: DEVELOP DESIGN AND CONSTRUCTION</td>
</tr>
<tr>
<td>MGMT 785</td>
<td>CORPORATE REAL ESTATE: CASE STUDIES IN ENERGY AND HEALTHCARE</td>
</tr>
</tbody>
</table>

Total Credit Hours 12

Footnotes and Additional Information

* The courses listed are approved to satisfy the requirements for the Real Estate concentration for the current academic year only. Courses not on this official list may be substituted upon approval of the Jones Graduate School of Business Associate Registrar. Students and their academic advisors should identify and clearly document the courses to be taken with the Jones Graduate School of Business Associate Registrar.

1 MGMT 754 may be taken twice with approval of instructor.
2 MGMT 776 is for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade. As a S/U course, it does not apply to the requirement of a minimum grade of C (2.00 grade points) in each required course.

Policies for the MBA Degree Programs

MBA Admission Requirements

Applicants to the MBA programs must submit scores on the Graduate Management Admission Test (GMAT) or the Graduate Record Examination (GRE). International applicants, who did not earn an undergraduate degree from an institution where the primary language of instruction was English must submit a valid score report from either TOEFL, PTE, or IELTS. Admission to the MBA programs is open to students regardless of their undergraduate major, but it is highly selective and limited to those who have performed with distinction in their previous academic work and on the GMAT or GRE.

Academic and Professional Standards

Students must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the MBA program, all students agree to be governed by the standards and procedures for dismissal or disciplinary action stated below.

Academic Standards

A minimum overall grade point average of 3.00 (B) is required for graduation. All courses taken for the MBA degree (including approved courses taken at the university, but outside the JGSB) are counted in the overall grade point average calculation.

Students with an overall grade point average lower than 3.00 at the end of any semester will be notified of academic standing. Students
not meeting the 3.00 requirement will be provided specific instruction and guidance on the next steps specific to their academic situation. In some cases, students may submit an appeal to the JGSB Academic Standards Committee, requesting to be placed on academic probation. The committee reviews all academic cases, and may consult the dean's office for counsel and/or suggestions on proposed handling of the case. The committee will decide, based on the circumstances of the appeal, whether the student may resume studies on academic probation; is to be academically suspended for one semester or an academic year; or is to be dismissed from the MBA program.

Students proposing to return after a period of academic suspension must follow the appropriate procedures outlined in the General Announcements by the Office of Graduate and Postdoctoral Studies to receive permission to be readmitted. If permitted to return, the student will pay the current rate of tuition, based upon the class of students s/he is joining.

Only courses in which a grade of C or above is earned will be counted for credit toward graduation. If students receive a grade below C in a course required for graduation, they must repeat the course. If students receive a grade lower than C in an elective course, they need not repeat the specific course, but they must make up the credit hours. If the required course is not offered again prior to graduation, the student will be permitted to take the course the following academic year, but will be charged the current pro-rated tuition for the program in which the additional coursework is completed.

Students on academic probation must complete all future courses with a grade of C or above and may be considered candidates for student offices by permission only. Students are removed from probation only upon achieving an overall grade point average of at least 3.00.

JGSB students may not take courses pass/fail to count toward their degree requirements. JGSB students may audit courses with departmental and professor approval. The courses will not count toward the MBA, but will appear on the transcript.

Professional Standards
MBA students are held to the highest standards of professional conduct expected of managers—standards substantially exceeding those expected of them simply as students. Students may be dismissed or suspended for failure to meet professional standards, as defined in the University Code of Conduct (p. 82). The dean may place a student on disciplinary probation for unacceptable conduct, giving oral and written notice that future misconduct will lead to filing specific charges. This probationary notice, however, is not required as a precondition for filing specific charges.

Class Attendance Policy
Students are expected to be in class on the first day of each term. The instructor reserves the right to exclude a student from their course who is absent on the first day. Students should refer to the specific attendance policy for each program. This information can be found in the Jones Graduate School of Business Student Handbook, which is referenced below. For special circumstances, students should see the Director of Advising in the Student Program Office and the instructor.

Guidelines for Appealing Academic Dismissal

The Process
A student who wishes to appeal a dismissal should address the following issues in a letter to the Academic Standards Committee. The student must send the letter to the chair of the Academic Standards Committee.

1. What circumstances led to your academic performance last semester and to what degree were those circumstances beyond your control?
2. If your performance in a particular course(s) last semester was below par, describe any circumstances specific to that course that explain your performance.
3. Do you expect the circumstances that created the problems for you last semester to change next semester? If so, how?

Students may include any additional information they deem relevant in the appeal letter.

Timing
If the student intends to appeal, the letter to the committee must be filed within one week after receiving a dismissal letter. If a student plans to appeal, he/she should continue to attend classes. It is important to keep up with studies during the appeal process. If the appeal is accepted, the student may continue progress towards the completion of their degree.

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1. The student should first pursue any grading question with the instructor following the formal or informal process the instructor has outlined for the course.
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**Withdrawal Policy**

A Jones Graduate School of Business student, participating in any offered program, may voluntarily withdraw from school at any time. Upon withdrawal, Rice University applies a sliding scale to tuition, which is noted in the university's Academic Calendar posted on the Rice Office of the Registrar website (https://registrar.rice.edu/calendars/).

**Jones Graduate School of Business Student Handbook**

Generally, the Jones Graduate School of Business adheres to the academic regulations of Rice University. However, the Jones Graduate School of Business MBA program has unique policies and procedures that vary from the Office of Graduate and Postdoctoral Studies regarding, but not limited to, leave of absence, withdrawals and readmission, add/drop, and academic dismissal. A copy of the handbook is available on Campus Groups.

**Financial Aid**

Jones Graduate School of Business scholarships are awarded at the point of admission and are based on the merit of the application. Financial assistance is generally awarded one academic year at a time. Continuation of assistance depends on Satisfactory Academic Progress (SAP) in accordance with Academic and Professional Standards of performance, professional behavior, and is subject to the availability of funds. Academic or disciplinary probation, suspension, or general failure to maintain academic pace will result in the removal of all forms of financial assistance (i.e. scholarship, employment, Federal/State student loans, etc.). Students have the right to appeal the suspension. All appeals will be reviewed by a committee.

**Additional Information**

For additional information, please see the Jones Graduate School of Business website: https://business.rice.edu/

**Opportunities for the MBA Degree Programs**

**Independent Study**

**Minimum Hours Requirement**

Each credit of independent study should contain approximately as much time content as a one-credit course at Jones Graduate School of Business, which is 12 hours of class time, plus an average of at least 24–36 outside-class hours, for a minimum total of 36–48 hours of work.

Independent study projects can be accommodated in increments of 1.0, 1.5, 2.0, or 3.0 credit hours; 3.0 credit independent study projects are rarely approved. Occasionally, a group independent study project may arise, though most independent studies are undertaken by individual students.

The number of credits for an independent study must be determined at the beginning of a project. Increases to the number of project credit hours after the project overview has been filed with the Jones Graduate School of Business associate registrar must be approved by the Academic Standards Committee. The committee will rely on input from sponsoring faculty in making its decision about ex post credit increases. Requests to increase the number of project credit hours must be made before the end of the second week of classes in the term in which the project begins.

**Restrictions**

No student may take more than three credit hours of independent study during the course of the MBA program without the approval of the Academic Standards Committee. If an independent study is proposed that would cause a student to exceed the 3.0 credit limit, the Academic Standards Committee will select two faculty members, other than the faculty member who will supervise the project, within the area most closely related to the study's academic content to review and approve the study. Independent study exceeding 3.0 credits in total should consider current policies restricting use of independent study as well as the incremental value of additional independent study in light of past independent studies. If the study does not align with any of the Jones Graduate School of Business academic groups, the Academic Standards Committee will perform the review and make the final approval decision.

Independent study projects are for academic credit, not for hire. Students may not earn credit for paid work.

**Faculty Sponsorship**

Independent study projects normally are sponsored only by full-time Jones Graduate School of Business faculty; faculty typically sponsor projects only in their area of expertise. Students wanting sponsorship by a part-time faculty member must submit a project overview to the Academic Standards Committee and obtain the committee's approval before the term in which the project is to begin.

**Common Requirements**

The goal of independent study projects is to advance or deepen a student's knowledge or competency in a business discipline or activity. To facilitate these goals, independent study projects generally fall into two broad categories:

1. directed reading and study resulting in a research paper, or
2. an experiential or hands-on project resulting in an outcome such as an empirical analysis with an executive summary of the “deliverable.”

While the content of individual independent study projects are at the discretion of a student and the sponsoring faculty member, to ensure relatively equal workloads per unit of independent study credit and some common requirements across independent study projects, students and/or sponsoring faculty should:

1. Prepare and submit to the Jones Graduate School of Business associate registrar an overview of the independent study project with number of project credits, anticipated final results, and a broad timeline of anticipated project milestones.
2. Meet to discuss the project, after the initial agreement on the project scope, at least once every two to three weeks.
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4. File a copy of each student’s final paper, or executive summary, with the Jones Graduate School of Business associate registrar.

Applications
Independent study applications are available for interested students on Campus Groups. Completed independent study applications must be approved by the senior associate dean of academic affairs. Completed and approved applications are due to the Jones Graduate School of Business associate registrar by the first week of the term in which the project will be completed. The student will be registered for MGMT 700/MGMT 800 independent study for the appropriate credit amount, only when the appropriate permissions have been obtained.

Additional Information
For additional information, please see the Jones Graduate School of Business website: https://business.rice.edu/

Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Strategic Management

Program Learning Outcomes for the MBA Degree

Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MBA Degree, Full-Time Program

The MBA degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the full-time MBA degree program must complete:

- A minimum of 60 credit hours to satisfy degree requirements.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A Global Field Experience (during the first year of enrollment in the degree program).
- A maximum of 6 credit hours from graduate-level coursework as transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab. Information regarding Exchange Program transfer credit can be found in the Student Handbook under Campus Groups.
- A minimum overall GPA of 3.00 or higher in all Rice coursework.
- A minimum overall GPA of 3.00 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree with a minimum grade of C (2.00 grade points) in each course.

Students who register for a standard course load of 9-18 credit hours per semester are considered full-time students. All registration and elective selection via add/drop is completed online through ESTHER (https://esther.rice.edu/). It is the responsibility of the student to monitor and maintain his or her schedule and academic record.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<th>Code</th>
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<tr>
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Degree Requirements

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Global Field Experience Requirement

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<td>MGMT 789</td>
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Custom Core Courses:

1. MGMT 501
2. MGMT 594
3. MGMT 789
4. MGMT 501
5. MGMT 594
6. MGMT 789
Major Concentration: Strategic Management

The major concentration in Strategic Management prepares students for careers in strategic planning, management consulting, and global business management across a variety of industries such as health care, energy, high technologies, consumer products, and professional services. It provides knowledge and analytic tools for students to understand why some companies are financially much more successful than others and to analyze how executives (at different levels) can devise a set of strategies and design processes that allow companies to achieve competitive advantage.

Students pursuing the major concentration in Strategic Management must complete:

- A minimum of 9 credit hours as listed below to satisfy the major concentration requirements*

<table>
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<td>MGMT 713</td>
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<td>MGMT 715</td>
<td>STRATEGIC INNOVATION AND COMPETITIVE ADVANTAGE</td>
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<td>MGMT 733</td>
<td>STRATEGIES FOR GROWTH</td>
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<td>MGMT 833</td>
<td>STRATEGY IN TECHNOLOGY ECOSYSTEMS</td>
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Elective Requirements

Select 4.5 credit hours from the following: 4.5

<table>
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<td>MGMT 607</td>
<td>COMPETITIVE STRATEGIES AND EMERGING MARKETS</td>
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<td>MGMT 652</td>
<td>MERGERS AND ACQUISITIONS</td>
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<td>MGMT 661</td>
<td>INTERNATIONAL BUSINESS LAW</td>
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<td>MGMT 668</td>
<td>INTERNATIONAL TRADE AND BUSINESS STRATEGY</td>
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<td>MGMT 686</td>
<td>INTRODUCTION TO MARKETING RESEARCH</td>
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<td>MGMT 690</td>
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<td>MGMT 731</td>
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<td>MGMT 786</td>
<td>GLOBAL BUSINESS OFFSITE ²</td>
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<td>MGMT 795</td>
<td>DEAN’S LEADERSHIP SEMINAR</td>
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<tr>
<td>MICO 605</td>
<td>MANAGING FOREIGN MARKET ENTRY FOR THE ENERGY INDUSTRY</td>
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</table>

Total Credit Hours 9

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Footnotes and Additional Information

1. The first year of the program is primarily dedicated to core courses in the basic functional areas of business.
2. MGMT 594, MGMT 596, MGMT 710, and MGMT 711 are not accepted as electives. MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives. Students must complete the Core Requirements, Global Field Experience, and Elective Requirements as listed above for the full-time MBA degree program.
3. Students participate in a required global field experience during the first year of enrollment in the degree program. Additional costs apply towards this global experience.
4. The custom core courses are taken during the second semester of the first year.
5. To fulfill the remaining requirements for the full-time MBA degree program, students must complete an additional 27-30 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 60 total credit hours. MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives. Students must complete the Core Requirements, Global Field Experience, and Elective Requirements as listed above for the full-time MBA degree program.
6. Students in the coordinated MBA/Master of Science degree from the PSM (professional science master’s) program or in the coordinated MBA/Master of Engineering degree program must complete the Core Requirements, Global Field Experience, and Custom Core Requirements as listed above for the full-time MBA degree program. For students in those coordinated programs, the Elective Requirements are 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach the total of 45 credit hours. MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives. The second year of the program is dedicated entirely to MBA elective coursework.
Footnotes and Additional Information

* The courses listed are approved to satisfy the requirements for the Strategic Management concentration for the current academic year only. Courses not on this official list may be substituted upon approval of the Jones Graduate School of Business Associate Registrar. Students and their academic advisors should identify and clearly document the courses to be taken with the Jones Graduate School of Business Associate Registrar.

1. MGMT 561 can only be applied toward major concentration requirements if not counted as a Custom Core course.

2. Students may only apply one Jones EdGE course (MGMT 786, MGMT 789, or MGMT 797) towards major concentration requirements.

Policies for the MBA Degree Programs

MBA Admission Requirements

Applicants to the MBA programs must submit scores on the Graduate Management Admission Test (GMAT) or the Graduate Record Examination (GRE). International applicants, who did not earn an undergraduate degree from an institution where the primary language of instruction was English must submit a valid score report from either TOEFL, PTE, or IELTS. Admission to the MBA programs is open to students regardless of their undergraduate major, but it is highly selective and limited to those who have performed with distinction in their previous academic work and on the GMAT or GRE.

Academic and Professional Standards

Students must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the MBA program, all students agree to be governed by the standards and procedures for dismissal or disciplinary action stated below.

Academic Standards

A minimum overall grade point average of 3.00 (B) is required for graduation. All courses taken for the MBA degree (including approved courses taken at the university, but outside the JGSB) are counted in the overall grade point average calculation.

Students with an overall grade point average lower than 3.00 at the end of any semester will be notified of academic standing. Students not meeting the 3.00 requirement will be provided specific instruction and guidance on the next steps specific to their academic situation. In some cases, students may submit an appeal to the JGSB Academic Standards Committee, requesting to be placed on academic probation. The committee reviews all academic cases, and may consult the dean's office for counsel and/or suggestions on proposed handling of the case. The committee will decide, based on the circumstances of the appeal, whether the student may resume studies on academic probation; is to be academically suspended for one semester or an academic year; or is to be dismissed from the MBA program.

Students proposing to return after a period of academic suspension must follow the appropriate procedures outlined in the General Announcements by the Office of Graduate and Postdoctoral Studies to receive permission to be readmitted. If permitted to return, the student will pay the current rate of tuition, based upon the class of students s/he is joining.

Only courses in which a grade of C or above is earned will be counted for credit toward graduation. If students receive a grade below C in a course required for graduation, they must repeat the course. If students receive a grade lower than C in an elective course, they need not repeat the specific course, but they must make up the credit hours. If the required course is not offered again prior to graduation, the student will be permitted to take the course the following academic year, but will be charged the current pro-rated tuition for the program in which the additional coursework is completed.

Students on academic probation must complete all future courses with a grade of C or above and may be considered candidates for student offices by permission only. Students are removed from probation only upon achieving an overall grade point average of at least 3.00.

JGSB students may not take courses pass/fail to count toward their degree requirements. JGSB students may audit courses with departmental and professor approval. The courses will not count toward the MBA, but will appear on the transcript.

Professional Standards

MBA students are held to the highest standards of professional conduct expected of managers—standards substantially exceeding those expected of them simply as students. Students may be dismissed or suspended for failure to meet professional standards, as defined in the University Code of Conduct (p. 82). The dean may place a student on disciplinary probation for unacceptable conduct, giving oral and written notice that future misconduct will lead to filing specific charges. This probationary notice, however, is not required as a precondition for filing specific charges.

Class Attendance Policy

Students are expected to be in class on the first day of each term. The instructor reserves the right to exclude a student from their course who is absent on the first day. Students should refer to the specific attendance policy for each program. This information can be found in the Jones Graduate School of Business Student Handbook, which is referenced below. For special circumstances, students should see the Director of Advising in the Student Program Office and the instructor.

Guidelines for Appealing Academic Dismissal

The Process

A student who wishes to appeal a dismissal should address the following issues in a letter to the Academic Standards Committee. The student must send the letter to the chair of the Academic Standards Committee.

1. What circumstances led to your academic performance last semester and to what degree were those circumstances beyond your control?
2. If your performance in a particular course(s) last semester was below par, describe any circumstances specific to that course that explain your performance.
3. Do you expect the circumstances that created the problems for you last semester to change next semester? If so, how?

Students may include any additional information they deem relevant in the appeal letter.

Timing

If the student intends to appeal, the letter to the committee must be filed within one week after receiving a dismissal letter. If a student plans to appeal, he/she should continue to attend classes. It is important to keep up with studies during the appeal process. If the appeal is accepted, the student may continue progress towards the completion of their degree.
Appeals
Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.

Confidentiality
The Family Educational Rights and Privacy Act of 1974 and amendments govern the records of actions related to appeals.

Grade Appeal Process
Once a course grade has been assigned by an instructor, it is generally considered final and is rarely changed for any reason other than calculation or transcription errors. The procedure below outlines the process by which a student may appeal a course grade.

1. The student should first pursue any grading question with the instructor following the formal or informal process the instructor has outlined for the course.
2. If the matter is not resolved in step 1 above, the student must file a written appeal to the instructor and send a copy to the senior associate dean of degree programs. This written appeal must be filed no later than two weeks after the final grade for a course was assigned.
3. The instructor must schedule a meeting with the student within two weeks of receiving the written appeal to further discuss the appeal with the student. Notice of the appeal time and date will be provided by the instructor to the senior associate dean of degree programs.
4. If step 3 does not resolve the issue to the satisfaction of both parties, the student may appeal to the Academic Standards Committee by sending a written notice describing the grounds for the appeal within two weeks of the date of the scheduled meeting in step 3.
5. The Academic Standards Committee will seek out information on the appeal from the instructor and the student and, at its discretion, hold a hearing to further consider the matter. The decision of the Academic Standards Committee will be rendered within 4 weeks of receiving a written notice of appeal (step 4).
6. Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.
7. In the event that the protested grade is necessary for the student to graduate, an accelerated schedule will be followed.

The Family Educational Rights and Privacy Act of 1974 and amendments govern records of these actions.

MBA Elective Course Add/Drop Policy and Procedures
Due to the unique term schedule followed by the Jones Graduate School of Business MBA programs, MBA students have special procedures they must follow to make schedule changes. The Jones Graduate School of Business Registrar Department administers an add/drop policy which allows students to add/drop elective courses at various times throughout the semester. For all elective courses, student may not add/drop a course after the deadline for the appropriate term.

Withdrawal Policy
A Jones Graduate School of Business student, participating in any offered program, may voluntarily withdraw from school at any time. Upon withdrawal, Rice University applies a sliding scale to tuition, which is noted in the university’s Academic Calendar posted on the Rice Office of the Registrar website (https://registrar.rice.edu/calendars/).

Jones Graduate School of Business Student Handbook
Generally, the Jones Graduate School of Business adheres to the academic regulations of Rice University. However, the Jones Graduate School of Business MBA program has unique policies and procedures that vary from the Office of Graduate and Postdoctoral Studies regarding, but not limited to, leave of absence, withdrawals and readmission, add/drop, and academic dismissal. A copy of the handbook is available on Campus Groups.

Financial Aid
Jones Graduate School of Business scholarships are awarded at the point of admission and are based on the merit of the application. Financial assistance is generally awarded one academic year at a time. Continuation of assistance depends on Satisfactory Academic Progress (SAP) in accordance with Academic and Professional Standards of performance, professional behavior, and is subject to the availability of funds. Academic or disciplinary probation, suspension, or general failure to maintain academic pace will result in the removal of all forms of financial assistance (i.e. scholarship, employment, Federal/State student loans, etc.). Students have the right to appeal the suspension. All appeals will be reviewed by a committee.

Additional Information
For additional information, please see the Jones Graduate School of Business website: https://business.rice.edu/

Opportunities for the MBA Degree Programs
Independent Study
Minimum Hours Requirement
Each credit of independent study should contain approximately as much time content as a one-credit course at Jones Graduate School of Business, which is 12 hours of class time, plus an average of at least 24–36 outside-class hours, for a minimum total of 36–48 hours of work. Independent study projects can be accommodated in increments of 1.0, 1.5, 2.0, or 3.0 credit hours; 3.0 credit independent study projects are rarely approved. Occasionally, a group independent study project may arise, though most independent studies are undertaken by individual students.

The number of credits for an independent study must be determined at the beginning of a project. Increases to the number of project credit hours after the project overview has been filed with the Jones Graduate School of Business associate registrar must be approved by the Academic Standards Committee. The committee will rely on input from sponsoring faculty in making its decision about ex post credit increases. Requests to increase the number of project credit hours must be made before the end of the second week of classes in the term in which the project begins.

Restrictions
No student may take more than three credit hours of independent study during the course of the MBA program without the approval of the Academic Standards Committee. If an independent study is proposed that would cause a student to exceed the 3.0 credit limit, the Academic Standards Committee will select two faculty members, other than the faculty member who will supervise the project, within the area most closely related to the study’s academic content to review and approve the study. Independent study exceeding 3.0 credits in total should
consider current policies restricting use of independent study as well as the incremental value of additional independent study in light of past independent studies. If the study does not align with any of the Jones Graduate School of Business academic groups, the Academic Standards Committee will perform the review and make the final approval decision.

Independent study projects are for academic credit, not for hire. Students may not earn credit for paid work.

**Faculty Sponsorship**

Independent study projects normally are sponsored only by full-time Jones Graduate School of Business faculty; faculty typically sponsor projects only in their area of expertise. Students wanting sponsorship by a part-time faculty member must submit a project overview to the Academic Standards Committee and obtain the committee’s approval before the term in which the project is to begin.

**Common Requirements**

The goal of independent study projects is to advance or deepen a student's knowledge or competency in a business discipline or activity.

To facilitate these goals, independent study projects generally fall into two broad categories:

1. directed reading and study resulting in a research paper, or
2. an experiential or hands-on project resulting in an outcome such as an empirical analysis with an executive summary of the "deliverable."

While the content of individual independent study projects is at the discretion of a student and the sponsoring faculty member, to ensure relatively equal workloads per unit of independent study credit and some common requirements across independent study projects, students and/or sponsoring faculty should:

1. Prepare and submit to the Jones Graduate School of Business associate registrar an overview of the independent study project with number of project credits, anticipated final results, and a broad timeline of anticipated project milestones.
2. Meet to discuss the project, after the initial agreement on the project scope, at least once every two to three weeks.
3. Prepare a final paper (in the case of directed reading and research projects) or complete a concrete deliverable (for example, computer program, survey results, empirical analyses, etc.) together with an executive summary of the project (in the case of experiential projects).
4. File a copy of each student’s final paper, or executive summary, with the Jones Graduate School of Business associate registrar.

**Applications**

Independent study applications are available for interested students on Campus Groups. Completed independent study applications must be approved by the senior associate dean of academic affairs. Completed and approved applications are due to the Jones Graduate School of Business associate registrar by the first week of the term in which the project will be completed. The student will be registered for MGMT 700/MSMG 800 independent study for the appropriate credit amount, only when the appropriate permissions have been obtained.

**Additional Information**

For additional information, please see the Jones Graduate School of Business website: [https://business.rice.edu/](https://business.rice.edu/)

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**Master of Business Administration (MBA) Degree, Online Program**

**Program Learning Outcomes for the MBA Degree**

Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

**Requirements for the MBA Degree, Online Program**

The MBA degree is a non-thesis master's degree. For general university requirements, please see [Non-Thesis Master's Degrees](p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see [All Graduate Students](p. 55). Students pursuing the MBA@Rice degree must complete:

- A minimum of 54 credit hours to satisfy degree requirements.
- A minimum overall GPA of 3.00 or higher in all Rice coursework.
- A minimum overall GPA of 3.00 or higher in all Rice coursework that satisfies requirements for the non-thesis master's degree with a minimum grade of C (2.00 grade points) in each course.

**MBA@Rice Program**

The MBA@Rice program consists of a 24-month curriculum generally earned over eight consecutive terms (3-month quadimesters) over a two-year period.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's [Official Certifier](https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

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Degree Requirements

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Footnotes and Additional Information
1. MGMT 513 and MGMT 514 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade. As S/U courses, they do not apply to the requirement of a minimum grade of C (2.00 grade points) in each required course.
2. To fulfill the remaining requirements for the Online MBA degree program, students must complete an additional 13.5 credit hours from departmental (MGMT) course offerings at the 500-level or above to reach 54 total credit hours. (MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.)

Proposed Plan-of-Study
The following plan-of-study represents the lockstep two-year sequence in which students pursuing the MBA@Rice degree complete the required coursework. In some instances students may follow a three-year or a four-year program. In those instances, students must agree to follow a specific course sequence as outlined by the Student Success Advisor.

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**Footnotes and Additional Information**

1. MGMT 513, MGMT 514, and MGMT 515 together comprise the Residential Intensive Learning Experiences (ILE) and Global Field Experience requirements for this degree program. It is highly encouraged that these courses are taken in the first year of the program (or as early in the program as possible). Students should consult their Student Success Advisor for more information regarding enrollment in these courses.

2. To fulfill the remaining requirements for the Online MBA degree program, students must complete an additional 13.5 credit hours from departmental (MGMT) course offerings at the 500-level or above to reach 54 total credit hours.

**Policies for the MBA Degree, Online Program**

**MBA Admission Requirements**

Admission to the MBA degree program is open to students regardless of their undergraduate major, but the program is highly selective and access is limited to those who have performed with distinction across all areas of the application. A bachelor’s degree (or equivalent) from an accredited undergraduate institution is required. All applicants submit an interview as part of their admission requirements.

All applicants to the MBA degree program must submit the following:

- an online application and application fee
- scores from the Graduate Management Admission Test (GMAT), the Graduate Record Examination (GRE),* or the Executive Assessment (EA)**
- transcripts from all previously-attended and/or degree-granting institutions
- resume with complete work history
- essays
- letter(s) of recommendation

**Notes:**

*Scores from the TOEFL, PTE, or IELTS are also required for international applicants, whose undergraduate degree was from an institution where the primary language of instruction was not English.

**The Executive Assessment (EA) is only accepted for MBA Degree, Executive Program applicants.

**The MBA@Rice Program**

The MBA@Rice Program does not have specific prerequisite courses required for admission.

**Academic and Professional Standards**

Students must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the MBA program, all students agree to be governed by the standards and procedures for dismissal or disciplinary action stated below.

**Academic Standards**

A minimum overall grade point average of 3.00 (B) is required for graduation. All courses taken for the MBA degree (including approved courses taken at the university, but outside the JGSB) are counted in the overall grade point average calculation.

Students with an overall grade point average lower than 3.00 at the end of any semester will be notified of academic standing. Students not meeting the 3.00 requirement will be provided specific instruction and guidance on the next steps specific to their academic situation.

In some cases, students may submit an appeal to the JGSB Academic Standards Committee, requesting to be placed on academic probation. The committee reviews all academic cases, and may consult the dean's office for counsel and/or suggestions on proposed handling of the case. The committee will decide, based on the circumstances of the appeal, whether the student may resume studies on academic probation; is to be academically suspended for one semester or an academic year; or is to be dismissed from the MBA program.

Students proposing to return after a period of academic suspension must follow the appropriate procedures outlined in the General Announcements by the Office of Graduate and Postdoctoral Studies to receive permission to be readmitted. If permitted to return, the student will pay the current rate of tuition, based upon the class of students s/he is joining.

Only courses in which a grade of C or above is earned will be counted for credit toward graduation. If students receive a grade below C in a course required for graduation, they must repeat the course. If students receive a grade lower than C in an elective course, they need not repeat the specific course, but they must make up the credit hours. If the required course is not offered again prior to graduation, the student will be permitted to take the course the following academic year, but will be charged the current pro-rated tuition for the program in which the additional coursework is completed.

Students on academic probation must complete all future courses with a grade of C or above and may be considered candidates for student offices by permission only. Students are removed from probation only upon achieving an overall grade point average of at least 3.00.

JGSB students may not take courses pass/fail to count toward their degree requirements. JGSB students may audit courses with departmental and professor approval. The courses will not count toward the MBA, but will appear on the transcript.

**Professional Standards**

MBA students are held to the highest standards of professional conduct expected of managers—standards substantially exceeding those expected of them simply as students. Students may be dismissed or suspended for failure to meet professional standards, as defined in the University Code of Conduct (p. 82). The dean may place a student on disciplinary probation for unacceptable conduct, giving oral and written notice that future misconduct will lead to filing specific charges. This probationary notice, however, is not required as a precondition for filing specific charges.

**Guidelines for Appealing Academic Dismissal**

**The Process**

A student who wishes to appeal a dismissal should address the following issues in a letter to the Academic Standards Committee. The student must send the letter to the chair of the Academic Standards Committee.
1. What circumstances led to your academic performance last semester and to what degree were those circumstances beyond your control?
2. If your performance in a particular course(s) last semester was below par, describe any circumstances specific to that course that explain your performance.
3. Do you expect the circumstances that created the problems for you last semester to change next semester? If so, how?

Students may include any additional information they deem relevant in the appeal letter.

**Timing**

If the student intends to appeal, the letter to the committee must be filed within one week after receiving a dismissal letter. If a student plans to appeal, he/she should continue to attend classes. It is important to keep up with studies during the appeal process. If the appeal is accepted, the student may continue progress towards the completion of their degree.

**Appeals**

Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.

**Confidentiality**

The Family Educational Rights and Privacy Act of 1974 and amendments govern the records of actions related to appeals.

**Grade Appeal Process**

Once a course grade has been assigned by an instructor, it is generally considered final and is rarely changed for any reason other than calculation or transcription errors. The procedure below outlines the process by which a student may appeal a course grade.

1. The student should first pursue any grading question with the instructor following the formal or informal process the instructor has outlined for the course.
2. If the matter is not resolved in step 1 above, the student must file a written appeal to the instructor and send a copy to the senior associate dean of degree programs. This written appeal must be filed no later than two weeks after the final grade for a course was assigned.
3. The instructor must schedule a meeting with the student within two weeks of receiving the written appeal to further discuss the appeal with the student. Notice of the appeal time and date will be provided by the instructor to the senior associate dean of degree programs.
4. If step 3 does not resolve the issue to the satisfaction of both parties, the student may appeal to the Academic Standards Committee by sending a written notice describing the grounds for the appeal within two weeks of the date of the scheduled meeting in step 3.
5. The Academic Standards Committee will seek out information on the appeal from the instructor and the student and, at its discretion, hold a hearing to further consider the matter. The decision of the Academic Standards Committee will be rendered within 4 weeks of receiving a written notice of appeal (step 4).
6. Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.
7. In the event that the protested grade is necessary for the student to graduate, an accelerated schedule will be followed.

The Family Educational Rights and Privacy Act of 1974 and amendments govern records of these actions.

**MBA Elective Course Add/Drop Policy and Procedures**

Due to the unique term schedule followed by the Jones Graduate School of Business MBA programs, MBA students have special procedures they must follow to make schedule changes. The Jones Graduate School of Business Registrar Department administers an add/drop policy which allows students to add/drop elective courses at various times throughout the semester. For all elective courses, student may not add/drop a course after the deadline for the appropriate term.

**Withdrawal Policy**

A Jones Graduate School of Business student, participating in any offered program, may voluntarily withdraw from school at any time. Upon withdrawal, Rice University applies a sliding scale to tuition, which is noted in the university’s Academic Calendar posted on the Rice Office of the Registrar website (https://registrar.rice.edu/calendars/).

**Jones Graduate School of Business Student Handbook**

Generally, the Jones Graduate School of Business adheres to the academic regulations of Rice University. However, the Jones Graduate School of Business MBA program has unique policies and procedures that vary from the Office of Graduate and Postdoctoral Studies regarding, but not limited to, leave of absence, withdrawals and readmission, add/drop, and academic dismissal. A copy of the handbook is available on Campus Groups.

**Financial Aid**

Jones Graduate School of Business scholarships are awarded at the point of admission and are based on the merit of the application. Financial assistance is generally awarded one academic year at a time. Continuation of assistance depends on Satisfactory Academic Progress (SAP) in accordance with Academic and Professional Standards of performance, professional behavior, and is subject to the availability of funds. Academic or disciplinary probation, suspension, or general failure to maintain academic pace will result in the removal of all forms of financial assistance (i.e. scholarship, employment, Federal/State student loans, etc.). Students have the right to appeal the suspension. All appeals will be reviewed by a committee.

**Additional Information**

For additional information, please see the Jones Graduate School of Business website: https://business.rice.edu/

**Opportunities for the MBA Degree, Online Program**

**Additional Information**

For additional information, please see the Jones Graduate School of Business website: https://business.rice.edu/

**Master of Business Administration (MBA) Degree, Professional Program**

Program Learning Outcomes for the MBA Degree

Upon completing the MBA degree, students will be able to:
1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.

2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.

3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MBA Degree, Professional Program

The MBA degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). The Jones Graduate School of Business offers the MBA for Professionals program in three formats. These programs cover the same content, but are offered at different times and over different periods.

Students choose a program based on life-style preference and professional and personal commitments. The current three formats are:

- MBA for Professionals, Evening Program (p. 261), or
- MBA for Professionals, Weekend Program (p. 261), or
- MBA for Professionals, Evening Extended Program (p. 262)

MBA for Professionals, Evening Program

The MBA for Professionals Evening Program consists of a 22-month, lock-step curriculum delivered in four consecutive semesters over a two-year period. Students pursuing the MBA for Professionals Evening Program must complete:

- A minimum of 54 credit hours as listed below to satisfy degree requirements.
- A Global Field Experience (during the first year of enrollment in the degree program).
- A minimum overall GPA of 3.00 in required coursework and with a minimum grade of C (2.00 grade points) in each course.

Summary

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Degree Requirements

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MBA for Professionals, Weekend Program

The MBA for Professionals Weekend Program consists of a 22-month, lock-step curriculum delivered in four consecutive semesters over a two-year period. Students pursuing the MBA for Professionals Weekend Program must complete:

- MGMP 560 CORPORATE SOCIAL RESPONSIBILITY 2 0.75
- MGMP 570 COMPETITIVE STRATEGY 1.5
- MGMP 571 STRATEGY FORMULATION AND IMPLEMENTATION 1.5
- MGMP 574 OPERATIONS MANAGEMENT 1.5
- MGMP 580 MARKETING 3
- MGMP 594 STRATEGIC BUSINESS COMMUNICATION I 2 0.75
- MGMP 595 DATA ANALYSIS 3
- MGMP 596 STRATEGIC BUSINESS COMMUNICATION II 2 0.75
- MGMP 708 LEADERSHIP ILE 2 1.5
- MGMP 709 NEGOTIATIONS ILE 2 1.5
- MGMP 798 STRATEGIC MANAGEMENT SIMULATION 1.5
- MGMP 799 CAPSTONE CONSULTING PROJECT 3

Global Field Experience Requirement

MGMP 789 GLOBAL FIELD EXPERIENCE 3 3

Custom Core Courses

Select 1 from the following: 1.5

- MGMT 541 / ECONOMIC ENVIRONMENT OF BUSINESS
- MGMP 541 /
- MGMW 541

Elective Requirements 4

Select an additional 16.5 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above 16.5

Total Credit Hours 54

Footnotes and Additional Information

1 Required first year classes are offered during the week from 6:15pm to 9:30pm predominantly on Monday and Wednesday evenings.

2 MGMP 500, MGMP 560, MGMP 594, MGMP 596, MGMP 708, MGMP 709 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade. As S/U courses, they do not apply to the requirement of a minimum grade of C (2.00 grade points) in each required course.

3 Students participate in a required global field experience during the first year of enrollment in the degree program. Additional costs apply towards this global experience.

4 Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. If students wish to apply courses that are offered outside of the Jones Graduate School of Business (MGMP, MGMT, or MICO course offerings), the student must obtain permission from the Jones Graduate School of Business registrar department. Electives are offered on the evening schedule, the weekend schedule, and the daytime schedule.
• A minimum of 54 credit hours as listed below to satisfy degree requirements.
• A Global Field Experience.
• A minimum overall GPA of 3.00 in required coursework and with a minimum grade of C (2.00 grade points) in each course.

Summary

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Degree Requirements

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Global Field Experience Requirement

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Custom Core Courses

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Elective Requirements ⁴

Select an additional 16.5 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above 16.5

Total Credit Hours 54

Footnotes and Additional Information

¹ Classes are offered predominately on Friday evenings from 4:00pm – 9:30pm and Saturdays from 7:30am – 6:30pm every other weekend.
² MGMW 500, MGMW 594, and MGMW 596 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade. As S/U courses, they do not apply to the requirement of a minimum grade of C (2.00 grade points) in each required course.
³ Students participate in a required global field experience during the first year of the program. Additional costs apply towards this global experience.
⁴ Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. If students wish to apply courses that are offered outside of the Jones Graduate School of Business (MGMP, MGMT, or MICO course offerings), the student must obtain permission from the Jones Graduate School of Business registrar department. Electives are offered on the weekend schedule, the evening schedule, and the daytime schedule.

MBA for Professionals Evening Extended Program

The MBA for Professionals-Evening Extended Program allows students to complete the same curricular requirements as the MBA for Professionals Evening Program (a minimum of 54 credit hours) over a longer period of time (typically 3-5 academic years, rather than 22 months). There are minimum requirements each semester, but the structure facilitates the alignment of the pace of completion with professional preferences and commitments.

Policies for the MBA Degree, Professional Program

MBA Admission Requirements

Admission to the MBA degree program is open to students regardless of their undergraduate major, but the program is highly selective and access is limited to those who have performed with distinction across all areas of the application. A bachelor's degree (or equivalent) from an accredited undergraduate institution is required. All applicants submit an interview as part of their admission requirements.

All applicants to the MBA degree program must submit the following:

• an online application and application fee
• scores from the Graduate Management Admission Test (GMAT), the Graduate Record Examination (GRE),* or the Executive Assessment (EA)**
• transcripts from all previously-attended and/or degree-granting institutions
• resume with complete work history
• essays
• letter(s) of recommendation

Notes:

*Scores from the TOEFL, PTE, or IELTS are also required for international applicants, whose undergraduate degree was from an institution where the primary language of instruction was not English.

**The Executive Assessment (EA) is only accepted for MBA Degree, Executive Program applicants.
The MBA for Professionals Programs
The MBA for Professionals Programs do not have specific prerequisite courses required for admission.

Academic and Professional Standards
Students must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the MBA program, all students agree to be governed by the standards and procedures for dismissal or disciplinary action stated below.

Academic Standards
A minimum overall grade point average of 3.00 (B) is required for graduation. All courses taken for the MBA degree (including approved courses taken at the university, but outside the JGSB) are counted in the overall grade point average calculation.

Students with an overall grade point average lower than 3.00 at the end of any semester will be notified of academic standing. Students not meeting the 3.00 requirement will be provided specific instruction and guidance on the next steps specific to their academic situation. In some cases, students may submit an appeal to the JGSB Academic Standards Committee, requesting to be placed on academic probation. The committee reviews all academic cases, and may consult the dean’s office for counsel and/or suggestions on proposed handling of the case. The committee will decide, based on the circumstances of the appeal, whether the student may resume studies on academic probation; is to be academically suspended for one semester or an academic year; or is to be dismissed from the MBA program.

Students proposing to return after a period of academic suspension must follow the appropriate procedures outlined in the General Announcements by the Office of Graduate and Postdoctoral Studies to receive permission to be readmitted. If permitted to return, the student will pay the current rate of tuition, based upon the class of students s/he is joining.

Only courses in which a grade of C or above is earned will be counted for credit toward graduation. If students receive a grade below C in a course required for graduation, they must repeat the course. If students receive a grade lower than C in an elective course, they need not repeat the specific course, but they must make up the credit hours. If the required course is not offered again prior to graduation, the student will be permitted to take the course the following academic year, but will be charged the current pro-rated tuition for the program in which the additional coursework is completed.

Students on academic probation must complete all future courses with a grade of C or above and may be considered candidates for student offices by permission only. Students are removed from probation only upon achieving an overall grade point average of at least 3.00.

JGSB students may not take courses pass/fail to count toward their degree requirements. JGSB students may audit courses with departmental and professor approval. The courses will not count toward the MBA, but will appear on the transcript.

Professional Standards
MBA students are held to the highest standards of professional conduct expected of managers—standards substantially exceeding those expected of them simply as students. Students may be dismissed or suspended for failure to meet professional standards, as defined in the University Code of Conduct (p. 82). The dean may place a student on disciplinary probation for unacceptable conduct, giving oral and written notice that future misconduct will lead to filing specific charges. This probationary notice, however, is not required as a precondition for filing specific charges.

Guidelines for Appealing Academic Dismissal
The Process
A student who wishes to appeal a dismissal should address the following issues in a letter to the Academic Standards Committee. The student must send the letter to the chair of the Academic Standards Committee.

1. What circumstances led to your academic performance last semester and to what degree were those circumstances beyond your control?
2. If your performance in a particular course(s) last semester was below par, describe any circumstances specific to that course that explain your performance.
3. Do you expect the circumstances that created the problems for you last semester to change next semester? If so, how?

Students may include any additional information they deem relevant in the appeal letter.

Timing
If the student intends to appeal, the letter to the committee must be filed within one week after receiving a dismissal letter. If a student plans to appeal, he/she should continue to attend classes. It is important to keep up with studies during the appeal process. If the appeal is accepted, the student may continue progress towards the completion of their degree.

Appeals
Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.

Confidentiality
The Family Educational Rights and Privacy Act of 1974 and amendments govern the records of actions related to appeals.

Grade Appeal Process
Once a course grade has been assigned by an instructor, it is generally considered final and is rarely changed for any reason other than calculation or transcription errors. The procedure below outlines the process by which a student may appeal a course grade.

1. The student should first pursue any grading question with the instructor following the formal or informal process the instructor has outlined for the course.
2. If the matter is not resolved in step 1 above, the student must file a written appeal to the instructor and send a copy to the senior associate dean of degree programs. This written appeal must be filed no later than two weeks after the final grade for a course was assigned.
3. The instructor must schedule a meeting with the student within two weeks of receiving the written appeal to further discuss the appeal with the student. Notice of the appeal time and date will be provided by the instructor to the senior associate dean of degree programs.
4. If step 3 does not resolve the issue to the satisfaction of both parties, the student may appeal to the Academic Standards Committee by sending a written notice describing the grounds for the appeal within two weeks of the date of the scheduled meeting in step 3.
5. The Academic Standards Committee will seek out information on the appeal from the instructor and the student and, at its discretion,
hold a hearing to further consider the matter. The decision of the
Academic Standards Committee will be rendered within 4 weeks of
receiving a written notice of appeal (step 4).
6. Appeals beyond the Academic Standards Committee must go
to the dean of the Jones Graduate School of Business, who may
seek guidance from other constituents of the school. All decisions
rendered by the dean are final.
7. In the event that the protested grade is necessary for the student to
graduate, an accelerated schedule will be followed.

The Family Educational Rights and Privacy Act of 1974 and amendments
govern records of these actions.

MBA Elective Course Add/Drop Policy and Procedures
Due to the unique term schedule followed by the Jones Graduate School
of Business MBA programs, MBA students have special procedures they
must follow to make schedule changes. The Jones Graduate School of
Business Registrar Department administers an add/drop policy which
allows students to add/drop elective courses at various times throughout
the semester. For all elective courses, student may not add/drop a
course after the deadline for the appropriate term.

Class Attendance Policy
Students are expected to be in class on the first day of each term. The
instructor reserves the right to exclude a student from their course who is
absent on the first day. Students should refer to the specific attendance
policy for each program. This information can be found in the Jones
Graduate School of Business Student Handbook, which is referenced
below. For special circumstances, students should see the Director of
Advising in the Student Program Office and the instructor.

Withdrawal Policy
A Jones Graduate School of Business student, participating in any
offered program, may voluntarily withdraw from school at any time. Upon
withdrawal, Rice University applies a sliding scale to tuition, which is
noted in the university’s Academic Calendar posted on the Rice Office of
the Registrar website (https://registrar.rice.edu/calendars/).

Jones Graduate School of Business Student Handbook
Generally, the Jones Graduate School of Business adheres to the
academic regulations of Rice University. However, the Jones Graduate
School of Business MBA program has unique policies and procedures
that vary from the Office of Graduate and Postdoctoral Studies regarding,
but not limited to, leave of absence, withdrawals and readmission, add/
drop, and academic dismissal. A copy of the handbook is available on
Campus Groups.

Financial Aid
Jones Graduate School of Business scholarships are awarded at the
point of admission and are based on the merit of the application.
Financial assistance is generally awarded one academic year at a time.
Continuation of assistance depends on Satisfactory Academic Progress
(SAP) in accordance with Academic and Professional Standards of
performance, professional behavior, and is subject to the availability
of funds. Academic or disciplinary probation, suspension, or general
failure to maintain academic pace will result in the removal of all forms of
financial assistance (i.e. scholarship, employment, Federal/State student
loans, etc.). Students have the right to appeal the suspension. All appeals
will be reviewed by a committee.

Additional Information
For additional information, please see the Jones Graduate School of
Business website: https://business.rice.edu/

Opportunities for the MBA Degree,
Professional Program
Independent Study
Minimum Hours Requirement
Each credit of independent study should contain approximately as
much time content as a one-credit course at Jones Graduate School of
Business, which is 12 hours of class time, plus an average of at least
24–36 outside-class hours, for a minimum total of 36–48 hours of work.
Independent study projects can be accommodated in increments of 1.0,
1.5, 2.0, or 3.0 credit hours; 3.0 credit independent study projects are
rarely approved. Occasionally, a group independent study project may
arise, though most independent studies are undertaken by individual
students.

The number of credits for an independent study must be determined at
the beginning of a project. Increases to the number of project credit hours
after the project overview has been filed with the Jones Graduate School
of Business associate registrar must be approved by the Academic
Standards Committee. The committee will rely on input from sponsoring
faculty in making its decision about ex post credit increases. Requests to
increase the number of project credit hours must be made before the end
of the second week of classes in the term in which the project begins.

Restrictions
No student may take more than three credit hours of independent study
during the course of the MBA program without the approval of the
Academic Standards Committee. If an independent study is proposed
that would cause a student to exceed the 3.0 credit limit, the Academic
Standards Committee will select two faculty members, other than the
faculty member who will supervise the project, within the area most
closely related to the study’s academic content to review and approve
the study. Independent study exceeding 3.0 credits in total should
consider current policies restricting use of independent study as well
as the incremental value of additional independent study in light of past
independent studies. If the study does not align with any of the Jones
Graduate School of Business academic groups, the Academic Standards
Committee will perform the review and make the final approval decision.

Independent study projects are for academic credit, not for hire. Students
may not earn credit for paid work.

Faculty Sponsorship
Independent study projects normally are sponsored only by full-time
Jones Graduate School of Business faculty; faculty typically sponsor
projects only in their area of expertise. Students wanting sponsorship
by a part-time faculty member must submit a project overview to the
Academic Standards Committee and obtain the committee’s approval
before the term in which the project is to begin.

Common Requirements
The goal of independent study projects is to advance or deepen a
student’s knowledge or competency in a business discipline or activity.
To facilitate these goals, independent study projects generally fall into
two broad categories:
1. directed reading and study resulting in a research paper, or
2. an experiential or hands-on project resulting in an outcome such as an empirical analysis with an executive summary of the “deliverable.”

While the content of individual independent study projects are at the discretion of a student and the sponsoring faculty member, to ensure relatively equal workloads per unit of independent study credit and some common requirements across independent study projects, students and/or sponsoring faculty should:

1. Prepare and submit to the Jones Graduate School of Business associate registrar an overview of the independent study project with number of project credits, anticipated final results, and a broad timeline of anticipated project milestones.
2. Meet to discuss the project, after the initial agreement on the project scope, at least once every two to three weeks.
3. Prepare a final paper (in the case of directed reading and research projects) or complete a concrete deliverable (for example, computer program, survey results, empirical analyses, etc.) together with an executive summary of the project (in the case of experiential projects).
4. File a copy of each student’s final paper, or executive summary, with the Jones Graduate School of Business associate registrar.

Applications
Independent study applications are available for interested students on Campus Groups. Completed independent study applications must be approved by the senior associate dean of academic affairs. Completed and approved applications are due to the Jones Graduate School of Business associate registrar by the first week of the term in which the project will be completed. The student will be registered for MGMT 700/MGMT 800 independent study for the appropriate credit amount, only when the appropriate permissions have been obtained.

Additional Information
For additional information, please see the Jones Graduate School of Business website: https://business.rice.edu/

Master of Business Administration (MBA) Degree, Professional Program (Evening, Evening Extended)

Program Learning Outcomes for the MBA Degree

Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MBA Degree, Professional Program (Evening, Evening Extended)

The MBA degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). The Jones Graduate School of Business offers the MBA Professional Program in three formats. These programs cover the same content, but are offered at different times and over different periods.

Students choose a program based on lifestyle preference and professional and personal commitments. The current three formats are:

• MBA Professional Program, Evening (p. 265), or
• MBA Professional Program, Evening Extended (p. 269), or
• MBA Professional Program, Weekend (p. 269)

MBA Professional Program, Evening
The MBA Professional Program, Evening, consists of a 22-month, lock-step curriculum delivered in four consecutive semesters over a two-year period. Students pursuing the MBA Professional Program, Evening, must complete:

• A minimum of 54 credit hours to satisfy degree requirements.
• A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
• A Global Field Experience (during the first year of enrollment in the degree program).
• A minimum overall GPA of 3.00 or higher in all Rice coursework.
• A minimum overall GPA of 3.00 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree with a minimum grade of C (2.00 grade points) in each course.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<thead>
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<th>Code</th>
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<th>Credit Hours</th>
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Degree Requirements

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<td>MGMP 501</td>
<td>FINANCIAL ACCOUNTING</td>
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</tbody>
</table>

2019-2020 General Announcements

PDF Generated 1/29/2020
MGMP 502  MANAGERIAL ACCOUNTING  1.5
MGMP 510  ORGANIZATIONAL BEHAVIOR  1.5
MGMP 511  ORGANIZATIONAL CHANGE  0.75
MGMP 540  MANAGERIAL ECONOMICS  1.5
MGMP 543  FINANCE  3
MGMP 560  CORPORATE SOCIAL RESPONSIBILITY 2  0.75
MGMP 570  COMPETITIVE STRATEGY  1.5
MGMP 571  STRATEGY FORMULATION AND IMPLEMENTATION  1.5
MGMP 574  OPERATIONS MANAGEMENT  1.5
MGMP 580  MARKETING  3
MGMP 594  STRATEGIC BUSINESS COMMUNICATION I 2  0.75
MGMP 595  DATA ANALYSIS  3
MGMP 596  STRATEGIC BUSINESS COMMUNICATION II 2  0.75
MGMP 708  LEADERSHIP ILE 2  1.5
MGMP 709  NEGOTIATIONS ILE 2  1.5
MGMP 798  STRATEGIC MANAGEMENT SIMULATION  1.5

Capstone
MGMP 799  CAPSTONE CONSULTING PROJECT  3

Global Field Experience Requirement
MGMP 789  GLOBAL FIELD EXPERIENCE 3  3

Custom Core Course
Select 1 from the following: 1.5
MGMT 541 / MGMW 541  ECONOMIC ENVIRONMENT OF BUSINESS
MGMT 561 / MGMW 561  BUSINESS-GOVERNMENT RELATIONS

Elective Requirements 4
Select an additional 16.5 credit hours from departmental (MGMP, MGMT, MICO) course offerings at the 500-level or above 16.5

Total Credit Hours 54

Footnotes and Additional Information
1 Required first year classes are offered during the week from 6:15pm to 9:30pm predominantly on Monday and Wednesday evenings.
2 MGMP 500, MGMP 560, MGMP 594, MGMP 596, MGMP 708, MGMP 709 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade. As S/U courses, they do not apply to the requirement of a minimum grade of C (2.00 grade points) in each required course.
3 Students participate in a required global field experience during the first year of enrollment in the degree program. Additional costs apply towards this global experience.

4 To fulfill the remaining requirements for the degree program, students must complete an additional 16.5 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 54 total credit hours. (MGMP 703, MGMP 704, and MGMP 705 are not accepted as electives.) Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. If students wish to apply courses that are offered outside of the Jones Graduate School of Business (MGMP, MGMT, or MICO course offerings), the student must obtain permission from the Jones Graduate School of Business registrar department. Electives are offered on the evening schedule, the weekend schedule, and the daytime schedule.

MBA Professional Program, Evening Extended
The MBA Professional Program, Evening Extended, allows students to complete the same curricular requirements as the MBA Professional Program, Evening, (a minimum of 54 credit hours) over a longer period of time (typically 3-5 academic years, rather than 22 months). There are minimum requirements each semester, but the structure facilitates the alignment of the pace of completion with professional preferences and commitments.

Policies for the MBA Degree, Professional Program (Evening, Evening Extended)
MBA Admission Requirements
Admission to the MBA degree program is open to students regardless of their undergraduate major, but the program is highly selective and access is limited to those who have performed with distinction across all areas of the application. A bachelor’s degree (or equivalent) from an accredited undergraduate institution is required. All applicants submit an interview as part of their admission requirements.

All applicants to the MBA degree program must submit the following:

- an online application and application fee
- scores from the Graduate Management Admission Test (GMAT), the Graduate Record Examination (GRE),* or the Executive Assessment (EA)**
- transcripts from all previously-attended and/or degree-granting institutions
- resume with complete work history
- essays
- letter(s) of recommendation

Notes:

*Scores from the TOEFL, PTE, or IELTS are also required for international applicants, whose undergraduate degree was from an institution where the primary language of instruction was not English.

**The Executive Assessment (EA) is only accepted for MBA Degree, Executive Program applicants.

The MBA Professional Program (Evening, Evening Extended)
The MBA Professional Program (Evening, Evening Extended) does not have specific prerequisite courses required for admission.
**Academic and Professional Standards**

Students must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the MBA program, all students agree to be governed by the standards and procedures for dismissal or disciplinary action stated below.

**Academic Standards**

A minimum overall grade point average of 3.00 (B) is required for graduation. All courses taken for the MBA degree (including approved courses taken at the university, but outside the JGSB) are counted in the overall grade point average calculation.

Students with an overall grade point average lower than 3.00 at the end of any semester will be notified of academic standing. Students not meeting the 3.00 requirement will be provided specific instruction and guidance on the next steps specific to their academic situation.

In some cases, students may submit an appeal to the JGSB Academic Standards Committee, requesting to be placed on academic probation. The committee will decide, based on the circumstances of the appeal, whether the student may resume studies on academic probation; is to be academically suspended for one semester or an academic year; or is to be dismissed from the MBA program.

Students proposing to return after a period of academic suspension must follow the appropriate procedures outlined in the General Announcements by the Office of Graduate and Postdoctoral Studies to receive permission to be readmitted. If permitted to return, the student will pay the current rate of tuition, based upon the class of students s/he is joining.

Only courses in which a grade of C or above is earned will be counted for credit toward graduation. If students receive a grade below C in a course required for graduation, they must repeat the course. If students receive a grade lower than C in an elective course, they need not repeat the specific course, but they must make up the credit hours. If the required course is not offered again prior to graduation, the student will be permitted to take the course the following academic year, but will be charged the current pro-rated tuition for the program in which the additional coursework is completed.

Students on academic probation must complete all future courses with a grade of C or above and may be considered candidates for student offices by permission only. Students are removed from probation only upon achieving an overall grade point average of at least 3.00.

JGSB students may not take courses pass/fail to count toward their degree requirements. JGSB students may audit courses with departmental and professor approval. The courses will not count toward the MBA, but will appear on the transcript.

**Professional Standards**

MBA students are held to the highest standards of professional conduct expected of managers—standards substantially exceeding those expected of them simply as students. Students may be dismissed or suspended for failure to meet professional standards, as defined in the University Code of Conduct (p. 82). The dean may place a student on disciplinary probation for unacceptable conduct, giving oral and written notice that future misconduct will lead to filing specific charges. This probationary notice, however, is not required as a precondition for filing specific charges.

**Class Attendance Policy**

Students are expected to be in class on the first day of each term. The instructor reserves the right to exclude a student from their course who is absent on the first day. Students should refer to the specific attendance policy for each program. This information can be found in the Jones Graduate School of Business Student Handbook, which is referenced below. For special circumstances, students should see the Director of Advising in the Student Program Office and the instructor.

**Guidelines for Appealing Academic Dismissal**

**The Process**

A student who wishes to appeal a dismissal should address the following issues in a letter to the Academic Standards Committee. The student must send the letter to the chair of the Academic Standards Committee.

1. What circumstances led to your academic performance last semester and to what degree were those circumstances beyond your control?
2. If your performance in a particular course(s) last semester was below par, describe any circumstances specific to that course that explain your performance.
3. Do you expect the circumstances that created the problems for you last semester to change next semester? If so, how?

Students may include any additional information they deem relevant in the appeal letter.

**Timing**

If the student intends to appeal, the letter to the committee must be filed within one week after receiving a dismissal letter. If a student plans to appeal, he/she should continue to attend classes. It is important to keep up with studies during the appeal process. If the appeal is accepted, the student may continue progress towards the completion of their degree.

**Appeals**

Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.

**Confidentiality**

The Family Educational Rights and Privacy Act of 1974 and amendments govern the records of actions related to appeals.

**Grade Appeal Process**

Once a course grade has been assigned by an instructor, it is generally considered final and is rarely changed for any reason other than calculation or transcription errors. The procedure below outlines the process by which a student may appeal a course grade.

1. The student should first pursue any grading question with the instructor following the formal or informal process the instructor has outlined for the course.
2. If the matter is not resolved in step 1 above, the student must file a written appeal to the instructor and send a copy to the senior associate dean of degree programs. This written appeal must be filed no later than two weeks after the final grade for a course was assigned.
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5. The Academic Standards Committee will seek out information on the appeal from the instructor and the student and, at its discretion, hold a hearing to further consider the matter. The decision of the Academic Standards Committee will be rendered within 4 weeks of receiving a written notice of appeal (step 4).

6. Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.

7. In the event that the protested grade is necessary for the student to graduate, an accelerated schedule will be followed.

The Family Educational Rights and Privacy Act of 1974 and amendments govern records of these actions.

MBA Elective Course Add/Drop Policy and Procedures
Due to the unique term schedule followed by the Jones Graduate School of Business MBA programs, MBA students have special procedures they must follow to make schedule changes. The Jones Graduate School of Business Registrar Department administers an add/drop policy which allows students to add/drop elective courses at various times throughout the semester. For all elective courses, student may not add/drop a course after the deadline for the appropriate term.

Withdrawal Policy
A Jones Graduate School of Business student, participating in any offered program, may voluntarily withdraw from school at any time. Upon withdrawal, Rice University applies a sliding scale to tuition, which is noted in the university’s Academic Calendar posted on the Rice Office of the Registrar website (https://registrar.rice.edu/calendars/).

Jones Graduate School of Business Student Handbook
Generally, the Jones Graduate School of Business adheres to the academic regulations of Rice University. However, the Jones Graduate School of Business MBA program has unique policies and procedures that vary from the Office of Graduate and Postdoctoral Studies regarding, but not limited to, leave of absence, withdrawals and readmission, add/drop, and academic dismissal. A copy of the handbook is available on Campus Groups.

Financial Aid
Jones Graduate School of Business scholarships are awarded at the point of admission and are based on the merit of the application. Financial assistance is generally awarded one academic year at a time. Continuation of assistance depends on Satisfactory Academic Progress (SAP) in accordance with Academic and Professional Standards of performance, professional behavior, and is subject to the availability of funds. Academic or disciplinary probation, suspension, or general failure to maintain academic pace will result in the removal of all forms of financial assistance (i.e. scholarship, employment, Federal/State student loans, etc.). Students have the right to appeal the suspension. All appeals will be reviewed by a committee.

Additional Information
For additional information, please see the Jones Graduate School of Business website: https://business.rice.edu/.

Opportunities for the MBA Degree, Professional Program (Evening, Evening Extended)

Independent Study
Minimum Hours Requirement
Each credit of independent study should contain approximately as much time content as a one-credit course at Jones Graduate School of Business, which is 12 hours of class time, plus an average of at least 24–36 outside-class hours, for a minimum total of 36–48 hours of work. Independent study projects can be accommodated in increments of 1.0, 1.5, 2.0, or 3.0 credit hours; 3.0 credit independent study projects are rarely approved. Occasionally, a group independent study project may arise, though most independent studies are undertaken by individual students.

The number of credits for an independent study must be determined at the beginning of a project. Increases to the number of project credit hours after the project overview has been filed with the Jones Graduate School of Business associate registrar must be approved by the Academic Standards Committee. The committee will rely on input from sponsoring faculty in making its decision about ex post credit increases. Requests to increase the number of project credit hours must be made before the end of the second week of classes in the term in which the project begins.

Restrictions
No student may take more than three credit hours of independent study during the course of the MBA program without the approval of the Academic Standards Committee. If an independent study is proposed that would cause a student to exceed the 3.0 credit limit, the Academic Standards Committee will select two faculty members, other than the faculty member who will supervise the project, within the area most closely related to the study’s academic content to review and approve the study. Independent study exceeding 3.0 credits in total should consider current policies restricting use of independent study as well as the incremental value of additional independent study in light of past independent studies. If the study does not align with any of the Jones Graduate School of Business academic groups, the Academic Standards Committee will perform the review and make the final approval decision.

Independent study projects are for academic credit, not for hire. Students may not earn credit for paid work.

Faculty Sponsorship
Independent study projects normally are sponsored only by full-time Jones Graduate School of Business faculty; faculty typically sponsor projects only in their area of expertise. Students wanting sponsorship by a part-time faculty member must submit a project overview to the Academic Standards Committee and obtain the committee’s approval before the term in which the project is to begin.

Common Requirements
The goal of independent study projects is to advance or deepen a student’s knowledge or competency in a business discipline or activity.

To facilitate these goals, independent study projects generally fall into two broad categories:

1. directed reading and study resulting in a research paper, or
2. an experiential or hands-on project resulting in an outcome such as an empirical analysis with an executive summary of the “deliverable.”
While the content of individual independent study projects are at the discretion of a student and the sponsoring faculty member, to ensure relatively equal workloads per unit of independent study credit and some common requirements across independent study projects, students and/or sponsoring faculty should:

1. Prepare and submit to the Jones Graduate School of Business associate registrar an overview of the independent study project with number of project credits, anticipated final results, and a broad timeline of anticipated project milestones.
2. Meet to discuss the project, after the initial agreement on the project scope, at least once every two to three weeks.
3. Prepare a final paper (in the case of directed reading and research projects) or complete a concrete deliverable (for example, computer program, survey results, empirical analyses, etc.) together with an executive summary of the project (in the case of experiential projects).
4. File a copy of each student's final paper, or executive summary, with the Jones Graduate School of Business associate registrar.

Applications
Independent study applications are available for interested students on Campus Groups. Completed independent study applications must be approved by the senior associate dean of academic affairs. Completed and approved applications are due to the Jones Graduate School of Business associate registrar by the first week of the term in which the project will be completed. The student will be registered for MGMT 700/MGMT 800 independent study for the appropriate credit amount, only when the appropriate permissions have been obtained.

Additional Information
For additional information, please see the Jones Graduate School of Business website: https://business.rice.edu/

Master of Business Administration (MBA) Degree, Professional Program (Weekend)

Program Learning Outcomes for the MBA Degree

Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MBA Degree, Professional Program (Weekend)
The MBA degree is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). The Jones Graduate School of Business offers the MBA Professional Program in three formats. These programs cover the same content, but are offered at different times and over different periods.

Students choose a program based on lifestyle preference and professional and personal commitments. The current three formats are:

- MBA Professional Program, Evening (p. 265), or
- MBA Professional Program, Evening Extended (p. 265), or
- MBA Professional Program, Weekend (p. 269)

MBA Professional Program, Weekend

The MBA Professional Program, Weekend, consists of a 22-month, lock-step curriculum delivered in four consecutive semesters over a two-year period. Students pursuing the MBA Professional Program, Weekend, must complete:

- A minimum of 54 credit hours to satisfy degree requirements.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A Global Field Experience.
- A minimum overall GPA of 3.00 or higher in all Rice coursework.
- A minimum overall GPA of 3.00 or higher in all Rice coursework that satisfies requirements for the non-thesis master's degree with a minimum grade of C (2.00 grade points) in each course.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/degneworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
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<th>Code</th>
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Degree Requirements

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<tr>
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<tr>
<td>MGMW 502</td>
<td>MANAGERIAL ACCOUNTING</td>
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<td>ORGANIZATIONAL BEHAVIOR</td>
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<td>ORGANIZATIONAL CHANGE</td>
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<td>MGMW 540</td>
<td>MANAGERIAL ECONOMICS</td>
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<td>MGMW 543</td>
<td>FINANCE</td>
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<td>MGMW 560</td>
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<tr>
<td>MGMW 570</td>
<td>COMPETITIVE STRATEGY</td>
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<tr>
<td>MGMW 571</td>
<td>STRATEGY FORMULATION AND IMPLEMENTATION</td>
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</tr>
<tr>
<td>MGMW 574</td>
<td>OPERATIONS MANAGEMENT</td>
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MGMW 580          MARKETING           3
MGMW 594          STRATEGIC BUSINESS COMMUNICATION I 2          0.75
MGMW 595          DATA ANALYSIS          3
MGMW 596          STRATEGIC BUSINESS COMMUNICATION II 2          0.75
MGMW 706          LEADERSHIP          1.5
MGMW 709          NEGOTIATIONS          1.5
MGMW 798          STRATEGIC MANAGEMENT SIMULATION          1.5
MGMW 799          CAPSTONE CONSULTING PROJECT          3
Global Field Experience Requirement
MGMW 789          GLOBAL FIELD EXPERIENCE 3 object value object value 3
Custom Core Course
MGMW 541          ECONOMIC ENVIRONMENT OF BUSINESS or MGM 561          BUSINESS-GOVERNMENT RELATIONS          1.5
Elective Requirements 4
Select an additional 16.5 credit hours from departmental (MGMP, MGM, or MICO) course offerings at the 500-level or above          16.5
Total Credit Hours          54

Footnotes and Additional Information
1 Classes are offered predominately on Friday evenings from 4:00pm – 9:30pm and Saturdays from 7:30am – 6:30pm every other weekend.
2 MGMW 500, MGMW 594, and MGMW 596 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade. As S/U courses, they do not apply to the requirement of a minimum grade of C (2.00 grade points) in each required course.
3 Students participate in a required global field experience during the first year of the program. Additional costs apply towards this global experience.
4 To fulfill the remaining requirements for the degree program, students must complete an additional 16.5 credit hours from departmental (MGMP, MGM, or MICO) course offerings at the 500-level or above to reach 54 total credit hours. (MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.) Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. If students wish to apply courses that are offered outside of the Jones Graduate School of Business (MGMP, MGM, or MICO course offerings), the student must obtain permission from the Jones Graduate School of Business registrar department. Electives are offered on the weekend schedule, the evening schedule, and the daytime schedule.

Policies for the MBA Degree, Professional Program (Weekend)

MBA Admission Requirements
Admission to the MBA degree program is open to students regardless of their undergraduate major, but the program is highly selective and access is limited to those who have performed with distinction across all areas of the application. A bachelor’s degree (or equivalent) from an accredited undergraduate institution is required. All applicants submit an interview as part of their admission requirements.

All applicants to the MBA degree program must submit the following:

- an online application and application fee
- scores from the Graduate Management Admission Test (GMAT), the Graduate Record Examination (GRE),* or the Executive Assessment (EA)**
- transcripts from all previously-attended and/or degree-granting institutions
- resume with complete work history
- essays
- letter(s) of recommendation

Notes:
*Scores from the TOEFL, PTE, or IELTS are also required for international applicants, whose undergraduate degree was from an institution where the primary language of instruction was not English.

**The Executive Assessment (EA) is only accepted for MBA Degree, Executive Program applicants.

The MBA Professional Program (Weekend)
The MBA Professional Program (Weekend) does not have specific prerequisite courses required for admission.

Academic and Professional Standards
Students must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the MBA program, all students agree to be governed by the standards and procedures for dismissal or disciplinary action stated below.

Academic Standards
A minimum overall grade point average of 3.00 (B) is required for graduation. All courses taken for the MBA degree (including approved courses taken at the university, but outside the JGSB) are counted in the overall grade point average calculation.

Students with an overall grade point average lower than 3.00 at the end of any semester will be notified of academic standing. Students not meeting the 3.00 requirement will be provided specific instruction and guidance on the next steps specific to their academic situation. In some cases, students may submit an appeal to the JGSB Academic Standards Committee, requesting to be placed on academic probation. The committee reviews all academic cases, and may consult the dean’s office for counsel and/or suggestions on proposed handling of the case. The committee will decide, based on the circumstances of the appeal, whether the student may resume studies on academic probation; is to be academically suspended for one semester or an academic year; or is to be dismissed from the MBA program.

Students proposing to return after a period of academic suspension must follow the appropriate procedures outlined in the General Announcements by the Office of Graduate and Postdoctoral Studies to receive permission to be readmitted. If permitted to return, the student will pay the current rate of tuition, based upon the class of students s/he is joining.

Only courses in which a grade of C or above is earned will be counted for credit toward graduation. If students receive a grade below C in a course required for graduation, they must repeat the course. If students receive a grade lower than C in an elective course, they need not repeat the specific course, but they must make up the credit hours. If the required course is not offered again prior to graduation, the student will be permitted to take the course the following academic year, but will be charged the current
pro-rated tuition for the program in which the additional coursework is completed.

Students on academic probation must complete all future courses with a grade of C or above and may be considered candidates for student offices by permission only. Students are removed from probation only upon achieving an overall grade point average of at least 3.00.

JGSB students may not take courses pass/fail to count toward their degree requirements. JGSB students may audit courses with departmental and professor approval. The courses will not count toward the MBA, but will appear on the transcript.

Professional Standards
MBA students are held to the highest standards of professional conduct expected of managers—standards substantially exceeding those expected of them simply as students. Students may be dismissed or suspended for failure to meet professional standards, as defined in the University Code of Conduct (p. 82). The dean may place a student on disciplinary probation for unacceptable conduct, giving oral and written notice that future misconduct will lead to filing specific charges. This probationary notice, however, is not required as a precondition for filing specific charges.

Class Attendance Policy
Students are expected to be in class on the first day of each term. The instructor reserves the right to exclude a student from their course who is absent on the first day. Students should refer to the specific attendance policy for each program. This information can be found in the Jones Graduate School of Business Student Handbook, which is referenced below. For special circumstances, students should see the Director of Advising in the Student Program Office and the instructor.

Guidelines for Appealing Academic Dismissal
The Process
A student who wishes to appeal a dismissal should address the following issues in a letter to the Academic Standards Committee. The student must send the letter to the chair of the Academic Standards Committee.

1. What circumstances led to your academic performance last semester and to what degree were those circumstances beyond your control?
2. If your performance in a particular course(s) last semester was below par, describe any circumstances specific to that course that explain your performance.
3. Do you expect the circumstances that created the problems for you last semester to change next semester? If so, how?

Students may include any additional information they deem relevant in the appeal letter.

Timing
If the student intends to appeal, the letter to the committee must be filed within one week after receiving a dismissal letter. If a student plans to appeal, he/she should continue to attend classes. It is important to keep up with studies during the appeal process. If the appeal is accepted, the student may continue progress towards the completion of their degree.

Appeals
Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.

Confidentiality
The Family Educational Rights and Privacy Act of 1974 and amendments govern the records of actions related to appeals.

Grade Appeal Process
Once a course grade has been assigned by an instructor, it is generally considered final and is rarely changed for any reason other than calculation or transcription errors. The procedure below outlines the process by which a student may appeal a course grade.

1. The student should first pursue any grading question with the instructor following the formal or informal process the instructor has outlined for the course.
2. If the matter is not resolved in step 1 above, the student must file a written appeal to the instructor and send a copy to the senior associate dean of degree programs. This written appeal must be filed no later than two weeks after the final grade for a course was assigned.
3. The instructor must schedule a meeting with the student within two weeks of receiving the written appeal to further discuss the appeal with the student. Notice of the appeal time and date will be provided by the instructor to the senior associate dean of degree programs.
4. If step 3 does not resolve the issue to the satisfaction of both parties, the student may appeal to the Academic Standards Committee by sending a written notice describing the grounds for the appeal within two weeks of the date of the scheduled meeting in step 3.
5. The Academic Standards Committee will seek out information on the appeal from the instructor and the student and, at its discretion, hold a hearing to further consider the matter. The decision of the Academic Standards Committee will be rendered within 4 weeks of receiving a written notice of appeal (step 4).
6. Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.
7. In the event that the protested grade is necessary for the student to graduate, an accelerated schedule will be followed.

The Family Educational Rights and Privacy Act of 1974 and amendments govern records of these actions.

MBA Elective Course Add/Drop Policy and Procedures
Due to the unique term schedule followed by the Jones Graduate School of Business MBA programs, MBA students have special procedures they must follow to make schedule changes. The Jones Graduate School of Business Registrar Department administers an add/drop policy which allows students to add/drop elective courses at various times throughout the semester. For all elective courses, student may not add/drop a course after the deadline for the appropriate term.

Withdrawal Policy
A Jones Graduate School of Business student, participating in any offered program, may voluntarily withdraw from school at any time. Upon withdrawal, Rice University applies a sliding scale to tuition, which is noted in the university’s Academic Calendar posted on the Rice Office of the Registrar website (https://registrar.rice.edu/calendars/).

Jones Graduate School of Business Student Handbook
Generally, the Jones Graduate School of Business adheres to the academic regulations of Rice University. However, the Jones Graduate School of Business MBA program has unique policies and procedures.
that vary from the Office of Graduate and Postdoctoral Studies regarding, but not limited to, leave of absence, withdrawals and readmission, add/drop, and academic dismissal. A copy of the handbook is available on Campus Groups.

Financial Aid
Jones Graduate School of Business scholarships are awarded at the point of admission and are based on the merit of the application. Financial assistance is generally awarded one academic year at a time. Continuation of assistance depends on Satisfactory Academic Progress (SAP) in accordance with Academic and Professional Standards of performance, professional behavior, and is subject to the availability of funds. Academic or disciplinary probation, suspension, or general failure to maintain academic pace will result in the removal of all forms of financial assistance (i.e., scholarship, employment, Federal/State student loans, etc.). Students have the right to appeal the suspension. All appeals will be reviewed by a committee.

Additional Information
For additional information, please see the Jones Graduate School of Business website: https://business.rice.edu/

Opportunities for the MBA Degree, Professional Program (Weekend)

Independent Study
Minimum Hours Requirement
Each credit of independent study should contain approximately as much time content as a one-credit course at Jones Graduate School of Business, which is 12 hours of class time, plus an average of at least 24–36 outside-class hours, for a minimum total of 36–48 hours of work. Independent study projects can be accommodated in increments of 1.0, 1.5, 2.0, or 3.0 credit hours; 3.0 credit independent study projects are rarely approved. Occasionally, a group independent study project may arise, though most independent studies are undertaken by individual students.

The number of credits for an independent study must be determined at the beginning of a project. Increases to the number of project credit hours after the project overview has been filed with the Jones Graduate School of Business associate registrar must be approved by the Academic Standards Committee. The committee will rely on input from sponsoring faculty in making its decision about ex post credit increases. Requests to increase the number of project credit hours must be made before the end of the second week of classes in the term in which the project begins.

Restrictions
No student may take more than three credit hours of independent study during the course of the MBA program without the approval of the Academic Standards Committee. If an independent study is proposed that would cause a student to exceed the 3.0 credit limit, the Academic Standards Committee will select two faculty members, other than the faculty member who will supervise the project, within the area most closely related to the study’s academic content to review and approve the study. Independent study exceeding 3.0 credits in total should consider current policies restricting use of independent study as well as the incremental value of additional independent study in light of past independent studies. If the study does not align with any of the Jones Graduate School of Business academic groups, the Academic Standards Committee will perform the review and make the final approval decision.

Independent study projects are for academic credit, not for hire. Students may not earn credit for paid work.

Faculty Sponsorship
Independent study projects normally are sponsored only by full-time Jones Graduate School of Business faculty; faculty typically sponsor projects only in their area of expertise. Students wanting sponsorship by a part-time faculty member must submit a project overview to the Academic Standards Committee and obtain the committee’s approval before the term in which the project is to begin.

Common Requirements
The goal of independent study projects is to advance or deepen a student’s knowledge or competency in a business discipline or activity. To facilitate these goals, independent study projects generally fall into two broad categories:

1. directed reading and study resulting in a research paper, or
2. an experiential or hands-on project resulting in an outcome such as an empirical analysis with an executive summary of the “deliverable.”

While the content of individual independent study projects are at the discretion of a student and the sponsoring faculty member, to ensure relatively equal workloads per unit of independent study credit and some common requirements across independent study projects, students and/or sponsoring faculty should:

1. Prepare a final paper (in the case of directed reading and research projects) or complete a concrete deliverable (for example, computer program, survey results, empirical analyses, etc.) together with an executive summary of the project (in the case of experiential projects).
2. Meet to discuss the project, after the initial agreement on the project scope, at least once every two to three weeks.
3. Prepare a final paper (in the case of directed reading and research projects) or complete a concrete deliverable (for example, computer program, survey results, empirical analyses, etc.) together with an executive summary of the project (in the case of experiential projects).
4. File a copy of each student’s final paper, or executive summary, with the Jones Graduate School of Business associate registrar.

Applications
Independent study applications are available for interested students on Campus Groups. Completed independent study applications must be approved by the senior associate dean of academic affairs. Completed and approved applications are due to the Jones Graduate School of Business associate registrar by the first week of the term in which the project will be completed. The student will be registered for MGMT 700/MGMT 800 independent study for the appropriate credit amount, only when the appropriate permissions have been obtained.

Additional Information
For additional information, please see the Jones Graduate School of Business website: https://business.rice.edu/

Minor in Business
Program Learning Outcomes for the Minor in Business

Upon completing the minor in Business, students will be able to:
1. Demonstrate an understanding of financial statements from the perspective of a user of this information.
2. Demonstrate an understanding of the major sociological and social psychological processes that underlie individual and group behavior in organizations.
3. Demonstrate an understanding of the basic concepts of corporate financial management and of the set of analytical tools used to evaluate corporate investment and financing decisions.
4. Demonstrate an understanding of the basic concepts of strategic management and the frameworks necessary to execute competitive industry analysis and strategy formulation and implementation.
5. Demonstrate a basic understanding of the role of marketing in organizations and of the primary marketing decisions facing management.
6. Demonstrate mastery of best practices in creating communication strategies and delivering effective internal and external communications.

Requirements for the Minor in Business

Students pursuing the minor in Business must complete:

- A minimum of 6 courses (18 credit hours) to satisfy minor requirements.
- A maximum of 2 courses (6 credit hours) from study abroad or transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the minor’s Official Certifier (https://registrar.rice.edu/facstaff/degeworks/officialcertifier/). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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Minor Requirements

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<td>FINANCIAL ACCOUNTING</td>
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<td>or ECON 343</td>
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<td>BUSI 380</td>
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Footnotes and Additional Information

1. Enrollment in BUSI 343 and BUSI 380 requires completion of instruction in microeconomics and statistics. The statistics requirement can be fulfilled by completing STAT 280, or an approved alternative as listed on the Jones School website (http://business.rice.edu/academic-program/undergraduate-business-minor/course-descriptions/). The economics requirement can be fulfilled by completing ECON 100 at Rice.

2. Enrollment in BUSI 343 and BUSI 390 requires completion of BUSI 305. Please Note: The Program Director will not approve requests to waive prerequisites for BUSI 343 or BUSI 390. For further details on course prerequisites, please see course descriptions (http://courses.rice.edu/).

Enrollment Lottery

If a given BUSI course is oversubscribed, the Jones Graduate School of Business will conduct a weighted lottery to determine which students will be admitted to the course. The lottery will give advantage to students who have successfully completed a greater number of Business minor courses and who are closer to graduation.

Policies for the Minor in Business

Declaration of the Business Minor

To declare the minor in Business, students must bring a completed Declaration of the Business Minor form and official transcript to the program director for review and signature. The Declaration and Change of Minor Form is available on ESTHER (https://esther.rice.edu/).

Program Restrictions and Exclusions

Students pursuing the minor in Business should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 11), i.) students may declare a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines

Students pursuing the minor in Business should be aware of the following program-specific transfer credit guidelines:

- No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the minor.
- Requests for transfer credit will be considered by the Program Director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information

For additional information, please see the Jones Graduate School of Business website: https://business.rice.edu/
Opportunities for the Minor in Business

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Additional Information

For additional information, please see the Jones Graduate School of Business website: https://business.rice.edu

Chemical and Biomolecular Engineering

Contact Information

Chemical and Biomolecular Engineering
https://chbe.rice.edu/
B218 Abercrombie Engineering Lab
713-348-4902

Michael S. Wong
Department Chair
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Kenneth R. Cox
Director of Undergraduate Studies
ken.cox@rice.edu

Frederick C. MacKintosh
Director of Graduate Studies
fcmack@rice.edu

The Chemical and Biomolecular Engineering Department's programs provide undergraduates with a sound scientific and technical grounding for further development in a variety of professional environments. Courses in mathematics, chemistry, physics, and computational engineering provide the background for the chemical engineering core, which introduces students to chemical process fundamentals, fluid mechanics, heat and mass transfer, thermodynamics, kinetics, reactor design, process control, product and process design. Course electives may be used to create a focus area in one of the following five disciplines: biotechnology/bioengineering, environmental engineering, materials science/engineering, sustainability and energy engineering, and computational engineering. Upon completing either the flexible BA requirements or the more scientific and professional BSChE requirements, students may apply for a fifth year of study leading to the nonthesis Master of Chemical Engineering (MChE) degree.

Students admitted for graduate studies leading to the MS or PhD degrees must complete a rigorous program combining advanced course work and original research that must be formalized in an approved thesis. Graduate research is possible in a number of areas, including catalysis and nanotechnology, thermodynamics and phase equilibria, interfacial phenomena, colloids, microemulsions, rheology and fluid mechanics, biosystems engineering, biocatalysis and metabolic engineering, cell population heterogeneity and biological pattern formation, cellular and tissue engineering, sustainability and energy, gas hydrates, enhanced oil recovery, reservoir characterization, and pollution control.

A coordinated MBA/MChE degrees program is also offered in conjunction with the Jesse H. Jones Graduate School of Business.

Bachelor's Programs

- Bachelor of Arts (BA) Degree with a Major in Chemical Engineering (p. 276)
- Bachelor of Science in Chemical Engineering (BSChE) Degree (p. 277)

Master's Programs

- Master of Chemical Engineering (MChE) Degree (p. 283)
- Master of Science (MS) Degree in the field of Chemical Engineering*

Doctoral Program

- Doctor of Philosophy (PhD) Degree in the field of Chemical Engineering (p. 282)

Coordinated Programs

- Master of Chemical Engineering (MChE) Degree / Master of Business Administration (MBA) Degree (p. 284)*

* Prospective students must receive permission from the graduate program to apply directly to the Master of Science (MS) degree program.

Chair

Michael S. Wong

Professors

Sibani Lisa Biswal
Walter G. Chapman
Frederick C. MacKintosh
Matteo Pasquali
Marc A. Robert
Kyriacos Zygourakis

Associate Professors

Aditya D. Mohite
Rafael Verduzco

Assistant Professors

Xue Gao
Amanda N. Marciel
Thomas Senftle
Francisco M. Vargas Arreola
Haotian Wang

Professors Emeriti

Constantine D. Armeniades
Sam H. Davis, Jr.
Jesse David Hellums
George J. Hirasaki
Clarence A. Miller
Research Professors
Abbas Firoozabadi
Glen C. Irvin

Associate Research Professor
Dilip Asthagiri

Professor in the Practice
Kenneth R. Cox

Lecturers
Marya Cokar
Gerald G. McGlamery
Mohammed Tavakkoli

Joint Appointments
Pedro J.J. Alvarez
Pulickel M. Ajayan
George N. Bennett
Cecilia Clementi
Eilaf Egap
Robert J. Griffin
Anatoly B. Kolomeisky
Christy F. Landes
Qilin Li
Antonios G. Mikos
Peter Rossky
Ka-Yiu San
Jonathan J. Silberg
Junghae Suh
Edwin L. Thomas

Adjunct Professors
Marek Behr
Jefferson L. Creek
Ramon Gonzalez
Bhagavatula Moorthy
Michael A. Reynolds
Richard B. Strait
Vahid Taghikhani

Adjunct Associate Professor
Rouhollah Farajzadeh

Adjunct Assistant Professor
Deepak Nagrath

Adjunct Lecturer
John T. Perez

Course Catalog/Schedule
• Course offerings/subject code: CHBE

Department Description and Code
• Chemical and Biomolecular Engineering: CHBE

Undergraduate Degree Descriptions and Codes
• Bachelor of Arts degree: BA
• Bachelor of Science in Chemical Engineering degree: BSChE

Undergraduate Major Description and Code
• Major in Chemical Engineering (both BA and BSChE degrees) code: CENG

Undergraduate Major Areas of Specialization Descriptions and Attribute Codes*
• Area of Specialization in Biotechnology and Bioengineering (BSChE degree only): CEBB
• Area of Specialization in Computational Engineering (BSChE degree only): CECE
• Area of Specialization in Environmental Engineering (BSChE degree only): CEEE
• Area of Specialization in Materials Science and Engineering (BSChE degree only): CEMS
• Area of Specialization in Sustainable and Energy Engineering (BSChE degree only): CESE
• Area of Specialization in Engineering Breadth (BSChE degree only): CEBR

Please Note: Areas of Specialization are department/program-specific and are not formally recognized academic credentials. Unlike Major Concentrations, Areas of Specialization do not appear on the student's official academic transcript, etc.

Graduate Degree Descriptions and Codes
• Master of Chemical Engineering degree: MChE
• Master of Science degree: MS
• Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code
• Degree Program in Chemical Engineering: CENG

CIP Code and Description

1 CENG Major/Program: CIP Code/Title: 14.0701 - Chemical Engineering

* Systems Use Only: this information is used solely by internal offices at Rice University (such as OTR, GPS, etc.) and primarily within student information systems and support.
1 Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/
Bachelor of Arts (BA) Degree with a Major in Chemical Engineering

Program Learning Outcomes for the BA Degree with a Major in Chemical Engineering

Upon completing the BA degree with a major in Chemical Engineering, students will be able to demonstrate:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to communicate effectively with a range of audiences.
3. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
4. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
5. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Requirements for the BA Degree with a Major in Chemical Engineering

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Chemical Engineering must complete:

- A minimum of 72 credit hours to satisfy major requirements.
- A minimum of 132 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 13 courses (37 credit hours) taken at the 300-level or above.

The BA with a Major in Chemical Engineering is a flexible program and allows a student to pursue other areas of interest with or without a second major (or an academic minor).

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier [https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/].) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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Degree Requirements

**Core Requirements**

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**Physics**

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<td>PHYS 111</td>
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**Chemical and Biomolecular Engineering Core Courses**

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<th>Title</th>
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<td>CHEMICAL ENGINEERING LAB I</td>
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<tr>
<td>CHBE 350</td>
<td>PROCESS SAFETY IN CHEMICAL ENGINEERING</td>
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</table>
Fifth-Year Master's Degree Option for Rice Undergraduate Students

Rice students have an option to pursue the Master of Chemical Engineering (MChE) degree by adding an additional fifth year to their four undergraduate years of science and engineering studies.

Advanced Rice undergraduate students in good academic standing may apply to the MChE degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master’s degree program. A plan of study will need to be approved by the student’s undergraduate advisor and the (MChE) chair of the department graduate studies committee.

As part of this option and opportunity, Rice undergraduate students:

- must complete the requirements for a bachelor's degree and the master's degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
- should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
- more information on this Undergraduate - Graduate Concurrent Enrollment opportunity, including specific information on the registration process can be found here (p. 17).

Additional Information

For additional information, please see the Chemical and Biomolecular Engineering website: https://chbe.rice.edu/.

Bachelor of Science in Chemical Engineering (BSChE) Degree

The program leading to the BSChE degree is accredited by the Engineering Accreditation Commission (EAC) of ABET: https://www.abet.org (https://www.abet.org/).

Program Learning Outcomes (Student Outcomes) for the BSChE Degree

Upon completing the BSChE degree, students will be able to demonstrate:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences.
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAR, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 CHEM 121 or CHEM 111 can be satisfied by completing CHEM 151; CHEM 123 or CHEM 113 can be satisfied by completing CHEM 153. CHEM 122 or CHEM 112 can be satisfied by completing CHEM 152; CHEM 124 or CHEM 114 can be satisfied by completing CHEM 154; CHEM 217 can be satisfied by completing CHEM 215.

2 MATH 221 and MATH 222 may substitute for MATH 212.

Policies for the BA Degree with a Major in Chemical Engineering

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in Chemical Engineering should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

Additional Information

For additional information, please see the Chemical and Biomolecular Engineering website: https://chbe.rice.edu/.

Opportunities for the BA Degree with a Major in Chemical Engineering

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Bachelor of Science in Chemical Engineering (BSChE) Degree

The program leading to the BSChE degree is accredited by the Engineering Accreditation Commission (EAC) of ABET: https://www.abet.org (https://www.abet.org/).

Program Learning Outcomes (Student Outcomes) for the BSChE Degree

Upon completing the BSChE degree, students will be able to demonstrate:

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2 MATH 221 and MATH 222 may substitute for MATH 212.
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.

7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Program Educational Objectives for the BSChE Degree

Within 3 to 5 years of graduation, graduates with a Bachelor of Science in Chemical Engineering (BSChE) degree are expected to be:

1. Graduate students, professionals, and entrepreneurs who are moving towards leadership positions as exemplary members of the global workforce; and
2. Professionals who practice their societal, environmental, and ethical responsibilities.

Requirements for the BSChE Degree

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BSChE degree must complete:

- A minimum of 97 credit hours to satisfy major requirements.
- A minimum of 132 credit hours to satisfy degree requirements.
- A minimum of 18 courses (53 credit hours) taken at the 300-level or above.
- The requirements for one area of specialization (see below for areas of specialization). When students declare the major (p. 11) in Chemical Engineering (associated with the BSChE degree), students must additionally identify and declare one of six areas of specialization, either in:
  - Biotechnology and Bioengineering (p. ), or
  - Computational Engineering (p. ), or
  - Environmental Engineering (p. ), or
  - Materials Science and Engineering (p. ), or
  - Sustainability and Energy Engineering (p. ), or
  - Engineering Breadth (p. ) (Engineering Breadth is an area of specialization comprised of electives from a mix of engineering disciplines).

Because of the common core requirements, it is possible for students to change their area of specialization at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (registrar@rice.edu).

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor, or where applicable, the department's Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https:// registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

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### Degree Requirements

#### Core Requirements

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#### Chemical and Biomolecular Engineering Core Courses

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CHBE 303  COMPUTER-AIDED ANALYSIS OF CHEMICAL AND BIOMOLECULAR PROCESSES  2
CHBE 305  COMPUTATIONAL METHODS IN CHEMICAL ENGINEERING  3
CHBE 310  FUNDAMENTALS OF BIOMOLECULAR ENGINEERING  3
CHBE 343  CHEMICAL ENGINEERING LAB I  3
CHBE 350  PROCESS SAFETY IN CHEMICAL ENGINEERING  1
CHBE 390  CHEMICAL KINETICS AND REACTOR DESIGN  3
CHBE 401  TRANSPORT PHENOMENA I  3
CHBE 402  TRANSPORT PHENOMENA II  3
CHBE 403  DESIGN FUNDAMENTALS  4
CHBE 404  CHEMICAL ENGINEERING DESIGN  4
CHBE 411  THERMODYNAMICS I  3
CHBE 412  THERMODYNAMICS II  3
CHBE 443  CHEMICAL ENGINEERING LAB II  3
CHBE 470  PROCESS DYNAMICS AND CONTROL  3

Area of Specialization

Select 1 from the following Areas of Specialization (see Areas of Specialization below):

- Biotechnology and Bioengineering
- Computational Engineering
- Environmental Engineering
- Materials Science and Engineering
- Sustainability and Energy Engineering
- Engineering Breadth

Total Credit Hours Required for the Major in Chemical Engineering  97
University Graduation Requirements (p. 26)  35
Total Credit Hours  132

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

1 Notes regarding the Chemistry course
requirements: CHEM 121 or CHEM 111 can be satisfied by completing CHEM 151; CHEM 123 or CHEM 113 can be satisfied by completing CHEM 153. CHEM 122 or CHEM 112 can be satisfied by completing CHEM 152; CHEM 124 or CHEM 114 can be satisfied by completing CHEM 154; CHEM 217 can be satisfied by completing CHEM 215.

2 MATH 221 and MATH 222 may substitute for MATH 212.

Areas of Specialization

Students must complete the requirements as listed for one of the following areas of specialization for the BSChE degree program. A minimum of 4 courses (minimum of 12 credit hours) must be taken from one of the areas of specialization as listed below.

Please Note: The following list of approved courses can be used to satisfy the requirements of the area of specialization. Courses not on the list may be taken upon approval of the academic advisor. Students and their academic advisors should identify and clearly document the courses to be taken.

Area of Specialization: Biotechnology and Bioengineering

To fulfill the BSChE degree requirements, students pursuing the Biotechnology and Bioengineering area of specialization must complete:

- 1 course (3 credit hours) from the area of specialization Core Requirement
- 3 courses (9 credit hours) from the area of specialization Elective Requirements

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Elective Requirements

Select 3 courses from the following:

- BIOC 301  BIOCHEMISTRY I
- BIOE 321  CELLULAR ENGINEERING
- BIOE 330  BIOREACTION ENGINEERING
- BIOE 370  BIOMATERIALS
- BIOE 372  BIOMECHANICS
- BIOE 381 / ELEC 381  FUNDAMENTALS OF NERVE AND MUSCLE ELECTROPHYSIOLOGY
- BIOE 383  BIOMEDICAL ENGINEERING INSTRUMENTATION
- BIOE 408  SYNTHETIC BIOLOGY
- BIOE 420 / CHBE 420  TRANSPORT PHENOMENA IN BIOENGINEERING
- BIOE 422  GENE THERAPY
- BIOE 464 / BIOL 464  EXTRACELLULAR MATRIX
- BIOE 482 / ELEC 482  PHYSIOLOGICAL CONTROL SYSTEMS
- BIOE 485 / COMP 485 / ELEC 485  FUNDAMENTALS OF MEDICAL IMAGING I
- BIOE 490 / INTRO COMPUTATIONAL SYSTEMS BIOLOGY: MODELING & DESIGN PRINCIPLES OF BIOCHEM NETWORKS
- BIOE 620 / CHBE 620  TISSUE ENGINEERING

Total Credit Hours  12

Area of Specialization: Computational Engineering

To fulfill the BSChE degree requirements, students pursuing the Computational Engineering area of specialization must complete:

- 2 courses (6 credit hours) from the area of specialization Core Requirements
- 2 courses (6 credit hours) from the area of specialization Elective Requirements

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Bachelor of Science in Chemical Engineering (BSChE) Degree

Elective Requirements
Select 2 courses from the following:

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAAM 415 / ELEC 488 / NEUR 415</td>
<td>THEORETICAL NEUROSCIENCE: FROM CELLS TO LEARNING SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>CAAM 416 / ELEC 489 / NEUR 416</td>
<td>NEURAL COMPUTATION</td>
<td></td>
</tr>
<tr>
<td>CAAM 435 / MATH 435</td>
<td>DYNAMICAL SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>CAAM 436</td>
<td>MODELING MATHEMATICAL PHYSICS</td>
<td></td>
</tr>
<tr>
<td>CAAM 454</td>
<td>NUMERICAL ANALYSIS II</td>
<td></td>
</tr>
<tr>
<td>CAAM 471</td>
<td>LINEAR AND INTEGER PROGRAMMING</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours 12

Area of Specialization: Environmental Engineering
To fulfill the BSChE degree requirements, students pursuing the Environmental Engineering area of specialization must complete:

- 2 courses (6 credit hours) from the area of specialization Core Requirements
- 2 courses (6 credit hours) from the area of specialization Elective Requirements

Code | Title                                                                 | Credit Hours |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CEVE 310</td>
<td>PRINCIPLES OF ENVIRONMENTAL ENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 434</td>
<td>FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT</td>
<td>3</td>
</tr>
</tbody>
</table>

Core Requirements

Elective Requirements
Select 2 courses from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEVE 302 / ENGI 302</td>
<td>SUSTAINABLE DESIGN</td>
<td></td>
</tr>
<tr>
<td>CEVE 307 / ENST 307 / ESCI 307</td>
<td>ENERGY AND THE ENVIRONMENT</td>
<td></td>
</tr>
<tr>
<td>CEVE 308</td>
<td>INTRODUCTION TO AIR POLLUTION CONTROL</td>
<td></td>
</tr>
<tr>
<td>CEVE 314 / BIOE 365 / GLHT 314</td>
<td>SUSTAINABLE WATER PURIFICATION FOR THE DEVELOPING WORLD</td>
<td></td>
</tr>
<tr>
<td>CEVE 323</td>
<td>APPLIED SUSTAINABLE PLANNING AND DESIGN</td>
<td></td>
</tr>
<tr>
<td>CEVE 401</td>
<td>CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE LAB</td>
<td></td>
</tr>
<tr>
<td>CEVE 411</td>
<td>ATMOSPHERIC PROCESSES</td>
<td></td>
</tr>
<tr>
<td>CEVE 412</td>
<td>HYDROLOGY AND WATER RESOURCES ENGINEERING</td>
<td></td>
</tr>
<tr>
<td>CEVE 420</td>
<td>ENVIRONMENTAL REMEDIATION RESTORATION</td>
<td></td>
</tr>
<tr>
<td>CEVE 442</td>
<td>WATER REUSE AND RESOURCE RECOVERY</td>
<td></td>
</tr>
<tr>
<td>CEVE 484 / STAT 484</td>
<td>ENVIRONMENTAL RISK ASSESSMENT &amp; HUMAN HEALTH</td>
<td></td>
</tr>
<tr>
<td>CEVE 518</td>
<td>ENVIRONMENTAL HYDROGEOLOGY</td>
<td></td>
</tr>
<tr>
<td>CEVE 535</td>
<td>PHYSICAL CHEMICAL PROCESSES FOR WATER QUALITY CONTROL</td>
<td></td>
</tr>
<tr>
<td>CEVE 536</td>
<td>ENVIRONMENTAL BIOTECHNOLOGY AND BIOREMEDIATION</td>
<td></td>
</tr>
<tr>
<td>CEVE 550</td>
<td>ENVIRONMENTAL ORGANIC CHEMISTRY</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours 12

Area of Specialization: Materials Science and Engineering
To fulfill the BSChE degree requirements, students pursuing the Materials Science and Engineering area of specialization must complete:

- 2 courses (6 credit hours) from the area of specialization Core Requirements
- 2 courses (6 credit hours) from the area of specialization Elective Requirements

Code | Title                                                                 | Credit Hours |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MSNE 301</td>
<td>MATERIALS SCIENCE FOR ENGINEERS</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 402</td>
<td>MECH PROPERTIES OF MATERIALS</td>
<td>3</td>
</tr>
</tbody>
</table>

Core Requirements

Elective Requirements
Select 2 courses from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOE 431</td>
<td>BIOMATERIALS APPLICATION</td>
<td></td>
</tr>
<tr>
<td>CHBE 560 / MSNE 560</td>
<td>COLLOIDAL AND INTERFACIAL PHENOMENA</td>
<td></td>
</tr>
<tr>
<td>CHBE 594 / MSNE 594</td>
<td>PROPERTIES OF POLYMERS</td>
<td></td>
</tr>
<tr>
<td>ELEC 361</td>
<td>QUANTUM MECHANICS FOR ENGINEERS</td>
<td></td>
</tr>
<tr>
<td>MSNE 302</td>
<td>MATERIALS PROCESSING AND NANOMANUFACTURING</td>
<td></td>
</tr>
<tr>
<td>MSNE 365</td>
<td>NANOMATERIALS FOR ENERGY</td>
<td></td>
</tr>
<tr>
<td>MSNE 401</td>
<td>THERMODYNAMICS IN MATERIALS SCIENCE</td>
<td></td>
</tr>
<tr>
<td>MSNE 406</td>
<td>PHYSICAL PROPERTIES OF SOLIDS</td>
<td></td>
</tr>
<tr>
<td>MSNE 411</td>
<td>METALLOGRAPHY AND PHASE RELATIONS</td>
<td></td>
</tr>
<tr>
<td>MSNE 415</td>
<td>CERAMICS AND GLASSES</td>
<td></td>
</tr>
<tr>
<td>MSNE 433</td>
<td>COMPUTATIONAL MATERIALS MODELING</td>
<td></td>
</tr>
<tr>
<td>MSNE 435</td>
<td>CRYSTALLOGRAPHY &amp; DIFFRACTION</td>
<td></td>
</tr>
<tr>
<td>MSNE 523</td>
<td>PROPERTIES, SYNTHESIS AND DESIGN OF COMPOSITE MATERIALS</td>
<td></td>
</tr>
<tr>
<td>MSNE 545 / ELEC 545</td>
<td>THIN FILMS</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours 12

Area of Specialization: Sustainability and Energy Engineering
To fulfill the BSChE degree requirements, students pursuing the Sustainability and Energy Engineering area of specialization must complete:

- 2 courses (6 credit hours) from the approved CEVE and CHBE Courses listed below

Code | Title                                                                 | Credit Hours |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CEVE 450</td>
<td>APPLIED ECOLOGICAL SCIENCE</td>
<td></td>
</tr>
<tr>
<td>CEVE 451</td>
<td>SUSTAINABLE SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>CEVE 452</td>
<td>ENVIRONMENTAL SCIENCE OF MATERIALS</td>
<td></td>
</tr>
<tr>
<td>CEVE 453</td>
<td>BIOMASS AND BIOPRODUCTS</td>
<td></td>
</tr>
<tr>
<td>CEVE 454</td>
<td>ENVIRONMENTAL AND RESEARCH SCIENCE</td>
<td></td>
</tr>
<tr>
<td>CEVE 455</td>
<td>ENVIRONMENTAL BIOTECHNOLOGY AND BIOREMEDIATION</td>
<td></td>
</tr>
<tr>
<td>CEVE 456</td>
<td>ENVIRONMENTAL ORGANIC CHEMISTRY</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours 12
• 2 courses (6 credit hours) from the area of specialization Elective Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEVE 307 / ENST 307 / ESCI 307</td>
<td>ENERGY AND THE ENVIRONMENT</td>
<td>6</td>
</tr>
<tr>
<td>CEVE 314 / BIOE 365 / GLHT 314</td>
<td>SUSTAINABLE WATER PURIFICATION FOR THE DEVELOPING WORLD</td>
<td>6</td>
</tr>
<tr>
<td>CEVE 401</td>
<td>CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE LAB</td>
<td>6</td>
</tr>
<tr>
<td>CEVE 434</td>
<td>FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT</td>
<td>6</td>
</tr>
<tr>
<td>CEVE 518</td>
<td>ENVIRONMENTAL HYDROGEOLOGY</td>
<td></td>
</tr>
<tr>
<td>CEVE 535</td>
<td>PHYSICAL CHEMICAL PROCESSES FOR WATER QUALITY CONTROL</td>
<td>6</td>
</tr>
<tr>
<td>CHBE 281 / ENST 281</td>
<td>ENGINEERING SUSTAINABLE COMMUNITIES</td>
<td></td>
</tr>
<tr>
<td>CHBE 450</td>
<td>PETROLEUM PHASE BEHAVIOR AND FLOW ASSURANCE</td>
<td>6</td>
</tr>
<tr>
<td>CHBE 571</td>
<td>FLOW AND TRANSPORT THROUGH POROUS MEDIA I</td>
<td></td>
</tr>
<tr>
<td>CHBE 671</td>
<td>FLOW AND TRANSPORT THROUGH POROUS MEDIA II</td>
<td></td>
</tr>
</tbody>
</table>

Elective Requirements

Select 2 courses from either the CEVE and CHBE course offerings listed above, or from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEVE 302 / ENGI 302</td>
<td>SUSTAINABLE DESIGN</td>
<td>6</td>
</tr>
<tr>
<td>CEVE 310</td>
<td>PRINCIPLES OF ENVIRONMENTAL ENGINEERING</td>
<td></td>
</tr>
<tr>
<td>CEVE 484 / STAT 484</td>
<td>ENVIRONMENTAL RISK ASSESSMENT &amp; HUMAN HEALTH</td>
<td></td>
</tr>
<tr>
<td>CHBE 570</td>
<td>INDUSTRIAL CATALYSIS AND PETROCHEMICAL PROCESSES</td>
<td></td>
</tr>
<tr>
<td>CHEM 425 / ENST 425 / ESCI 425</td>
<td>ORGANIC GEOCHEMISTRY</td>
<td></td>
</tr>
<tr>
<td>ESCI 415</td>
<td>DECISION MAKING AND ECONOMICS IN THE ENERGY INDUSTRY</td>
<td>6</td>
</tr>
<tr>
<td>ESCI 417</td>
<td>PETROLEUM INDUSTRY ECONOMICS AND MANAGEMENT</td>
<td></td>
</tr>
<tr>
<td>ESCI 442</td>
<td>EXPLORATION GEOPHYSICS</td>
<td></td>
</tr>
<tr>
<td>ESCI 460</td>
<td>GEOLOGICAL AND GEOPHYSICAL FLUID DYNAMICS</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours 12

Area of Specialization: Engineering Breadth

To fulfill the BSChE degree requirements, students pursuing the Engineering Breadth area of specialization must complete:

• 1 course (3 credit hours) from the area of specialization Core Requirement

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC 201</td>
<td>INTRODUCTORY BIOLOGY I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 330</td>
<td>ANALYTICAL CHEMISTRY</td>
<td></td>
</tr>
<tr>
<td>CHEM 360</td>
<td>INORGANIC CHEMISTRY</td>
<td></td>
</tr>
<tr>
<td>ESCI 334</td>
<td>GEOLOGICAL TECHNIQUES</td>
<td></td>
</tr>
<tr>
<td>ESCI 340 / EBIO 340 / ENST 340</td>
<td>GLOBAL BIOGEOCHEMICAL CYCLES</td>
<td></td>
</tr>
<tr>
<td>PHYS 202</td>
<td>MODERN PHYSICS</td>
<td>6</td>
</tr>
</tbody>
</table>

Elective Requirements

Select 3 courses from at least 3 categories below:

Environmental Engineering Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEVE 310</td>
<td>PRINCIPLES OF ENVIRONMENTAL ENGINEERING</td>
<td></td>
</tr>
<tr>
<td>CEVE 311 / MECH 311</td>
<td>MECHANICS OF SOLIDS AND STRUCTURES</td>
<td></td>
</tr>
<tr>
<td>CEVE 434</td>
<td>FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT</td>
<td>3</td>
</tr>
</tbody>
</table>

Materials Science Engineering Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSNE 301</td>
<td>MATERIALS SCIENCE FOR ENGINEERS</td>
<td></td>
</tr>
<tr>
<td>MSNE 402</td>
<td>MECH PROPERTIES OF MATERIALS</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 406</td>
<td>PHYSICAL PROPERTIES OF SOLIDS</td>
<td></td>
</tr>
<tr>
<td>MSNE 594 / CHBE 594</td>
<td>PROPERTIES OF POLYMERS</td>
<td>9</td>
</tr>
</tbody>
</table>

Bioengineering Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC 540 / CHBE 640</td>
<td>METABOLIC ENGINEERING</td>
<td></td>
</tr>
<tr>
<td>BIOE 370</td>
<td>BIOMATERIALS</td>
<td></td>
</tr>
<tr>
<td>BIOE 372</td>
<td>BIOMECHANICS</td>
<td></td>
</tr>
<tr>
<td>BIOE 420 / CHBE 420</td>
<td>TRANSPORT PHENOMENA IN BIOENGINEERING</td>
<td></td>
</tr>
</tbody>
</table>

Sustainability and Energy Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEVE 302 / ENGI 302</td>
<td>SUSTAINABLE DESIGN</td>
<td></td>
</tr>
<tr>
<td>CEVE 307 / ENST 307 / ESCI 307</td>
<td>ENERGY AND THE ENVIRONMENT</td>
<td></td>
</tr>
<tr>
<td>CHBE 281 / ENST 281</td>
<td>ENGINEERING SUSTAINABLE COMMUNITIES</td>
<td></td>
</tr>
<tr>
<td>CHBE 450</td>
<td>PETROLEUM PHASE BEHAVIOR AND FLOW ASSURANCE</td>
<td></td>
</tr>
</tbody>
</table>

Computation and Applied Mathematics Course

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAAM 335</td>
<td>MATRIX ANALYSIS</td>
<td></td>
</tr>
</tbody>
</table>

Other Approved Engineering Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHBE 560 / MSNE 560</td>
<td>COLLOIDAL AND INTERFACIAL PHENOMENA</td>
<td></td>
</tr>
<tr>
<td>ELEC 242</td>
<td>SIGNALS, SYSTEMS, AND TRANSFORMS</td>
<td>2</td>
</tr>
</tbody>
</table>

2019-2020 General Announcements

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Footnotes and Additional Information

A maximum of 3 credit hours for CHBE 499 or CHBE 495 may replace 3 credit hours of any of the discipline electives above, but not the Core Requirement.

Policies for the BSChE Degree

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the BSChE degree should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

Additional Information

For additional information, please see the Chemical and Biomolecular Engineering website: https://chbe.rice.edu/

Opportunities for the BSChE Degree

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Fifth-Year Master's Degree Option for Rice Undergraduate Students

Rice students have an option to pursue the Master of Chemical Engineering (MChE) degree by adding an additional fifth year to their four undergraduate years of science and engineering studies.

Advanced Rice undergraduate students in good academic standing may apply to the MChE degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master’s degree program. A plan of study will need to be approved by the student's undergraduate advisor and the (MChE) chair of the department graduate studies committee.

As part of this option and opportunity, Rice undergraduate students:

- must complete the requirements for a bachelor's degree and the master's degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
- should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
- more information on this Undergraduate - Graduate Concurrent Enrollment opportunity, including specific information on the registration process can be found here (p. 17).

Additional Information

For additional information, please see the Chemical and Biomolecular Engineering website: https://chbe.rice.edu/

Doctor of Philosophy (PhD) Degree in the field of Chemical Engineering

Program Learning Outcomes for the MS and PhD Degrees in the field of Chemical Engineering

Upon completing the MS and PhD degrees in the field of Chemical Engineering, students will be able to:

1. Demonstrate a solid foundation in the fundamentals of chemical engineering in four areas: applied mathematics, kinetics and reaction engineering, thermodynamics, and transport phenomena.
2. Apply advanced knowledge from several major areas of modern chemical engineering.
3. Conduct independent research by working on research projects, individually and in interdisciplinary groups.
4. Demonstrate professional written and oral communication skills.

Requirements for the MS and PhD Degrees in the field of Chemical Engineering

MS Degree Program

The MS degree is a thesis masters degree. For general university requirements, please see Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MS degree in the field of Chemical Engineering must:

- Obtain permission by the department to apply for the program.
- Accepted candidates must complete at least 18 credit hours, which must include:
  - 5 courses (15 credit hours) of core Chemical Engineering courses, and
  - 1 course (3 credit hours) as an Elective, taken at the 500-level or above.
- Complete at least 18 approved advanced course credit hours with high standing.
- Submit an original research thesis.
- Defend the thesis in a public oral examination.
- Complete a teaching requirement.
Opportunities for the PhD Degree in the field of Chemical Engineering

Additional Information

For additional information, please see the Chemical and Biomolecular Engineering website: https://chbe.rice.edu/

Master of Chemical Engineering (MChE) Degree

Program Learning Outcomes for the MChE Degree

Upon completing the MChE degree, students will be able to:

1. Identify, formulate, and solve complex engineering problems that require synthesis of advanced knowledge in chemical engineering fundamentals.
2. Demonstrate broad advanced knowledge in science and math, and depth in one chemical engineering sub-discipline (energy engineering, biomolecular engineering, materials science).
3. Demonstrate knowledge of business policies and practices in the current business environment in identifying, formulating, and solving engineering challenges in a problem/engineering challenge they undertake to solve as part of independent study.
4. Demonstrate effective oral and written communication skills.

Requirements for the MChE Degree

The MChE degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MChE degree must complete:

- A minimum of 10 courses (30 credit hours) to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University.
- A minimum of 5 courses (15 credit hours) from the Core Requirements.
- A minimum of 5 courses (15 credit hours) from Elective Requirements, which must include 1 course (3 credit hours) from CHBE course offerings.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree with a minimum grade of B- (2.67 grade points) in each course.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/dregeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral
Master of Chemical Engineering (MChE) Degree / Master of Business Administration (MBA) Degree

Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MChE Degree</td>
<td>30</td>
</tr>
</tbody>
</table>

Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Core Requirements</td>
<td></td>
</tr>
<tr>
<td>CHBE 501</td>
<td>FLUID MECHANICS AND TRANSPORT PROCESSES</td>
<td>3</td>
</tr>
<tr>
<td>CHBE 505</td>
<td>ADVANCED NUMERICAL METHODS</td>
<td>3</td>
</tr>
<tr>
<td>CHBE 590</td>
<td>KINETICS, CATALYSIS, AND REACTION ENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td>CHBE 602</td>
<td>PHYSICO-CHEMICAL HYDRODYNAMICS</td>
<td>3</td>
</tr>
<tr>
<td>CHBE 611</td>
<td>ADVANCED TOPICS-THERMODYNAMICS</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Elective Requirements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select 5 elective courses at the 500-level or above</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>30</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1 As an alternative to CHBE 505, CHBE 692 - Applied Mathematics for Chemical Engineering I - may be taken to fulfill this mathematics requirement. Students should consult with the Program Advisor when selecting CHBE 692.

2 At least 1 of the elective courses must be completed from a departmental (CHBE) course offering.

Policies for the MChE Degree

Department of Chemical and Biomolecular Engineering Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Chemical and Biomolecular Engineering publishes a graduate program handbook, which can be found here: [https://gradhandbooks.rice.edu/2019_20/Chemical_Biomolecular_Engineering_MCHE_Graduate_Handbook.pdf](https://gradhandbooks.rice.edu/2019_20/Chemical_Biomolecular_Engineering_MCHE_Graduate_Handbook.pdf)

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program's advisor when considering transfer credit possibilities.

Additional Information

For additional information, please see the Chemical and Biomolecular Engineering website: [https://chbe.rice.edu/](https://chbe.rice.edu/)

Opportunities for the MChE Degree

Fifth-Year Master's Degree Option for Rice Undergraduate Students

Rice students have an option to pursue the Master of Chemical Engineering (MChE) degree by adding an additional fifth year to their four undergraduate years of science and engineering studies.

Advanced Rice undergraduate students in good academic standing may apply to the MChE degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master’s degree program. A plan of study will need to be approved by the student’s undergraduate advisor and the (MChE) chair of the department graduate studies committee.

As part of this option and opportunity, Rice undergraduate students:

- must complete the requirements for a bachelor’s degree and the master’s degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
- should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
- more information on this Undergraduate - Graduate Concurrent Enrollment opportunity, including specific information on the registration process can be found here (p. 17).

Additional Information

For additional information, please see the Chemical and Biomolecular Engineering website: [https://chbe.rice.edu/](https://chbe.rice.edu/)

Master of Chemical Engineering (MChE) Degree / Master of Business Administration (MBA) Degree

Program Learning Outcomes for the MChE Degree

Upon completing the MChE degree, students will be able to:

1. Identify, formulate, and solve complex engineering problems that require synthesis of advanced knowledge in chemical engineering fundamentals.
2. Demonstrate broad advanced knowledge in science and math, and depth in one chemical engineering sub-discipline (energy engineering, biomolecular engineering, materials science).
3. Demonstrate knowledge of business policies and practices in the current business environment in identifying, formulating, and solving engineering challenges in a problem/engineering challenge they undertake to solve as part of independent study.
4. Demonstrate effective oral and written communication skills.

Program Learning Outcomes for the MBA Degree

Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MChE/MBA Coordinated Degrees Program

Students may earn a coordinated MBA degree and a non-thesis Master of Engineering degree from the George R. Brown School of Engineering in the following fields:

- Chemical Engineering (MChE)
- Computational and Applied Mathematics (MCAAM)
- Computer Science (MCS)
- Industrial Engineering (MIE)
- Materials Science and Nanoengineering (MMSNE)
- Mechanical Engineering (MME)
- Statistics (MStat)

For the coordinated MBA/Master of Engineering degrees, students must complete:

- A minimum of 69 credit hours in approved coursework*, including:
  - A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the Master of Engineering degree requirements
  - A minimum of 24 credit hours in the corresponding engineering discipline
  - A minimum of 6 credit hours in elective requirements*
- A minimum of 45 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the MBA degree requirements
- A minimum of 45 credit hours of business coursework
- All MBA core requirements, the global field experience, custom core requirements, and coordinated elective requirements

*Note: A maximum of 6 credit hours of the Master of Engineering degree elective requirements may be selected from business course offerings (MGMP, MGMT, or MICO) and used to fulfill the requirements for both the MBA and the Master of Engineering degrees.

Students plan their course schedules in consultation with the George R. Brown School of Engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department. Coordinated degrees candidates can fulfill requirements for both degrees within 2 academic years.

For general university requirements, see Graduate Degrees (p. 49). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Candidates in the MBA/Master of Engineering coordinated degrees program must complete all requirements as listed for both degrees, and must apply and be accepted in both degree programs.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Coordinated Master of Engineering Degree</td>
<td>Minimum of 30</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the Coordinated MBA Degree</td>
<td>Minimum of 45</td>
</tr>
</tbody>
</table>

### Coordinated MChE Degree Requirements

Students in the coordinated MBA/MChE degrees program must complete the Core Requirements of the MChE degree program (p. 283) and Coordinated MChE Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MChE Core Requirements</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Coordinated MChE Elective Requirements</td>
<td>15</td>
</tr>
</tbody>
</table>

Select a minimum of 9 credit hours from approved departmental (CHBE) course offerings at the 500-level or above

Select a maximum of 6 credit hours from approved course offerings (MGMP, MGMT, or MICO) from the Jones Graduate School of Business at the 500-level or above

### Coordinated MBA Degree Requirements

Students in the coordinated MBA/Master of Engineering degrees program or in the coordinated MBA/Master of Science degree from the Professional Science Master's (PSM) degrees program must complete the Core Requirements, Global Field Experience, and Custom Core Requirements of the full-time MBA degree program (p. 214) and the Coordinated MBA Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Full-time MBA Core Requirements</td>
<td>25.5</td>
</tr>
<tr>
<td></td>
<td>Full-time MBA Global Field Experience Requirement</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>Full-time MBA Custom Core Courses</td>
<td>3-6</td>
</tr>
<tr>
<td></td>
<td>Coordinated MBA Elective Requirements</td>
<td>12-15</td>
</tr>
</tbody>
</table>

Select an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours.

### Footnotes and Additional Information

1. To fulfill the remaining requirements for the coordinated MBA degree program, students must complete an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours. (MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.) The second year of the program is dedicated entirely to MBA elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. MBA electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.
Policies for the MChE/MBA Coordinated Degrees Program

Additional Information
For additional information on these two degrees:

1. Please see the Chemical and Biomolecular Engineering website: https://chbe.rice.edu/
2. Please see the Jones Graduate School of Business website: https://business.rice.edu/

Opportunities for the MChE/MBA Coordinated Degrees Program

Additional Information
For additional information on these two degrees:

1. Please see the Chemical and Biomolecular Engineering website: https://chbe.rice.edu/
2. Please see the Jones Graduate School of Business website: https://business.rice.edu/

Chemical Physics

Contact Information
Chemical Physics
Stanley A. Dodds
Program Co-Director
dodds@rice.edu
R. Bruce Weisman
Program Co-Director
weisman@rice.edu

The Bachelor of Science (BS) degree in Chemical Physics is jointly managed by the Department of Chemistry and the Department of Physics and Astronomy. Students take upper-level courses in both chemistry and physics, focusing on the applications of physics to chemical systems.

For additional information regarding Chemical Physics, please see the following department websites:

• Chemistry: https://chemistry.rice.edu/
• Physics and Astronomy: https://physics.rice.edu/

Bachelor’s Program

• Bachelor of Science (BS) Degree with a Major in Chemical Physics (p. 286)

Chemical Physics does not currently offer an academic program at the graduate level.

Co-Directors
Stanley A. Dodds
R. Bruce Weisman

Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: Courses from various subjects may apply towards the major.

Program Description and Code
• Chemical Physics: CPHY

Undergraduate Degree Description and Code
• Bachelor of Science degree: BS

Undergraduate Major Description and Code
• Major in Chemical Physics: CPHY

CIP Code and Description
1
• CPHY Major/Program: CIP Code/Title: 40.0508 - Chemical Physics

1 Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Bachelor of Science (BS) Degree with a Major in Chemical Physics

Program Learning Outcomes for the BS Degree with a Major in Chemical Physics

Upon completing the BS degree with a major in Chemical Physics, students will be able to:

1. Demonstrate a solid foundation of knowledge in chemical physics and deeper knowledge of subdivisions of the field related to their interests.
2. Identify, formulate, and solve challenging scientific and technical problems as encountered in chemical physics.
3. Read basic scientific literature and communicate scientific results orally and in writing for scientists and the general public.

Requirements for the BS Degree with a Major in Chemical Physics

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BS degree with a major in Chemical Physics must complete:

• A minimum of 73 credit hours to satisfy major requirements.
• A minimum of 133 credit hours to satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
• A minimum of 33-35 credit hours, depending on course selection, taken at the 300-level or above.

The Chemical Physics major is offered jointly by the Department of Chemistry and the Department of Physics and Astronomy. Students take upper-level courses in both chemistry and physics, focusing on the applications of physics to chemical systems. Students may obtain credit for some courses by advanced placement, and the program’s
undergraduate committee can modify requirements to meet the needs of students with special backgrounds.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier [https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/].) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Credit Hours Required for Major in Chemical Physics</td>
<td>73</td>
<td></td>
</tr>
<tr>
<td>Total Credit Hours Required for the BS Degree with a Major in Chemical Physics</td>
<td>133</td>
<td></td>
</tr>
</tbody>
</table>

Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Core Requirements</strong></td>
<td></td>
</tr>
<tr>
<td>CHEM 121</td>
<td>GENERAL CHEMISTRY I</td>
<td>3</td>
</tr>
<tr>
<td>or CHEM 111</td>
<td>AP/OTH CREDIT IN GENERAL CHEMISTRY I</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 123</td>
<td>GENERAL CHEMISTRY LABORATORY I</td>
<td>3</td>
</tr>
<tr>
<td>or CHEM 113</td>
<td>AP/OTH CREDIT IN GENERAL CHEMISTRY LAB I</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 122</td>
<td>GENERAL CHEMISTRY II</td>
<td>3</td>
</tr>
<tr>
<td>or CHEM 112</td>
<td>AP/OTH CREDIT IN GENERAL CHEMISTRY II</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 124</td>
<td>GENERAL CHEMISTRY LABORATORY II</td>
<td>3</td>
</tr>
<tr>
<td>or CHEM 114</td>
<td>AP/OTH CREDIT IN GENERAL CHEMISTRY LAB II</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 211</td>
<td>ORGANIC CHEMISTRY I</td>
<td>3</td>
</tr>
<tr>
<td>&amp; CHEM 213</td>
<td>and ORGANIC CHEMISTRY DISCUSSION</td>
<td></td>
</tr>
<tr>
<td>CHEM 215</td>
<td>ORGANIC CHEMISTRY LAB</td>
<td>2</td>
</tr>
<tr>
<td>or CHEM 365</td>
<td>ORGANIC CHEMISTRY LAB</td>
<td></td>
</tr>
<tr>
<td>CHEM 301</td>
<td>PHYSICAL CHEMISTRY I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 302</td>
<td>PHYSICAL CHEMISTRY II</td>
<td>3</td>
</tr>
<tr>
<td><strong>Select 1 from the following:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHYS 101</td>
<td>MECHANICS (WITH LAB)</td>
<td>4</td>
</tr>
<tr>
<td>&amp; PHYS 103</td>
<td>and MECHANICS DISCUSSION</td>
<td></td>
</tr>
<tr>
<td>PHYS 111</td>
<td>HONORS MECHANICS (WITH LAB)</td>
<td>4</td>
</tr>
<tr>
<td><strong>Select 1 from the following:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHYS 102</td>
<td>ELECTRICITY &amp; MAGNETISM (WITH LAB)</td>
<td>4</td>
</tr>
<tr>
<td>&amp; PHYS 104</td>
<td>and ELECTRICITY AND MAGNETISM DISCUSSION</td>
<td></td>
</tr>
<tr>
<td>PHYS 112</td>
<td>HONORS ELECTRICITY &amp; MAGNETISM (WITH LAB)</td>
<td></td>
</tr>
<tr>
<td>PHYS 201</td>
<td>WAVES, LIGHT, AND HEAT</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 202</td>
<td>MODERN PHYSICS</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 231</td>
<td>ELEMENTARY PHYSICS LAB</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 301</td>
<td>INTERMEDIATE MECHANICS</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 302</td>
<td>INTERMEDIATE ELECTRODYNAMICS</td>
<td>4</td>
</tr>
<tr>
<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I</td>
<td>3</td>
</tr>
<tr>
<td>or MATH 105</td>
<td>AP/OTH CREDIT IN CALCULUS I</td>
<td></td>
</tr>
<tr>
<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
<td>3</td>
</tr>
<tr>
<td>or MATH 106</td>
<td>AP/OTH CREDIT IN CALCULUS II</td>
<td></td>
</tr>
<tr>
<td>MATH 211</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA</td>
<td>3</td>
</tr>
<tr>
<td>or MATH 220</td>
<td>HONORS ORDINARY DIFFERENTIAL EQUATIONS</td>
<td></td>
</tr>
<tr>
<td>or MATH 221</td>
<td>HONORS CALCULUS III</td>
<td></td>
</tr>
<tr>
<td>MATH 212</td>
<td>MULTIVARIABLE CALCULUS</td>
<td>3</td>
</tr>
<tr>
<td>or MATH 222</td>
<td>HONORS CALCULUS IV</td>
<td></td>
</tr>
</tbody>
</table>

**Elective Requirements**

Advanced Coursework in Physics and Chemistry

Select 3 courses from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 311</td>
<td>INTRODUCTION TO QUANTUM PHYSICS I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 312</td>
<td>INTRODUCTION TO QUANTUM PHYSICS II</td>
<td>3</td>
</tr>
<tr>
<td>or CHEM 430</td>
<td>QUANTUM CHEMISTRY</td>
<td></td>
</tr>
<tr>
<td>CHEM 360</td>
<td>INORGANIC CHEMISTRY</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 415</td>
<td>CHEMICAL KINETICS AND DYNAMICS</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 420</td>
<td>CLASSICAL AND STATISTICAL THERMODYNAMICS</td>
<td>3</td>
</tr>
<tr>
<td>or PHYS 425</td>
<td>STATISTICAL &amp; THERMAL PHYSICS</td>
<td></td>
</tr>
</tbody>
</table>

Advanced Laboratories

Select 2 courses from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 366</td>
<td>INORGANIC CHEMISTRY LAB</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 367</td>
<td>MATERIALS CHEMISTRY LAB</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 368</td>
<td>CHEMICAL MEASUREMENT LAB</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 491</td>
<td>RESEARCH FOR UNDERGRADUATES</td>
<td>3</td>
</tr>
<tr>
<td>or PHYS 461</td>
<td>INDEPENDENT RESEARCH</td>
<td></td>
</tr>
<tr>
<td>or PHYS 462</td>
<td>INDEPENDENT RESEARCH</td>
<td></td>
</tr>
<tr>
<td>PHYS 332</td>
<td>JUNIOR PHYSICS LAB II</td>
<td>3</td>
</tr>
</tbody>
</table>

Advanced Coursework in Mathematics (MATH) or Computational and Applied Math (CAAM)

Select 2 courses from MATH or CAAM course offerings at the 300-level or above

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 311</td>
<td>INTRODUCTION TO QUANTUM PHYSICS I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 312</td>
<td>INTRODUCTION TO QUANTUM PHYSICS II</td>
<td>3</td>
</tr>
<tr>
<td>or CHEM 430</td>
<td>QUANTUM CHEMISTRY</td>
<td></td>
</tr>
<tr>
<td>CHEM 360</td>
<td>INORGANIC CHEMISTRY</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 415</td>
<td>CHEMICAL KINETICS AND DYNAMICS</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 420</td>
<td>CLASSICAL AND STATISTICAL THERMODYNAMICS</td>
<td>3</td>
</tr>
<tr>
<td>or PHYS 425</td>
<td>STATISTICAL &amp; THERMAL PHYSICS</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credit Hours Required for the Major in Chemical Physics**

**73**

University Graduation Requirements (p. 26)

*Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 CHEM 151 may be substituted for CHEM 121 or CHEM 111; CHEM 153 may be substituted for CHEM 123 or CHEM 113; CHEM 152 may be substituted for CHEM 122 or CHEM 112, and CHEM 154 may be substituted for CHEM 124 or CHEM 114.

2 A limit of 2 credit hours from CHEM 491 or PHYS 461 or PHYS 462 may count toward the Advanced Laboratories requirement.

Footnotes and Additional Information

1 Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

2 Footnotes and Additional Information

Policies for the BS Degree with a Major in Chemical Physics

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: [https://oaa.rice.edu](https://oaa.rice.edu). Students are encouraged to meet with their academic advisor to discuss transfer credit options.
academic program’s transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines
Students pursuing the major in Chemical Physics should be aware of the following program-specific transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information
For additional information, please see the following department websites:

- Chemistry: https://chemistry.rice.edu/
- Physics and Astronomy: https://physics.rice.edu/

Opportunities for the BS Degree with a Major in Chemical Physics

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Additional Information
For additional information, please see the following department websites:

- Chemistry: https://chemistry.rice.edu/
- Physics and Astronomy: https://physics.rice.edu/

Chemistry

Contact Information
Chemistry
https://chemistry.rice.edu/
111 Space Science Building
713-348-4082

Anatoly B. Kolomeisky
Department Chair
tolya@rice.edu

Jeffrey D. Hartgerink
Chair for Undergraduate Studies
jdh@rice.edu

László Kürti
Associate Chair for Graduate Studies
kurti.laszlo@rice.edu

Eugene Zubarev
Associate Chair for Graduate Studies
zubarev@rice.edu

The Department of Chemistry offers undergraduate chemistry majors leading to both the bachelor of science (BS) degree and the bachelor of arts (BA) degree. The BS program rigorously prepares students for advanced work in chemistry or a related discipline, and the degree requirements are consistent with the guidelines for certification by the American Chemical Society. This curriculum provides a broad and comprehensive introduction to core areas of chemistry while promoting depth of understanding in one or more specific fields. BS students complete a series of foundation courses in general chemistry, analytical chemistry, biological chemistry, inorganic chemistry, organic chemistry, and physical chemistry. Students then complete one or more areas of specialization, consisting of in-depth courses both in and out of the specialization. The BA degree is a more flexible program that provides a comprehensive overview of all areas of chemistry, including laboratory experiences, but can be coupled more easily with other majors or professional career paths. Both degree programs offer students a solid background in the fundamental principles of chemistry, the properties and reactions of chemical compounds, and their uses.

Graduate studies emphasize individual research together with a fundamental understanding of chemistry beyond the students’ specific interests. Faculty research interests include the synthesis and biosynthesis of organic natural products; supramolecular chemistry, molecular recognition and biological catalysis; bioinorganic and organometallic chemistry; main group element and transition metal chemistry; the design of nanophase solids; molecular photochemistry and photophysics; infrared kinetic spectroscopy, laser, and NMR spectroscopy; studies of electron transfer in crossed beams; theoretical and computational chemistry; the study of fullerenes, carbon nanotubes, and their derivatives; polymer synthesis and characterization; molecular electronics; molecular machines; and chemical-based nanotechnology.

Bachelor’s Programs

- Bachelor of Arts (BA) Degree with a Major in Chemistry (p. 290)
- Bachelor of Science (BS) Degree with a Major in Chemistry (p. 291)

Coordinated Program

- Bachelor of Science (BS) Degree with a Major in Chemical Physics (p. 286)*
  * This degree is jointly managed by the Department of Chemistry and the Department of Physics and Astronomy. For more information, see Chemical Physics. (p. 286)

Master’s Program

- Master of Arts (MA) Degree in the field of Chemistry*

Doctoral Program

- Doctor of Philosophy (PhD) Degree in the field of Chemistry (p. 294)
  * Although students are not normally admitted to a Master of Arts (MA) degree program, graduate students may earn the MA as they work towards the PhD.

Chair
Anatoly B. Kolomeisky

Professors
Pulickel M. Ajayan
Pedro J.J. Alvarez
Zachary T. Ball
Lecturers
Lawrence B. Alemany
Michelle Gilbertson
Kristi Kincaid
Krista Kobylanski
Caroline V. McNeil
Lesa Tran Lu

Instructor
Kasey Yearty

Adjunct Faculty
Andrew R. Barron
Marco A. Ciufolini
Tohru Fukuyama
Scott Gilbertson
Ganesh Kailasam
Scott Kent
Luz Maria Martinez Calderon
Henk Mooiweer
Frank Noe
Mark ‘Marty’ Pagel
Keith Pannell
B. Montgomery Pettit
Emilie Ringe
Corina Rogge
Yongcheng Song
Ben van den Brule
Marcelo Videa Vargas
Damian Young

Department and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: CHEM

Department Description and Code
• Chemistry: CHEM

Undergraduate Degree Descriptions and Codes
• Bachelor of Arts degree: BA
• Bachelor of Science degree: BS

Undergraduate Major Description and Code
• Major in Chemistry: CHEM
• Major in Chemical Physics: CPHY

Graduate Degree Descriptions and Codes
• Master of Arts degree: MA
• Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code
• Degree Program in Chemistry: CHEM
Bachelor of Arts (BA) Degree with a Major in Chemistry

Program Learning Outcomes for the BA Degree with a Major in Chemistry

Upon completing the BA degree with a major in Chemistry, students will be able to:

1. Demonstrate understanding of and proficiency with:
   a. the structure, bonding, spectroscopy, and reactivity of organic compounds and functional groups;
   b. curved-arrow formalism to describe reaction mechanisms, and
   c. the synthesis of organic compounds.
2. Demonstrate understanding of and proficiency with:
   a. thermochemical principles, acid-base and redox reactions,
   b. structure of simple solids and construction of molecular orbital diagrams (group theory), and
   c. survey of main group chemistry.
3. Demonstrate understanding of:
   a. the principles of quantum mechanics and applications to atomic and molecular structure and spectroscopy,
   b. classical and basic statistical thermodynamics and applications to equilibrium physico-chemical systems, and
   c. kinetics of gas phase processes and chemical reactions.

Requirements for the BA Degree with a Major in Chemistry

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Chemistry must complete:

- A minimum of 21-23 courses, depending on course selection, (55 credit hours) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 9 courses (24 credit hours) taken at the 300-level or above.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

CIP Code and Description

- CHEM Major/Program: CIP Code/Title: 40.0501 - Chemistry, General
- CPHY Major/Program: CIP Code/Title: 40.0508 - Chemical Physics

Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/
Departmental Transfer Credit Guidelines

Students pursuing the major in Chemistry should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

Additional Information

For additional information, please see the Chemistry website: https://chemistry.rice.edu

Opportunities for the BA Degree with a Major in Chemistry

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Additional Information

For additional information, please see the Chemistry website: https://chemistry.rice.edu

Bachelor of Science (BS) Degree with a Major in Chemistry

Program Learning Outcomes for the BS Degree with a Major in Chemistry

Upon completing the BS degree with a major in Chemistry, students will be able to:

1. Demonstrate understanding of and proficiency with:
   a. the structure, bonding, spectroscopy, and reactivity of organic compounds and functional groups;
   b. curved-arrow formalism to describe reaction mechanisms, and
   c. the synthesis of organic compounds.
2. Demonstrate understanding of and proficiency with:
   a. thermochemical principles, acid-base and redox reactions,
   b. structure of simple solids and construction of molecular orbital diagrams (group theory), and
   c. survey of main group chemistry.
3. Demonstrate understanding of:
   a. the principles of quantum mechanics and applications to atomic and molecular structure and spectroscopy,
   b. classical and basic statistical thermodynamics and applications to equilibrium physico-chemical systems, and
   c. kinetics of gas phase processes and chemical reactions.
4. Design, conduct, record, and analyze chemical experiments, while practicing responsible and ethical scientific conduct.

Policies for the BA Degree with a Major in Chemistry

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.
Requirements for the BS Degree with a Major in Chemistry

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BS degree with a major in Chemistry must complete:

- A minimum of 24-28 courses, depending on course selection, (69 credit hours) to satisfy major requirements.
- A minimum of 129 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 14-16 courses, depending on course selection, (41 credit hours) at the 300-level or above.
- The requirements for one area of specialization (see below for areas of specialization). The BS degree with a major in Chemistry offers four areas of specialization:
  - Biological and Medicinal Chemistry (p. 293),
  - Inorganic Chemistry and Inorganic Materials (p. 293),
  - Organic Chemistry (p. 293),
  - Physical and Theoretical Chemistry (p. 293).

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor, or where applicable, the department's Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Chemistry</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BS Degree with a Major in Chemistry</td>
<td>129</td>
</tr>
</tbody>
</table>

### Degree Requirements

#### Core Requirements

**General Chemistry**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 151</td>
<td>HONORS CHEMISTRY I &amp; HONORS CHEMISTRY LABORATORY I</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 152</td>
<td>HONORS CHEMISTRY II &amp; HONORS CHEMISTRY LABORATORY II</td>
<td>4</td>
</tr>
</tbody>
</table>

**Chemistry Foundation Courses**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC 301</td>
<td>BIOCHEMISTRY I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 211</td>
<td>ORGANIC CHEMISTRY I</td>
<td>3</td>
</tr>
<tr>
<td>&amp; CHEM 213</td>
<td>ORGANIC CHEMISTRY DISCUSSION</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 301</td>
<td>PHYSICAL CHEMISTRY I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 302</td>
<td>PHYSICAL CHEMISTRY II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 330</td>
<td>ANALYTICAL CHEMISTRY</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 360</td>
<td>INORGANIC CHEMISTRY</td>
<td>3</td>
</tr>
</tbody>
</table>

**Mathematics**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I</td>
<td>3</td>
</tr>
<tr>
<td>or MATH 105</td>
<td>AP/OTH CREDIT IN CALCULUS I</td>
<td>3</td>
</tr>
</tbody>
</table>

**Physics**

Select 1 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 101</td>
<td>MECHANICS (WITH LAB) &amp; PHYS 103</td>
<td>MECHANICS DISCUSSION</td>
</tr>
<tr>
<td>PHYS 111</td>
<td>HONORS MECHANICS (WITH LAB)</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 125</td>
<td>GENERAL PHYSICS (WITH LAB)</td>
<td>3</td>
</tr>
</tbody>
</table>

Select 1 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 102</td>
<td>ELECTRICITY &amp; MAGNETISM (WITH LAB) &amp; PHYS 104</td>
<td>ELECTRICITY AND MAGNETISM DISCUSSION</td>
</tr>
<tr>
<td>PHYS 112</td>
<td>HONORS ELECTRICITY &amp; MAGNETISM (WITH LAB)</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 126</td>
<td>GENERAL PHYSICS II (WITH LAB)</td>
<td>3</td>
</tr>
</tbody>
</table>

**Advanced Laboratories**

Select 3 courses from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC 311</td>
<td>ADVANCED EXPERIMENTAL BIOSCIENCES</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 365</td>
<td>ORGANIC CHEMISTRY LAB</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 366</td>
<td>INORGANIC CHEMISTRY LAB</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 367</td>
<td>MATERIALS CHEMISTRY LAB</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 368</td>
<td>CHEMICAL MEASUREMENT LAB</td>
<td>3</td>
</tr>
</tbody>
</table>

**Research**

Select 5 credit hours from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 491</td>
<td>RESEARCH FOR UNDERGRADUATES</td>
<td>5</td>
</tr>
<tr>
<td>CHEM 492</td>
<td>UNDERGRADUATE HONORS RESEARCH</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 493</td>
<td>UNDERGRADUATE HONORS RESEARCH</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 700</td>
<td>TEACHING PRACTICUM</td>
<td>6</td>
</tr>
</tbody>
</table>

**Area of Specialization**

Select 1 from the following Areas of Specialization (see Areas of Specialization below):

- Biological and Medicinal Chemistry
- Inorganic Chemistry and Inorganic Materials
- Organic Chemistry
- Physical and Theoretical Chemistry

Total Credit Hours Required for the Major in Chemistry 69

**University Graduation Requirements** (p. 26)

Total Credit Hours 129

### Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

1. CHEM 121 or CHEM 111 may be substituted for CHEM 151; CHEM 123 or CHEM 113 may be substituted for CHEM 153; CHEM 122 or CHEM 112 may be substituted for CHEM 152; CHEM 124 or CHEM 114 may be substituted for CHEM 154.

2. Chemistry students may enroll in BIOC 301 without the prerequisite BIOC 201. Requests to waive the prerequisite course are approved by the course instructor. Students should contact the course instructor for more information.
Though not required, MATH 211 is strongly recommended for students planning to specialize in Physical and Theoretical chemistry or planning to pursue graduate studies. Additionally, the Department of Mathematics may, after consultation with a student concerning his/her previous math preparation, recommend that a student be placed into a higher level math course than that for which the student has received official credit. The Department of Chemistry will accept this waiver of the math classes upon a written confirmation of the waiver from the Department of Mathematics and upon the student’s successful completion of the higher level math course.

MATH 221 and MATH 222 may substitute for MATH 212.

CHEM 391 must be taken as part of the Research requirement and for at least 3 credit hours. Enrollment in CHEM 391 requires permission of the course instructor. Students are expected to complete CHEM 391 before the end of their junior year; permission will not normally be granted for students in their final year of undergraduate study.

If CHEM 700 is selected as a Research course, it may only be taken for up to 2 credit hours.

### Areas of Specialization

To fulfill the remaining Chemistry major requirements, students must complete advanced work that satisfies the requirements of one area of specialization as listed below. A student may, working with his or her chemistry major advisor and with the approval of the Director of the Undergraduate Program, propose a course of study in another specialization. Such proposed areas of specialization must have course and laboratory experiences comparable to those of the areas of specialization listed below.

Additionally, a double specialization can be earned by completing the requirements for two specialties. For double specialization, only two advanced lecture courses may count towards both specializations. The remaining two advanced courses in each specialization must be unique (i.e., double specialization requires six advanced lecture courses, and triple specialization require eight). A NanoChemistry specialization can be added to any of the standard areas of specialization by adding two nanoscience courses.

### Area of Specialization: Biological and Medicinal Chemistry

Students must complete a minimum of 4 courses (12 credit hours) as listed below to satisfy the requirements for the area of specialization in Biological and Medicinal Chemistry.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 212 &amp; CHEM 214</td>
<td>ORGANIC CHEMISTRY II and ORGANIC CHEM DISCUSSION II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 320</td>
<td>ORGANIC CHEMISTRY II</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 302</td>
<td>BIOCHEMISTRY II</td>
<td>3</td>
</tr>
</tbody>
</table>

### Advanced Coursework in Chemistry

Select 1 course (for at least 3 credit hours) from MATH or PHYS course offerings at the 400-level or above

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 415</td>
<td>CHEMICAL KINETICS AND DYNAMICS</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 531</td>
<td>ADVANCED QUANTUM CHEMISTRY</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 559</td>
<td>SPECTROSCOPY AT THE SINGLE MOLECULE/PARTICLE LIMIT</td>
<td>3</td>
</tr>
</tbody>
</table>

### Area of Specialization: Inorganic Chemistry and Inorganic Materials

Students must complete a minimum of 4 courses (12 credit hours) as listed below to satisfy the requirements for the area of specialization in Inorganic Chemistry and Inorganic Materials.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 475</td>
<td>PHYSICAL METHODS IN INORGANIC CHEMISTRY</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 495</td>
<td>TRANSITION METAL CHEMISTRY</td>
<td>3</td>
</tr>
</tbody>
</table>

### Advanced Coursework in Chemistry

Select 2 courses from the following:

- Any lecture course between CHEM 400 and CHEM 489
- Any lecture course between CHEM 495 and CHEM 699

Total Credit Hours 12

### Area of Specialization: Organic Chemistry

Students must complete a minimum of 4 courses (12 credit hours) as listed below to satisfy the requirements for the area of specialization in Organic Chemistry.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 212 &amp; CHEM 214</td>
<td>ORGANIC CHEMISTRY II and ORGANIC CHEM DISCUSSION II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 320</td>
<td>ORGANIC CHEMISTRY II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 401</td>
<td>ADVANCED ORGANIC CHEMISTRY</td>
<td>3</td>
</tr>
</tbody>
</table>

### Advanced Coursework in Chemistry

Select 2 courses from the following:

- BIOC 302 | BIOCHEMISTRY II |
- Any lecture course between CHEM 400 and CHEM 489
- Any lecture course between CHEM 495 and CHEM 699

Total Credit Hours 12

### Area of Specialization: Physical and Theoretical Chemistry

Students must complete a minimum of 4 courses (12 credit hours) as listed below to satisfy the requirements for the area of specialization in Physical and Theoretical Chemistry.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 430</td>
<td>QUANTUM CHEMISTRY</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 420</td>
<td>CLASSICAL AND STATISTICAL THERMODYNAMICS</td>
<td>3</td>
</tr>
</tbody>
</table>

### Advanced Coursework in Chemistry

Select 1 course from the following:

- CHEM 415 | CHEMICAL KINETICS AND DYNAMICS |
- CHEM 531 | ADVANCED QUANTUM CHEMISTRY |
- CHEM 559 | SPECTROSCOPY AT THE SINGLE MOLECULE/PARTICLE LIMIT |

Select 1 course (for at least 3 credit hours) from MATH or PHYS course offerings at the 400-level or above

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 415</td>
<td>CHEMICAL KINETICS AND DYNAMICS</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credit Hours 12
Footnotes and Additional Information
1 For purposes of this requirement, “advanced coursework” includes chemistry lecture courses at the 400-level or higher (courses in Rice’s course catalog that have a course type listed as ‘lecture’). CHEM 212 or CHEM 320 or BIOC 302 count as “advanced coursework” for purposes of this requirement. Courses in other departments at the 400-level or higher with substantial chemistry content may count toward this requirement with approval of the Director of the Undergraduate Program.

Policies for the BS Degree with a Major in Chemistry

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the major in Chemistry should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information
For additional information, please see the Chemistry website: https://chemistry.rice.edu

Opportunities for the BS Degree with a Major in Chemistry

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Honors Research Program in Chemistry
The Chemistry Honors Research Program is a suite of courses (CHEM 492/CHEM 493) offering the opportunity for a rigorous two-semester “capstone” individual research project in Chemistry. This immersive program is intended to give students a first-hand experience of a career in research. Students interested in graduate school are strongly encouraged to apply. Students having completed previous independent research (as CHEM 391 and/or CHEM 491) in an off-campus laboratory in the Texas Medical Center are eligible to apply to perform honors research in that laboratory. The honors research courses (CHEM 492 and CHEM 493) function as a pair and must all be taken in the same academic year. Registration for CHEM 492 requires a commitment to register for CHEM 493.

Students who complete the Chemistry Honors Research Program are given primary consideration for the Distinction in Research and Creative Work, a university honor for select undergraduates, carefully selected by the department and granted at commencement, which appears on the transcript and diploma.

Chemistry Honors Research Program Components
- CHEM 492: Fall semester, 5 credit hours. For approved students only requires a formal application and recommendation of a faculty research advisor. Requirements include at least 15 hours of laboratory research per week and regular written and/or oral progress reports.
- CHEM 493: Spring semester, 5 credit hours. Requirements include at least 15 hours of laboratory research per week and a formal thesis.
- Applications may be submitted to the course instructor, February 1 – August 1. Students are encouraged to apply early.

Additional Information
For additional information, please see the Chemistry website: https://chemistry.rice.edu

Doctor of Philosophy (PhD) Degree in the field of Chemistry

Program Learning Outcomes for the MA and PhD Degrees in the field of Chemistry

Upon completing MA and PhD degrees in the field of Chemistry, students will be able to:

1. Design and conduct independent and novel experimental and/or theoretical/computational chemical-based research that contributes to the existing body of knowledge in the field.
2. Locate, retrieve, read, and interpret current chemical literature using modern literature search methods.
3. Demonstrate an awareness of the ethical, societal, and environmental impact of chemistry.
4. Effectively communicate to both the scientific community and the general public the results of their work both orally and in writing.

Requirements for the MA and PhD Degrees in the field of Chemistry

MA Degree Program
The MA degree is a thesis master’s degree. For general university requirements, please see Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Although students are not normally admitted to study for the MA degree, graduate students may earn the MA degree after obtaining approval of their candidacy for the PhD. The MA degree may also be earned by students who do not achieve PhD candidacy by:

- Completing the six one-semester courses required for PhD candidacy
- Producing a master’s thesis that presents the results of a program of research approved by the department
- Passing a final master’s thesis defense and submitting the thesis to the Office of Graduate and Postdoctoral Studies.
Requirements for the PhD Degree in the field of Chemistry
PhD Degree Program
For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students who have completed coursework equivalent to that required for a BA or BS in chemistry may apply for admission to the PhD degree program. For more information, see Admission to Graduate Study (p. 55). Students are not normally admitted to study for an MA degree.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MA Degree in the field of Chemistry</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the PhD Degree in the field of Chemistry</td>
<td>90</td>
</tr>
</tbody>
</table>

Research
The PhD in chemistry is awarded for original research in chemistry. During the first semester of residence, students select a research advisor from among the members of the faculty. In some cases, students may choose research advisors outside of the department. Approval of the department chair is required to formalize these advising relationships. The research advisor will guide the student in the choice of an appropriate research topic and in the detailed training required to complete that project. Students must successfully complete CHEM 800 and CHEM 600 every semester of residence. Candidates earn a PhD after successfully completing at least 90 semester hours of advanced study in chemistry and related fields, culminating in a thesis that describes an original and significant investigation in chemistry. The thesis must be satisfactorily defended in a public oral examination. The student must pass the thesis defense before the end of the 16th semester of residency.

Coursework
Within the first two years, the student must complete six 3-semester-hour graduate-level lecture courses at Rice University, or their approved equivalent. In order to satisfy this requirement, each of these courses must satisfy the following criteria:

- They must be approved by the department’s graduate advising committee.
- Chemistry graduate courses must be at the 500 level or higher. Certain 300-level and 400-level courses in other departments may be acceptable with prior approval by the department’s graduate advising committee, but a maximum of three lower-level courses in other departments can count towards the six-class requirement, and these do not count towards the university-wide requirement of 90 credits at the 500-level. Courses must be in technical subjects in science or engineering. Courses in teaching, presentation, or management will not be counted toward the six-class requirement.
- Each course must be passed with a grade of B- or higher. It is possible to repeat or replace a course, upon approval of the department’s graduate advising committee. A maximum of two courses can be repeated/replaced.

- Students who pursue both the BS and the PhD at Rice need not duplicate course work for the two degrees. However, teaching as an undergraduate does not substitute for the teaching requirements in the PhD program.

Responsible Conduct of Research
Each graduate student must successfully complete the ethics course UNIV 594.

Teaching
- Each graduate student must participate in teaching (CHEM 700) for the equivalent of three semesters. Assignments are determined by departmental needs.
- An average of a B- in all three courses is required. Assignments are determined by departmental needs.

Qualifying Examination
The qualifying exam has written and oral components, and the expectations for these are available in the department office. The examination committee will be composed of three faculty members, excluding the research advisor. The written document must be submitted to the committee at least one week before the date of the oral examination. The examination must be taken by the last day of class at the end of the student’s fourth semester in residency. Any follow-up work required by the committee must be completed by the assigned date, and the exam must be passed by the end of the sixth semester.

Advancement to Candidacy for the PhD
After completing the required coursework, teaching, and qualifying examination, a student must petition to be Advanced to Candidacy for the PhD degree. Upon Advancement to Candidacy, a student chooses a thesis committee of at least three faculty members with the guidance and approval of the research advisor and department chair. The thesis committee must include one faculty member whose primary appointment is outside of the chemistry department.

Policies for the PhD Degree in the field of Chemistry
Department of Chemistry Graduate Program Handbook
The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Chemistry publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Chemistry_Graduate_Handbook.pdf

Appeals
Students may petition the Chemistry Graduate Studies Committee for variances on these academic regulations.

Satisfactory Performance
To remain in good academic standing, a student must maintain a GPA of 3.00 (B) or higher in all lecture courses, a GPA of 3.00 (B) or higher in all semesters of CHEM 700, and a grade of B or higher in every semester of CHEM 600 and CHEM 800. Failure to maintain satisfactory grades and sufficient progress in research will result in probation and possible dismissal. The student must be enrolled full-time in a departmentally approved research group beginning the second semester, and every semester thereafter. All graduate students are evaluated annually to
ensure that they are making appropriate progress towards the degree. The student, advisor, or department may request a meeting between the student and a faculty committee at any time to evaluate progress or to determine a course of action. If progress is unsatisfactory, the committee may recommend a semester of probation, which could result in dismissal from the program if progress remains unsatisfactory in the probationary semester.

Additional Information
For additional information, please see the Chemistry website: https://chemistry.rice.edu

Opportunities for the PhD Degree in the field of Chemistry
Additional Information
For additional information, please see the Chemistry website: https://chemistry.rice.edu

Cinema and Media Studies
Contact Information
Cinema and Media Studies
https://arthistory.rice.edu/minors/cinema-and-media-studies-minor
103 Herring Hall
713-348-4276

Martin Blumenthal-Barby
Program Co-Director
martin.blumenthal-barby@rice.edu

Gordon Hughes
Program Co-Director
Gordon.A.Hughes@rice.edu

Cinema and Media Studies is an interdisciplinary program that focuses on the history, analysis, and theorization of film and other technologically driven visual media, including television, video art, the Internet, and expanded cinema.

Broader survey courses introduce students to the history of moving images and to the fundamentals of cinematic and media analysis, while advanced seminars focus on particular movements, concepts, and themes across specific periods and geographic areas.

The Cinema and Media Studies minor is housed in the Art History department.

Minor

- Minor in Cinema and Media Studies (p. 296)

Cinema and Media Studies does not currently offer an academic program at the graduate level.

Co-Directors and Advisors
Martin Blumenthal-Barby
Gordon Hughes

Professors
Marcia Brennan
Luis Duno-Gottberg
Kirsten Ostherr
Judith Roof
Edward A. Snow

Associate Professors
Graham Bader
Martin Blumenthal-Barby
Gordon Hughes
Lida Oukaderova
Philip R. Wood

Professor in the Practice
Charles Dove

Steering Committee
Martin Blumenthal-Barby
Charles Dove
Luis Duno-Gottberg
Gordon Hughes
Kirsten Ostherr
Lida Oukaderova

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
- Course offerings/subject codes: CMST

Program Description and Code
- Cinema and Media Studies: CMST

Undergraduate Minor Description and Code
- Minor in Cinema and Media Studies: CMST

CIP Code and Description

1 Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Minor in Cinema and Media Studies
Program Learning Outcomes for the Minor in Cinema and Media Studies

Upon completing the minor in Cinema and Media Studies, students will be able to:

1. Develop an understanding of film and media history in the context of cultural, economic, political, and national developments.

2. Utilize specialized disciplinary vocabulary and methodologies effectively, and communicate the function and meaning of film and media works both verbally and in writing.
3. Develop an understanding of modes of theoretical inquiry relevant to film and media studies.
4. Understand major film movements, trends, and genres across regional, national, and global contexts.
5. Develop analytical thinking skills to generate and answer original research questions and produce independent research.

**Requirements for the Minor in Cinema and Media Studies**

Students pursuing the minor in Cinema and Media Studies must complete:

- A minimum of 6 courses (18-22 credit hours, depending on course selection) to satisfy minor requirements.
- A minimum of 2 courses (6 credit hours) taken at the 300-level or above.
- A maximum of 3 courses (9 credit hours) from study abroad or transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab.

Students who pursue the minor in Cinema and Media Studies are encouraged to meet with a program co-director before the end of the winter semester of their third year to declare their intention to complete the minor.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor's academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the minor’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/)). Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

<table>
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**Minor Requirements**

**Core Requirements**

*Select 3 courses from the following:* 9 or 10

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<th>Code</th>
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<td>CMST 201 / GERM 280</td>
<td>HISTORY OF CINEMA AND MEDIA I: INVENTION TO 1945</td>
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<td>CMST 202</td>
<td>HISTORY OF CINEMA AND MEDIA PART II: 1945-PRESENT</td>
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<td>CMST 203</td>
<td>INTRODUCTION TO FILM AND MEDIA ANALYSIS</td>
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<td>FILM 280 / ARTS 280 / HART 280</td>
<td>HISTORY &amp; AESTHETICS OF FILM</td>
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**Elective Requirements**

*Select 3 courses from the following:* 9-12

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<tr>
<td>ENGL 273 / SWGS 273</td>
<td>MEDICINE AND MEDIA</td>
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<td>ENGL 320</td>
<td>SHAKESPEARE ON FILM</td>
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<td>CINEMA STUDIES 2</td>
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<td>ENGL 375</td>
<td>FILM AND LITERATURE</td>
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<td>ENGL 398</td>
<td>SLAVERY IN 20TH CENTURY FILM AND FICTION</td>
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<td>FILM 180 / HART 180</td>
<td>14 FILMS YOU SHOULD SEE BEFORE YOU GRADUATE FROM RICE UNIVERSITY</td>
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<td>FILM 218 / ASIA 218 / HIST 218</td>
<td>HISTORY THROUGH FILM IN EAST AND NORTHEAST ASIA</td>
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<td>FILM 250 / HART 250</td>
<td>CONTEMPORARY EUROPEAN CINEMA</td>
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<td>FILM 284 / HART 284</td>
<td>NONFICTION FILM</td>
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<td>FILM 336 / ASIA 355 / HART 336</td>
<td>CINEMA AND THE CITY</td>
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<td>FILM 359 / ARCH 359 / HART 359</td>
<td>CINEMAS OF URBAN ALIENATION</td>
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<td>FILM 378 / ANTH 378 / HART 391</td>
<td>PLACE AND MEMORY IN MIDDLE EASTERN AND EUROPEAN CINEMA</td>
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<td>FILM 381 / ENGL 386</td>
<td>MEDICAL MEDIA ARTS LAB</td>
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<td>FILM 382 / HART 382</td>
<td>MODALITIES OF CINEMA</td>
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<td>FILM 383 / HART 383</td>
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<td>FILM 385 / ENGL 385</td>
<td>FILM STUDIES</td>
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<td>POST WAR EUROPEAN CINEMA</td>
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<td>FILM 432 / ARTS 432</td>
<td>FILM GENRE: THE WESTERN</td>
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<td>FILM 433</td>
<td>FILM GENRE: SCIENCE FICTION CINEMA</td>
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<td>FILM 435 / ARTS 435 / HART 480</td>
<td>SEMINAR ON FILM AUTHORSHIP THE NEW HOLLYWOOD</td>
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<td>FILM 455 / HART 457</td>
<td>VIDEO AND EXPLAINED CINEMA</td>
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<td>GLOBAL FRENCH CINEMA (IN ENGLISH)</td>
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<td>FREN 407</td>
<td>CINEMA IN FRENCH</td>
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<td>GERM 328 / HUMA 328</td>
<td>GERMAN ADAPTATIONS: TEXT TO FILM</td>
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<td>GERM 335</td>
<td>GERMAN FILM (IN ENGLISH)</td>
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<td>GERM 338 / HUMA 373 / SWGS 361</td>
<td>NEW GERMAN FILM: HITLER'S CINEMATIC CHILDREN</td>
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<td>GERM 410</td>
<td>THE POLITICS OF GERMAN FILM (IN GERMAN)</td>
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<td>HART 495</td>
<td>READINGS IN MEDIA HISTORY AND THEORY</td>
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<td>SOCI 389</td>
<td>RACE, GENDER, CLASS ON FILM</td>
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</table>
Footnotes and Additional Information
1 At least 2 elective courses (6 credit hours) must be numbered at the 300-level or above. With the exception of core courses, no more than 2 courses (6 credit hours) from the same subject code (i.e. ENGL, GERM, etc.) may be used to fulfill the Electives Requirement.
2 ENGL 374 is a variable topics course. Depending on the topic in any given semester, the course may or may not fulfill the minor requirement. Contact the Program Director or Advisor for more information.

Policies for the Minor in Cinema and Media Studies
Program Restrictions and Exclusions
Students pursuing the minor in Cinema and Media Studies should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 11), i) students may declare their intent to pursue a minor only after they have first declared a major, and ii) students may not major and minor in the same subject.

Transfer Credit
For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines
Students pursuing the minor in Cinema and Media Studies should be aware of the following program-specific transfer credit guidelines:

- No more than 3 courses (9 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the minor.
- Request for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

Distribution Credit Information
The determination of distribution eligibility is done as part of the new course creation process (https://registrar.rice.edu/facstaff/courseprocess/). As part of an annual roll call (https://registrar.rice.edu/facstaff/distribution_credit/) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean's Offices of each of the academic schools.

Faculty and leadership in the academic schools are responsible for ensuring that the courses identified as distribution-eligible meet the criteria as set in the General Announcements (p. 26). Students are responsible for ensuring that they meet graduation requirements (p. 26) by completing coursework designated as distribution at the time of course registration.

Additional Information
For additional information, please see the Cinema and Media Studies website: https://arthistory.rice.edu/minors/cinema-and-media-studies-minor (https://arthistory.rice.edu/minors/cinema-and-media-studies-minor/)

Opportunities for the Minor in Cinema and Media Studies
Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Additional Information
For additional information, please see the Cinema and Media Studies website: https://arthistory.rice.edu/minors/cinema-and-media-studies-minor (https://arthistory.rice.edu/minors/cinema-and-media-studies-minor/)

See https://humanities.rice.edu/student-life (https://humanities.rice.edu/student-life/) for tables of fellowships, prizes, and internships/practica that may be relevant to this minor.

Civic Leadership
Contact Information
Civic Leadership
https://ccl.rice.edu/
208 Rice Memorial Center
713-348-2223

Caroline Quenemoen
Associate Dean of Undergraduates, Director of Inquiry Based Learning
cqk@rice.edu

In support of Rice's mission of providing a distinctive undergraduate experience, the Center for Civic Leadership (CCL) helps undergraduate students develop the knowledge, skills, and values to address the problems of the 21st century and to lead in a variety of community environments. The focus on civic leadership reflects not only Rice's mission but a broader trend that recognizes the civic purpose of 21st century institutions of higher education to cultivate social responsibility and active citizenship. The CCL's approach to leadership education stresses the development of knowledge to understand the complex challenges facing today's society, skills to motivate and collaborate with diverse stakeholders to take informed action, and values to effect positive change.

Students begin the program by completing a CCL Immersion Program, which introduces them to social issues in community-based contexts (through lectures, community tours, and short-term service) and develops skills in reflective practice critical to leadership development.

Additionally, students complete a minimum of 3 credit hours of social issues electives and a minimum of 3 credit hours of leadership electives chosen from a list of courses covering relevant
Topics. Timely, personalized advising plays an important role in the selection of the electives in order to ensure that students follow an academically coherent path to the certificate. The purpose of this element of the certificate pathway is to provide foundational knowledge directly pertinent to a student’s capstone project.

Students will apply to participate in a CCL Action Program that allows them to work in collaboration with a community partner to address a social issue and identified need through research and service. To be selected to one of these programs, students must demonstrate relevant academic preparation.

Upon completion of the above listed requirements, students may apply in the spring of their sophomore or junior year for admittance to the Certificate in Civic Leadership.

To receive the certificate, students must complete a substantial civic leadership project in partnership with a community organization under the guidance of one faculty and a CCL advisor. In the fall semester, all admitted certificate students take UNIV 402, in which they prepare for their capstone projects by learning principles of community partnership development, researching a community need or issue in context, designing a sustainable response, developing a project proposal, and reflecting on leadership challenges and solutions. Students subsequently carry out their projects independently in the spring semester under the direction of their faculty advisor and the capstone instructor (UNIV 403). To register for UNIV 403, students must have successfully completed UNIV 402 and received approval for their CCL capstone project proposal from their advisor, their community partner, and the UNIV 402 course instructor. UNIV 403 students must present their project results to the community partner through a formal presentation and written report before the conclusion of the course. Additionally, students are encouraged to present at a formal venue, such as a conference or symposium, within one year of course completion.

Consideration for receipt of the certificate requires submission of a portfolio that includes the capstone project and description of its outcomes, responses to reflective questions regarding their civic leadership development, and a public presentation to the campus and community. Upon recommendation of the capstone instructor and faculty advisor, the certificate will be awarded by vote of the faculty and center directors and recognized on the student’s official transcript upon graduation.

Certificate

- Certificate in Civic Leadership (p. 299)

Civic Leadership does not currently offer an academic program at the graduate level.

Associate Dean of Undergraduates and Director of Inquiry Based Learning

Caroline Quenemoen

Faculty Director

Robert M. Stein, Political Science

Director of Programs and Partnerships

Libby Vann

Director of Curriculum and Fellowships

Danika Brown

Certificate Advisor

Fatima Raza

Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule

- Course offerings/subject code: LEAD

Center Description and Code

- Center for Civic Leadership: LEAD

Undergraduate Certificate Description and Code

- Certificate in Civic Leadership: CCL

CIP Code and Description

- CCL Certificate: CIP Code/Title: 52.0213 - Organizational Leadership

Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Certificate in Civic Leadership

Program Learning Outcomes for the Certificate in Civic Leadership

Upon completing the certificate in Civic Leadership, students will be able to:

1. Integrate academic and experiential knowledge in civic contexts.
2. Analyze issues through the framework of democratic values, processes, and policies.
3. Address real world issues through interaction and collaboration with diverse community partners.
4. Communicate with and present their work effectively to a range of audiences both within and beyond the academic community.
5. Employ reflection to express their individual values and goals and be able to act on them.
6. Demonstrate motivation to realizing equitable and inclusive communities.

Requirements for the Certificate in Civic Leadership

Students pursuing the certificate in Civic Leadership must complete:

- A minimum of 4 courses (12 credit hours) to satisfy certificate requirements.
- A minimum of 2 Experiential Learning Programs:
  - 1 LEARN Level Program
  - 1 ACT Level Program
- A Civic Leadership Portfolio.
Certificate in Civic Leadership

- A Capstone Requirement.
- A minimum overall GPA of 2.00 in required coursework with a minimum grade of C (2.00 grade points) in each course.

This certificate is not a freestanding degree program; in addition to fulfilling the certificate requirements outlined below, candidates will be required to complete successfully the degree program to which they have been admitted in order to receive this certificate. Upon completion, the certificate is awarded at the same time as the conferral of the student's Rice degree, along with a formal notation on their academic transcript.

The courses listed below satisfy the requirements for this certificate. In certain instances, courses not on this official list may be substituted upon approval of the certificate's academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the certificate's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

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**Certificate Requirements**

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<td>Core Requirements</td>
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<td>Select at least 1 course (minimum of 3 credit hours) from the Leadership Electives (see below for course list) 3</td>
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<td></td>
<td>Select at least 1 course (minimum of 3 credit hours) from the Social Issues Electives (see below for course list) 3</td>
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<td>Required Experiential Learning Programs</td>
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<td>Select 1 LEARN Level Program from the following:</td>
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<td>Urban Immersion Participant</td>
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<td>Alternative Break Participant</td>
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<td></td>
<td>Alternative Spring Break Participant</td>
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<tr>
<td></td>
<td>Global Engagement Opportunity Participant</td>
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<tr>
<td></td>
<td>Houston Volunteer Cohort</td>
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<tr>
<td></td>
<td>Houston-Centered Policy Challenge Participant</td>
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<td>Select 1 ACT Level Program from the following:</td>
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<td></td>
<td>Urban Immersion or Alternative Break Coordinator</td>
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<td></td>
<td>Alternative Spring Break Site Leader</td>
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<td></td>
<td>Houston Action Research Team (HART)</td>
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<td>Leadership Rice Summer Mentorship Experience</td>
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**Footnotes and Additional Information**

1 The submission of the Portfolio is required by the end of the semester in which the student is graduating. The Portfolio must include work samples completed for the certificate and a reflection essay that addresses how these experiences contributed to civic leadership development.

**Course Lists to Satisfy Requirements**

**Leadership Electives**

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<td>BUSI 310</td>
<td>LEADING PEOPLE IN ORGANIZATIONS</td>
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<td>ENGI 140</td>
<td>ENGINEERING LEADERSHIP DEVELOPMENT</td>
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<td>ENGI 315</td>
<td>LEADING TEAMS AND INNOVATION</td>
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<td>ENGI 320 / CEVE 320</td>
<td>ETHICS AND ENGINEERING LEADERSHIP</td>
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<td>LEAD 102</td>
<td>INTRODUCTION TO CIVIC LEADERSHIP</td>
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<td>LEAD 260 / POLI 260</td>
<td>ADVOCATING FOR IDEAS TO CHANGE THE WORLD</td>
<td>3</td>
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<td>LEAD 301 / HUMA 312</td>
<td>HISTORICAL AND INTELLECTUAL FOUNDATIONS OF LEADERSHIP</td>
<td>3</td>
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<td>LEAD 321</td>
<td>LEADERSHIP COMMUNICATION</td>
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<td>LEAD 330</td>
<td>LEADERSHIP IN HIGHER EDUCATION</td>
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<td>LEAD 333</td>
<td>STEM (SCIENCE TECHNOLOGY ENGINEERING AND MATHEMATICS) OUTREACH: INTRO TO CIVIC SCIENCE</td>
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<td>LEAD 335</td>
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<td>PHILANTHROPY IN THEORY AND PRACTICE</td>
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<td>LEADERSHIP AND MANAGEMENT I</td>
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**Social Issues Electives**

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<td>CITY/CULTURE</td>
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<td>ANTH 358</td>
<td>THE FOURTH WORLD: ISSUES OF INDIGENOUS PEOPLE</td>
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<tr>
<td>ARCH 313 / ENST 313</td>
<td>CASE STUDIES IN SUSTAINABLE DESIGN</td>
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<td>ARCH 455</td>
<td>HOUSING AND URBAN PROGRAMS: ISSUES IN POLICY</td>
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<tr>
<td>ASIA 387 / ANTH 387</td>
<td>ASIAN AMERICAN CONTEMPORARY COMMUNITIES</td>
<td>3</td>
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<tr>
<td>BUSI 464 / GLHT 464 / SOSC 464</td>
<td>SOCIAL ENTREPRENEURSHIP</td>
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<td>CEVE 302 / ENGI 302</td>
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<td>ECON 479</td>
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<td>SOCI 314</td>
<td>SCIENCE AT RISK? OUT OF THE LAB AND INTO PUBLIC SPHERE</td>
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<td>SOCIOLOGY OF IMMIGRATION</td>
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<td>SOCI 365 / ANTH 365</td>
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<td>SOCS 330</td>
<td>HEALTH CARE REFORM IN THE 50 STATES</td>
<td>3</td>
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</table>

### Policies for the Certificate in Civic Leadership

**Admissions**

Upon completing an advising plan to complete the Required Electives and Experiential Learning Programs, students may apply in the spring of their sophomore or junior year for admittance to the certificate in Civic Leadership.

To apply, students must submit the following:

- An Official Transcript
- Curriculum Choice Statement
- 3 Supplemental Questions (complete instructions are available at [https://ccl.rice.edu/certificate/steps-to-complete-certificate/](https://ccl.rice.edu/certificate/steps-to-complete-certificate/)).

Only students who demonstrate a coherent path of preparation will be admitted to the certificate program.

**Program Restrictions and Exclusions**

Students pursuing the Certificate in Civic Leadership should be aware of the following program restriction:

- As noted in [Majors, Minors, and Certificates](#), 'Students may declare their intent to pursue a university certificate only after they have first declared a major.'

**Transfer Credit**

For Rice University's policy regarding transfer credit, see [Transfer Credit](#). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: [https://oaa.rice.edu](https://oaa.rice.edu). Students are encouraged to meet with their advisors to discuss their individual situations.
Program Transfer Credit Guidelines
Students pursuing the Certificate in Civic Leadership should be aware of the following program-specific transfer credit guidelines:

- Request for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

Additional Information
For additional information, please see the Center for Civic Leadership website: https://ccl.rice.edu/ (https://ccl.rice.edu).

Opportunities for the Certificate in Civic Leadership
Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Additional Information
For additional information, please see the Center for Civic Leadership website: https://ccl.rice.edu/ (https://ccl.rice.edu).

Civil and Environmental Engineering
Contact Information
Civil and Environmental Engineering
https://ceve.rice.edu/
116 Keck Hall, MS 519
713-348-4949

Philip B. Bedient
Department Chair
bedient@rice.edu

Civil and Environmental Engineering (CEE) is a broad and diverse field of study that offers students an education with several degree options. The most flexible degree options are at the bachelor's level, where students can pursue either the Bachelor of Science in Civil Engineering (BSCE) degree or the Bachelor of Arts (BA) degree. The more scientific BSCE includes four areas of specialization while the BA, with its two distinct major concentrations, affords students more flexibility, including the possibility to complete a double major with any other Rice University major.

At the graduate level, the department offers one non-thesis graduate degree, the Master of Civil and Environmental Engineering (MCEE), to students who desire additional education and specialization in the practice of civil engineering or environmental sciences and engineering. Students admitted for graduate study leading to a Master of Science (MS) or Doctor of Philosophy (PhD) degree must complete a rigorous course of study that combines advanced coursework with scholarly research culminating in the public defense of a written thesis. Graduate research is carried out in a range of areas reflecting the interests of the department's faculty. Examples include environmental engineering, geotechnical engineering, structural engineering and mechanics, infrastructure reliability, hydrology, water resources and water quality management, air pollution and its control, and hazardous waste treatment.

Bachelor's Programs
- Bachelor of Arts (BA) Degree with a Major in Civil and Environmental Engineering
- and a Major Concentration in Civil Engineering (p. 304)
- and a Major Concentration in Environmental Engineering (p. 307)
- Bachelor of Science in Civil Engineering (BSCE) Degree (p. 310)

Minor
- Minor in Energy and Water Sustainability (p. 405)

Master's Programs
- Master of Civil and Environmental Engineering (MCEE) Degree in the field of Civil Engineering (p. 318)
- Master of Civil and Environmental Engineering (MCEE) Degree in the field of Environmental Engineering, (p. 320)
- Master of Science (MS) Degree in the field of Civil Engineering (p. 322)
- Master of Science (MS) Degree in the field of Environmental Engineering (p. 323)

Doctoral Programs
- Doctor of Philosophy (PhD) Degree in the field of Civil Engineering (p. 314)
- Doctor of Philosophy (PhD) Degree in the field of Environmental Engineering (p. 316)

Chair
Philip B. Bedient

Professors
Pedro J. J. Alvarez
Philip B. Bedient
Reginald DesRoches
Robert J. Griffin
Qilin Li
Satish Nagarajaiah
Pol D. Spanos
Mason B. Tomson

Associate Professors
Daniel Cohan
Leonardo A. Dueñas-Osorio
Jamie Ellen Padgett
Ilinca Stanciulescu

Assistant Professor
Lauren Stadler
Professors Emeriti
Ahmad J. Durrani
Ronald P. Nordgren
Anestis S. Veletsos
Calvin H. Ward

Professor in the Practice of Civil Engineering
Edmund P. Segner III

Professor in the Practice of Environmental Law
James B. Blackburn

Lecturers
David T. Adamson
Mandi Chapa
Philip C. deBlanc
Travis McGuire
Charles M. Penland
Nestor Rubiano-Benavides
Christof Spieler
Bob Stevens
Jacob Torres
Steve Wilkerson

Joint Appointments
William Tillman Cannady
Michael S. Wong

Adjunct Professors
Jean-Yves Bottero
Wei Chen
Joseph Cibor
Nick Fang
Jorge Loyo
Charles J. Newell
Carroll L. Oubre
Jerome Rose
Baxter Vieux

Adjunct Lecturer
Richard Johnson

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
- Course offerings/subject code: CEVE

Department Description and Code
- Civil and Environmental Engineering: CEEG

Undergraduate Degree Descriptions and Codes
- Bachelor of Arts degree: BA
- Bachelor of Science in Civil Engineering degree: BSCE

Undergraduate Major Descriptions and Codes
- Major in Civil Engineering (offered to students pursuing the BSCE degree): CIVI
- Major in Civil and Environmental Engineering (offered to students pursuing the BA degree): CEEG

Undergraduate Major Concentration Descriptions and Codes
- Major Concentration in Civil Engineering (attached to the BA degree): CIEG
- Major Concentration in Environmental Engineering (attached to the BA degree): ENEG

Undergraduate Major Areas of Specialization Descriptions and Attribute Codes
- Area of Specialization in Area I - Environmental Engineering (BSCE degree only): CEEN
- Area of Specialization in Area II - Hydrology and Water Resources (BSCE degree only): CEHW
- Area of Specialization in Area III - Structural Engineering and Mechanics (BSCE degree only): CESM
- Area of Specialization in Area IV - Urban Infrastructure, Reliability, and Management (BSCE degree only): CEUR

Please Note: Areas of Specialization are department/program-specific and are not formally recognized academic credentials. Unlike Major Concentrations, Areas of Specialization do not appear on the student's official academic transcript, etc.

Undergraduate Minor Description and Code
- Minor in Energy and Water Sustainability: EWSU

Graduate Degree Descriptions and Codes
- Master of Civil and Environmental Engineering degree: MCEE
- Master of Science degree: MS
- Doctor of Philosophy degree: PhD

Graduate Degree Program Descriptions and Codes
- Degree Program in Civil Engineering: CIVI
- Degree Program in Environmental Engineering: ENVI

CIP Code and Description
- CEEG Major/Program: CIP Code/Title: 14.0801 - Civil Engineering, General
- CIVI Major/Program: CIP Code/Title: 14.0801 - Civil Engineering, General
- ENVI Major/Program: CIP Code/Title: 14.1401 - Environmental/Environmental Health Engineering
- CIEG Major Concentration: CIP Code/Title: 14.0802 - Geotechnical and Geoenvironmental Engineering
- ENEG Major Concentration: CIP Code/Title: 14.1401 - Environmental/Environmental Health Engineering
Bachelor of Arts (BA) Degree with a Major in Civil and Environmental Engineering and a Major Concentration in Civil Engineering

Program Learning Outcomes for the BA Degree with a Major in Civil and Environmental Engineering and a Major Concentration in Civil Engineering

Upon completing the BA degree with a major in Civil and Environmental Engineering and a major concentration in Civil Engineering, students will be able to demonstrate:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to communicate effectively with a range of audiences.
3. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
4. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
5. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
6. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Requirements for the Bachelor of Arts (BA) Degree with a Major in Civil and Environmental Engineering

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Civil and Environmental Engineering must complete:

- A minimum of 62 credit hours to satisfy major requirements.
- A minimum of 122 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 8 courses (22-25 credit hours, depending on declared major concentration) taken at the 300-level or above.
- 11 courses (25 credit hours) of General Math and Science courses.
- 5-6 courses (16 credit hours) as Major Concentration Core courses.
- 7 courses (21 credit hours) in a focused specialty area of study.
- The requirements of a major concentration. When students declare the major (p. 11) in Civil and Environmental Engineering, students must additionally identify and declare one of two major concentrations, either in:
  - Civil Engineering (p. 305), or
  - Environmental Engineering (p. 308).

Because of the common core requirements, it is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (%20registrar@rice.edu).

Each major concentration is to be tailored to the specific needs of the student by discussions with, and approval by, the Civil and Environmental Engineering departmental major concentration advisor. Although not required, students are encouraged to double major when pursuing the BA degree.

The coherent and complete core curriculum is designed to give Rice undergraduate students a consistent technological literacy through the lens of Civil and Environmental Engineering and to prepare students for graduate school in engineering, various sciences (depending upon focus), economics, business MBA, political science, law, or medicine. Select students will be invited to finish an accelerated MS/PhD degree in the CEVE Department (see your advisor or department chair for details). Those students who want to obtain an engineering degree from a program accredited by the Engineering Accreditation Commission (EAC) of ABET must follow one of the Bachelor of Science programs the EAC has accredited at Rice, like the Bachelor of Science in Civil Engineering (BSCE). Students pursuing professional engineering licensure should also consider our BS in Civil and Environmental Engineering (BSCE).

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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Degree Requirements

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<td>General Math and Science Courses</td>
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<td>CAAM 210</td>
<td>INTRODUCTION TO ENGINEERING COMPUTATION</td>
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**Major Concentration**

Select 1 of the following Major Concentrations (see below for Major Concentration requirements):

- Civil Engineering
- Environmental Engineering

**Specialty Focus Area**

Select 7 courses from approved electives selected with the Civil and Environmental Engineering advisor (see below for more information, including course requirements).

**Total Credit Hours Required for the Major in Civil and Environmental Engineering**

62

**University Graduation Requirements (p. 26)**

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

**Major Concentration: Civil Engineering**

Students must complete the following 6 courses (16 credit hours) to satisfy the requirements for the major concentration in Civil Engineering.

**Specialty Focus Area**

To satisfy the remaining Specialty Focus Area of the BA degree with a major in Civil and Environmental Engineering, students must complete a total of 7 courses (21 credit hours) from approved electives selected with the Civil and Environmental Engineering advisor. Course selection must meet the following requirements:

- A minimum of 4 courses (12 credit hours) must be within one Specialty Focus Area (See examples below).
- A minimum of 4 courses (12 credit hours) from the 300-level or above; 2 of these 4 courses (6 credit hours) must also be selected from departmental (CEVE) course offerings.

Example Specialty Focus areas are suggested below; however students are encouraged to prepare their own specialty related to their career objectives in consultation with, and approval by, their Civil and Environmental Engineering advisor.

1. Biology
2. Chemical Engineering
3. Chemistry
4. Civil Engineering
5. Economics
6. Environmental Science and Engineering
7. Management

**Policies for the BA Degree with a Major in Civil and Environmental Engineering and a Major Concentration in Civil Engineering**

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

**Departmental Transfer Credit Guidelines**

Students pursuing the major in Civil and Environmental Engineering should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

**Additional Information**

For additional information, please see the Civil and Environmental Engineering website: https://ceve.rice.edu/

**Opportunities for the BA Degree with a Major in Civil and Environmental Engineering and a Major Concentration in Civil Engineering**

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university
honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Departmental Honor, Award, and Scholarship Opportunities

- **Distinction in Research and Creative Work**: The Department of Civil and Environmental Engineering will recognize graduating seniors for outstanding creative contributions with the award of Distinction in Research and Creative Work. The Department recognizes this award as being a significant honor. As such, it will be awarded to no more than 20% of a graduating class (rounded up to next whole number). This award shall be given for significant contributions in research, design, and creative projects beyond class assignments (except CEVE 499). Generally, it is expected that the student recipients will have performed research/design for a minimum of two academic segments (one segment = one academic year or one summer) during their undergraduate career (either for credit or pay). It may be given for one outstanding piece of work for consistent meaningful contributions made over the course of an undergraduate career. All majors (BA and BS) with a GPA of 3.30 or higher in all courses completed at Rice are eligible and will be considered for this distinction in the spring prior to their graduation.

- **Rice Global Forum**: Rice Global Forum (RGF) is an engineering and construction industry funded center which is in its second decade of operation. It was founded by Ahmad Durrani, past chair of Civil and Environmental Engineering at Rice. RGF funds and facilitates interaction with the engineering and construction industry, particularly oil and gas related work. RGF funds $25,000 worth of scholarships every year. In addition, RGF also consistently sponsors and supports Engineers Without Borders (EWB) and has donated to other student clubs as well in addition to holding an engineering design competition every year in February during National Engineers Week.

Fifth-Year Master’s Degree Option for Rice Undergraduate Students

Rice students have an option to pursue the Master of Civil and Environmental Engineering (MCEE) degree by adding an additional fifth year to their four undergraduate years of science and engineering studies.

Advanced Rice undergraduate students in good academic standing may apply to the MCEE degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master’s degree program. A plan of study will need to be approved by the student’s undergraduate advisor and the (MCEE) chair of the department graduate studies committee.

As part of this option and opportunity, Rice undergraduate students:

- must complete the requirements for their bachelor’s degree and the master’s degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
- should be aware of the financial aid implications, if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).

• more information on this Undergraduate - Graduate Concurrent Enrollment possibility, including specific information on the registration process can be found here (p. 17).

Student Organizations and Clubs

- **American Society of Civil Engineers Student (ASCE)**: https://www.asce.org/membership/student/.
  ASCE seeks to promote civil and environmental engineering, expose students to real world engineering, and connect students to alumni and professionals. Throughout the year we invite speakers from the industry, visit plants and sites, and organize social events. The objectives of this Chapter are to encourage the development of a professional consciousness, to afford an opportunity for civil engineering students to become acquainted and to practice working together effectively, to promote a spirit of congeniality among them, and to provide friendly contact with the engineering profession. We also support the Concrete Canoe competition (see below) and the Seismic Design Competition of the Earthquake Engineering Research Institute (EERI).

- **Chi Epsilon**: https://www.chi-epsilon.org/xewebgeneral2/.
  Chi Epsilon is dedicated to maintaining and promoting the status of civil engineering as an ideal profession. Chi Epsilon was organized to recognize the characteristics of the individual civil engineering deemed to be fundamental to the successful pursuit of an engineering career, and to aid in the development of those characteristics in the civil engineering student.

- **Engineers Without Borders (EWB)**: https://ewb.rice.edu/.
  EWB partners with developing communities worldwide to design engineering solutions that will improve their standards of living. It is an important component of the Civil and Environmental Engineering program. BA students with their flexible curriculum are encouraged to participate. This exciting endeavor allows undergraduates to have an experience in a developing country, where they are able to design and build a project to help society. Students have been attracted to the EWB program in large numbers and our local chapter is one of the most successful in the United States. Some CEVE courses are EWB-related, providing the opportunity to also obtain credit hours.

- **Concrete Canoe**: https://concretecanoe.rice.edu/.
  Rice Concrete Canoe is a student-run club that creates a functional concrete canoe to race and present at the yearly ASCE sponsored competition. Through the year, members gain engineering experience through the research, planning and constructing of a concrete canoe. By offerings members exposure to the engineering design process, small-group work, software such as Matlab and Adobe Illustrator (and possibly more starting this year), and laser cutters, Concrete Canoe offers a unique experience to students regardless of whether or not they want to become engineers.

- **Society of Women Engineers**: https://swe.rice.edu.
  The Society of Women Engineers aims to empower women to pursue and achieve their full potential in science and engineering related fields. We provide opportunities in professional development, academic and post-graduate planning, community outreach, and social events.

Additional Information

For additional information, please see the Civil and Environmental Engineering website: https://ceve.rice.edu/
Bachelor of Arts (BA) Degree with a Major in Civil and Environmental Engineering and a Major Concentration in Environmental Engineering

Program Learning Outcomes for the BA Degree with a Major in Civil and Environmental Engineering and a Major Concentration in Environmental Engineering

Upon completing the BA with a major in Civil and Environmental Engineering and a major concentration in Environmental Engineering, students will be able to demonstrate:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to communicate effectively with a range of audiences.
3. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
4. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
5. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
6. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Requirements for the Bachelor of Arts (BA) Degree with a Major in Civil and Environmental Engineering

For general university requirements, see Graduation Requirements (p. 26).

Students pursuing the BA degree with a major in Civil and Environmental Engineering must complete:

- A minimum of 62 credit hours to satisfy major requirements.
- A minimum of 122 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 8 courses (22-25 credit hours, depending on declared major concentration) taken at the 300-level or above.
- 11 courses (25 credit hours) of General Math and Science courses.
- 5-6 courses (16 credit hours) as Major Concentration Core courses.
- 7 courses (21 credit hours) in a focused specialty area of study.
- The requirements of a major concentration. When students declare the major (p. 11) in Civil and Environmental Engineering, students must additionally identify and declare one of two major concentrations, either in:
  - Civil Engineering (p. 305), or
  - Environmental Engineering (p. 308).

Because of the common core requirements, it is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (%20registrar@rice.edu).

Each major concentration is to be tailored to the specific needs of the student by discussions with, and approval by, the Civil and Environmental Engineering departmental major concentration advisor. Although not required, students are encouraged to double major when pursuing the BA degree.

The coherent and complete core curriculum is designed to give Rice undergraduate students a consistent technological literacy through the lens of Civil and Environmental Engineering and to prepare students for graduate school in engineering, various sciences (depending upon focus), economics, business MBA, political science, law, or medicine. Select students will be invited to finish an accelerated MS/PhD degree in the CEVE Department (see your advisor or department chair for details). Those students who want to obtain an engineering degree from a program accredited by the Engineering Accreditation Commission (EAC) of ABET must follow one of the Bachelor of Science programs the EAC has accredited at Rice, like the Bachelor of Science in Civil Engineering (BSCE). Students pursuing professional engineering licensure should also consider our BS in Civil and Environmental Engineering (BSCE).

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor, or where applicable, the department's Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
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<tr>
<th>Code</th>
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Degree Requirements

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<td></td>
<td>Core Requirements</td>
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General Math and Science Courses

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<th>Title</th>
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<tr>
<td>CAAM 210</td>
<td>INTRODUCTION TO ENGINEERING COMPUTATION</td>
</tr>
<tr>
<td>or CAAM 335</td>
<td>MATRIX ANALYSIS</td>
</tr>
</tbody>
</table>

CHEM 121 | GENERAL CHEMISTRY I |
| or CHEM 111 | AP/OTH CREDIT IN GENERAL CHEMISTRY I |

CHEM 123 | GENERAL CHEMISTRY LABORATORY I |
| or CHEM 113 | AP/OTH CREDIT IN GENERAL CHEMISTRY LAB I |

CHEM 122 | GENERAL CHEMISTRY II |
| or CHEM 112 | AP/OTH CREDIT IN GENERAL CHEMISTRY II |

CHEM 124 | GENERAL CHEMISTRY LABORATORY II |
Bachelor of Arts (BA) Degree with a Major in Civil and Environmental Engineering and a Major Concentration in Environmental Engineering

Major Concentration

Select 1 of the following Major Concentrations (see below for Major Concentration requirements):

- Civil Engineering
- Environmental Engineering

**Major Concentration: Environmental Engineering**

Students must complete the following 5 courses (16 credit hours) to satisfy the requirements for the major concentration in Environmental Engineering.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
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<tr>
<td>CEVE 101</td>
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<td>3</td>
</tr>
<tr>
<td>CEVE 307 / ENST 307 / ESCI 307</td>
<td>ENERGY AND THE ENVIRONMENT</td>
<td>3</td>
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<td>CEVE 310</td>
<td>PRINCIPLES OF ENVIRONMENTAL ENGINEERING</td>
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<tr>
<td>CEVE 401</td>
<td>CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE LAB</td>
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<tr>
<td>CEVE 412</td>
<td>HYDROLOGY AND WATER RESOURCES ENGINEERING</td>
<td>3</td>
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</table>

**Total Credit Hours**

16

**Specialty Focus Area**

Select 7 courses from approved electives selected with the Civil and Environmental Engineering advisor (see below for more information, including course requirements).

- Biology
- Chemical Engineering
- Chemistry
- Civil Engineering
- Economics
- Environmental Science and Engineering
- Management

**Policies for the BA Degree with a Major in Civil and Environmental Engineering and a Major Concentration in Environmental Engineering**

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: [https://oaa.rice.edu](https://oaa.rice.edu). Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

**Departmental Transfer Credit Guidelines**

Students pursuing the major in Civil and Environmental Engineering should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

**Additional Information**

For additional information, please see the Civil and Environmental Engineering website: [https://ceve.rice.edu](https://ceve.rice.edu)

**Opportunities for the BA Degree with a Major in Civil and Environmental Engineering and a Major Concentration in Environmental Engineering**

**Academic Honors**

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum
laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Departmental Honor, Award, and Scholarship Opportunities

• Distinction in Research and Creative Work: The Department of Civil and Environmental Engineering will recognize graduating seniors for outstanding creative contributions with the award of Distinction in Research and Creative Work. The Department recognizes this award as being a significant honor. As such, it will be awarded to no more than 20% of a graduating class (rounded up to next whole number). This award shall be given for significant contributions in research, design, and creative projects beyond class assignments (except CEVE 499). Generally, it is expected that the student recipients will have performed research/design for a minimum of two academic segments (one segment = one academic year or one summer) during their undergraduate career (either for credit or pay). It may be given for one outstanding piece of work for consistent meaningful contributions made over the course of an undergraduate career. All majors (BA and BS) with a GPA of 3.30 or higher in all courses completed at Rice are eligible and will be considered for this distinction in the spring prior to their graduation.

• Rice Global Forum: Rice Global Forum (RGF) is an engineering and construction industry funded center which is in its second decade of operation. It was founded by Ahmad Durrani, past chair of Civil and Environmental Engineering at Rice. RGF funds and facilitates interaction with the engineering and construction industry, particularly oil and gas related work. RGF funds $25,000 worth of scholarships every year. In addition, RGF also consistently sponsors and supports Engineers Without Borders (EWB) and has donated to other student clubs as well in addition to holding an engineering design competition every year in February during National Engineers Week.

Fifth-Year Master’s Degree Option for Rice Undergraduate Students

Rice students have an option to pursue the Master of Civil and Environmental Engineering (MCEE) degree by adding an additional fifth year to their four undergraduate years of science and engineering studies.

Advanced Rice undergraduate students in good academic standing may apply to the MCEE degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master’s degree program. A plan of study will need to be approved by the student’s undergraduate advisor and the (MCEE) chair of the department graduate studies committee.

As part of this option and opportunity, Rice undergraduate students:

• must complete the requirements for their bachelor’s degree and the master’s degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).

• should be aware of the financial aid implications, if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).

• more information on this Undergraduate - Graduate Concurrent Enrollment possibility, including specific information on the registration process can be found here (p. 17).

Student Organizations and Clubs

• American Society of Civil Engineers Student (ASCE): https://www.asce.org/membership/student/.

ASCE seeks to promote civil and environmental engineering, expose students to real world engineering, and connect students to alumni and professionals. Throughout the year we invite speakers from the industry, visit plants and sites, and organize social events. The objectives of this Chapter are to encourage the development of a professional consciousness, to afford an opportunity for civil engineering students to become acquainted and to practice working together effectively, to promote a spirit of congeniality among them, and to provide friendly contact with the engineering profession. We also support the Concrete Canoe competition (see below) and the Seismic Design Competition of the Earthquake Engineering Research Institute (EERI).

• Chi Epsilon: https://www.chi-epsilon.org/xewebgeneral2/.

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• Society of Women Engineers: https://swe.rice.edu.

The Society of Women Engineers aims to empower women to pursue and achieve their full potential in science and engineering related fields. We provide opportunities in professional development, academic and post-graduate planning, community outreach, and social events.

Additional Information

For additional information, please see the Civil and Environmental Engineering website: https://ceve.rice.edu/
Bachelor of Science in Civil Engineering (BSCE) Degree

The program leading to the BSCE degree is accredited by the Engineering Accreditation Commission (EAC) of ABET, https://www.abet.org (https://www.abet.org/).

Program Learning Outcomes (Student Outcomes) for the BSCE Degree

Upon completing the BSCE degree, students will be able to demonstrate:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences.
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Program Educational Objectives for the BSCE Degree

Within 3 to 5 years of graduation, graduates with a Bachelor of Science in Civil Engineering (BSCE) degree are expected to attain the following Program Educational Objectives (PEOs):

1. Demonstrate strong problem-solving and communication skills.
2. Achieve leadership positions in technical or managerial areas.
3. Demonstrate initiative and innovation in professional endeavors.
4. Demonstrate engagement in addressing ethical, social, environmental, and global concerns.
5. Remain engaged in continuing learning, including advanced degrees.
6. Obtain a Professional Engineering license, if appropriate.

Requirements for the BSCE Degree

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BSCE degree must complete:

- A minimum of 19 courses (54 credit hours) taken at the 300-level or above.
- The requirements for one area of specialization (see below for areas of specialization). When students declare the major (p. 11) in Civil Engineering (associated with the BSCE degree), students must additionally identify and declare one of four areas of specialization, either in:
  - Area I - Environmental Engineering (p. 11): Air and water quality, transport theory, modeling, and energy, or
  - Area II - Hydrology and Water Resources (p. 11): Watershed and aquifer management, flood prediction, data analysis, GIS, and hydrologic modeling, or
  - Area III - Structural Engineering and Mechanics (p. 11): Structural analysis, mechanics, design, dynamics, and matrix method, or
  - Area IV - Urban Infrastructure, Reliability, and Management (p. 11): Transportation systems, complex urban systems, system reliability, soil mechanics, decision theory, engineering economics, and project management.
- A minimum of 16 courses (40-41 credit hours, depending on course selection) from the General Math and Science courses.
- A minimum of 9 courses (24 credit hours) from the Core Requirements.

Because of the common core requirements, it is possible for students to change their area of specialization at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (registrar@rice.edu).

Civil and Environmental Engineering’s innovative and challenging BSCE degree’s engineering curriculum is designed to provide significant flexibility to the student. Specific details and typical course layouts by semester can be found on the departmental website (http://ceve.rice.edu/).

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://register.rice.edu/facstaff/degreeworks/officialcertifier/). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<th>Code</th>
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</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BSCE Degree</td>
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Degree Requirements

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<tr>
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<td>INTRODUCTION TO ENGINEERING COMPUTATION</td>
<td>3</td>
</tr>
<tr>
<td>CAAM 335</td>
<td>MATRIX ANALYSIS 1</td>
<td>3</td>
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<tr>
<td>or MATH 354</td>
<td>HONORS LINEAR ALGEBRA</td>
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<td>or MATH 355</td>
<td>LINEAR ALGEBRA</td>
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<td>GENERAL CHEMISTRY I</td>
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<tr>
<td>or CHEM 111</td>
<td>AP/OTH CREDIT IN GENERAL CHEMISTRY I</td>
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<td>Code</td>
<td>Title</td>
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<td>CHEM 123</td>
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<tr>
<td>or CHEM 113</td>
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</tr>
<tr>
<td>CHEM 122</td>
<td>GENERAL CHEMISTRY II</td>
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<tr>
<td>or CHEM 112</td>
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<tr>
<td>CHEM 124</td>
<td>GENERAL CHEMISTRY LABORATORY II</td>
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<td>or CHEM 114</td>
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<td>ESCI 115</td>
<td>INTRODUCTION TO THE EARTH</td>
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<td>or BIOC 201</td>
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<td>MATH 211</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA</td>
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<td>MATH 212</td>
<td>MULTIVARIABLE CALCULUS</td>
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<td>PHYS 101</td>
<td>MECHANICS (WITH LAB)</td>
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<td>&amp; PHYS 103</td>
<td>and MECHANICS DISCUSSION</td>
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<td>PHYS 102</td>
<td>ELECTRICITY &amp; MAGNETISM (WITH LAB)</td>
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<tr>
<td>&amp; PHYS 104</td>
<td>and ELECTRICITY AND MAGNETISM DISCUSSION</td>
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<tr>
<td>STAT 310 / ECON 307</td>
<td>PROBABILITY AND STATISTICS</td>
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**Core Requirements**

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<tr>
<td>CEVE 101</td>
<td>FUNDAMENTALS OF CIVIL AND ENVIRONMENTAL ENGINEERING</td>
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<tr>
<td>CEVE 211 / MECH 211</td>
<td>ENGINEERING MECHANICS</td>
<td>3</td>
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<tr>
<td>CEVE 310</td>
<td>PRINCIPLES OF ENVIRONMENTAL ENGINEERING</td>
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<tr>
<td>CEVE 311 / MECH 311</td>
<td>MECHANICS OF SOLIDS AND STRUCTURES</td>
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</tr>
<tr>
<td>CEVE 312</td>
<td>STRENGTH OF MATERIALS LAB</td>
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<td>CEVE 363</td>
<td>APPLIED FLUID MECHANICS</td>
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<td>Select 1 from the following:</td>
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<td>CEVE 401</td>
<td>CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE LAB</td>
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<tr>
<td>CEVE 471 &amp; CEVE 472</td>
<td>PRINCIPLES OF SOIL MECHANICS AND FOUNDATION ENGINEERING and SOIL MECHANICS LABORATORY WITH INDIVIDUAL PARTICIPATION</td>
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<td>CEVE 480</td>
<td>SENIOR DESIGN</td>
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<tr>
<td>CEVE 481</td>
<td>INTRODUCTION TO SENIOR DESIGN</td>
<td>1</td>
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</table>

**Area of Specialization**

Select 1 from the following Areas of Specialization (see Areas of Specialization below):

- Area I - Environmental Engineering
- Area II - Hydrology and Water Resources
- Area III - Structural Engineering and Mechanics
- Area IV - Urban Infrastructure, Reliability and Management

**Elective Requirements**

Select electives to fulfill the remaining BSCE degree requirements (see below for suggested elective courses) 5

**Total Credit Hours Required for the Major in Civil Engineering** 94-95

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**Footnotes and Additional Information**

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1. Or an equivalent approved course
2. Students may substitute ESCI 115 with any departmental (ESCI) course offering.
3. Students may substitute STAT 310 with any departmental (STAT) course offering at the 300-level or above with the exception of STAT 305.
4. * Please Note: For students pursuing an area of specialization in Environmental Engineering (Area I) or Hydrology and Water Resources (Area II), CEVE 401 is required, and CEVE 471 and CEVE 472 are Urban Infrastructure, Reliability, and Management (Area IV) electives. For students pursuing an area of specialization in Structural Engineering and Mechanics (Area III) or Urban Infrastructure, Reliability, and Management (Area IV), CEVE 471 and CEVE 472 are required and CEVE 401 is an Environmental Engineering (Area I) elective.
5. Courses that introduce fundamentals of civil and environmental engineering primarily targeted at students with diverse science, engineering, and humanities backgrounds (CEVE 101, CEVE 211, CEVE 310, CEVE 311, CEVE 312)
6. See also the University Graduation Requirements footnote above denoted with an *.

**Areas of Specialization**

To fulfill the remaining BSCE degree requirements, students must complete a total of 10 courses (30 credit hours) from the four areas of specialization as follows:

- 8 courses (24 credit hours), consisting of a minimum of 2 courses (6 credit hours) from each of the four areas of specialization as breadth.
- 2 additional courses (6 credit hours) from one of the four areas of specialization for a total of 4 courses (12 credit hours, including breadth) in that specific area as an area of specialization.

**Area of Specialization: Area I - Environmental Engineering**

All students must select a minimum of 2 courses (6 credit hours) from Area I. Students pursuing the Area I - Environmental Engineering area of specialization must complete:

- 4 courses (12 credit hours) from Area I - Environmental Engineering
- 2 courses (6 credit hours) from Area II - Hydrology and Water Resources
- 2 courses (6 credit hours) from Area III - Structural Engineering and Mechanics
- 2 courses (6 credit hours) from Area IV - Urban Infrastructure, Reliability and Management

**Elective Requirements**

Select 4 courses from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>CEVE 302 / ENGI 302</td>
<td>SUSTAINABLE DESIGN</td>
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</tbody>
</table>

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**University Graduation Requirements (p. 26)** 39

Total Credit Hours 133-134
CEVE 307 / ENST 307 / ESCI 307
ENERGY AND THE ENVIRONMENT

CEVE 308
INTRODUCTION TO AIR POLLUTION CONTROL

CEVE 404
ATMOSPHERIC PARTICULATE MATTER

CEVE 406 / ENST 406
INTRODUCTION TO ENVIRONMENTAL LAW

CEVE 411
ATMOSPHERIC PROCESSES

CEVE 434
FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT

CEVE 442
WATER REUSE AND RESOURCE RECOVERY

CEVE 444
ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

Or any approved (Area I - Environmental Engineering) course from CEVE course offerings

Select 2 courses (6 credit hours) from the Area II - Hydrology and Water Resources Area of Specialization

Select 2 courses (6 credit hours) from the Area III - Structural Engineering and Mechanics Area of Specialization

Select 2 courses (6 credit hours) from the Area IV - Urban Infrastructure, Reliability and Management Area of Specialization

Total Credit Hours 30

Area of Specialization: Area II - Hydrology and Water Resources
All students must select a minimum of 2 courses (6 credit hours) from Area II. Students pursuing the Area II - Hydrology and Water Resources area of specialization must complete:

- 4 courses (12 credit hours) from Area II - Hydrology and Water Resources
- 2 courses (6 credit hours) from Area I - Environmental Engineering
- 2 courses (6 credit hours) from Area III - Structural Engineering and Mechanics
- 2 courses (6 credit hours) from Area IV - Urban Infrastructure, Reliability and Management

Select 4 courses from the following:

CEVE 314 SUSTAINABLE WATER PURIFICATION FOR THE DEVELOPING WORLD

CEVE 412 HYDROLOGY AND WATER RESOURCES ENGINEERING

CEVE 418 / ESCI 418 QUANTITATIVE HYDROGEOLOGY

CEVE 420 ENVIRONMENTAL REMEDIATION RESTORATION

CEVE 512 ADVANCED HYDROLOGY AND HYDRAULICS

CEVE 518 ENVIRONMENTAL HYDROGEOLOGY

Or any approved (Area II - Hydrology or Water Resources) course from CEVE course offerings

Select 2 courses (6 credit hours) from the Area I - Environmental Engineering Area of Specialization

Select 2 courses (6 credit hours) from the Area II - Hydrology and Water Resources Area of Specialization

Select 2 courses (6 credit hours) from the Area III - Structural Engineering and Mechanics Area of Specialization

Total Credit Hours 30

Area of Specialization: Area III - Structural Engineering and Mechanics
All students must select a minimum of 2 courses (6 credit hours) from Area III. Students pursuing the Area III - Structural Engineering and Mechanics area of specialization must complete:

- 4 courses (12 credit hours) from Area III - Structural Engineering and Mechanics
- 2 courses (6 credit hours) from Area I - Environmental Engineering
- 2 courses (6 credit hours) from Area II - Hydrology and Water Resources
- 2 courses (6 credit hours) from Area IV - Urban Infrastructure, Reliability and Management

Select 4 courses from the following:

CEVE 325 STRUCTURAL ANALYSIS AND MODELING

CEVE 400 / MECH 400 ADVANCED MECHANICS OF MATERIALS

CEVE 427 / MECH 427 COMPUTATIONAL STRUCTURAL MECHANICS AND FEM

CEVE 431 DESIGN AND BEHAVIOR OF CONCRETE BUILDINGS AND BUILDING ELEMENTS

CEVE 432 CONCRETE AND STEEL STRUCTURES LABORATORY

CEVE 441 DESIGN AND BEHAVIOR OF STRUCTURAL STEEL BUILDINGS AND BUILDING ELEMENTS

CEVE 476 STRUCTURAL DYNAMIC SYSTEMS

CEVE 496 SYSTEM IDENTIFICATION OF DYNAMIC SYSTEMS WITH MACHINE LEARNING

Or any approved (Area III Structural Engineering and Mechanics) course from CEVE/MECH course offerings

Select 2 courses (6 credit hours) from the Area I - Environmental Engineering Area of Specialization

Select 2 courses (6 credit hours) from the Area II - Hydrology and Water Resources Area of Specialization

Select 2 courses (6 credit hours) from the Area IV - Urban Infrastructure, Reliability and Management Area of Specialization

Total Credit Hours 30

Area of Specialization: Area IV - Urban Infrastructure, Reliability and Management
All students must select a minimum of 2 courses (6 credit hours) from Area IV. Students pursuing the Area IV - Urban Infrastructure, Reliability and Management area of specialization must complete:

- 4 courses (12 credit hours) from Area IV - Urban Infrastructure, Reliability and Management
- 2 courses (6 credit hours) from Area I - Environmental Engineering
- 2 courses (6 credit hours) from Area II - Hydrology and Water Resources
- 2 courses (6 credit hours) from Area III - Structural Engineering and Mechanics

Select 4 courses from the following:

CEVE 435 SUSTAINABLE WATER PURIFICATION FOR THE DEVELOPING WORLD

CEVE 412 HYDROLOGY AND WATER RESOURCES ENGINEERING

CEVE 418 / ESCI 418 QUANTITATIVE HYDROGEOLOGY

CEVE 442 WATER REUSE AND RESOURCE RECOVERY

CEVE 444 ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

Or any approved (Area I - Environmental Engineering) course from CEVE course offerings
Policies for the BSCE Degree

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the BSCE degree should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information

For additional information, please see the Civil and Environmental Engineering website: https://ceve.rice.edu/

Opportunities for the BSCE Degree

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Departmental Honor, Award, and Scholarship Opportunities

- Distinction in Research and Creative Work: The Department of Civil and Environmental Engineering will recognize graduating seniors for outstanding creative contributions with the award of Distinction in Research and Creative Work. The Department recognizes this award as being a significant honor. As such, it will be awarded to no more than 20% of a graduating class (rounded up to next whole number). This award shall be given for significant contributions in research, design, and creative projects beyond class assignments (except CEVE 499). Generally, it is expected that the student recipients will have performed research/design for a minimum of two academic segments (one segment = one academic year or one summer) during their undergraduate career (either for credit or pay). It may be given for one outstanding piece of work for consistent meaningful contributions made over the course of an undergraduate career. All majors (BA and BS) with a GPA of 3.30 or higher in all courses completed at Rice are eligible and will be considered for this distinction in the spring prior to their graduation.

- Rice Global Forum: Rice Global Forum (RGF) is an engineering and construction industry funded center which is in its second decade of operation. It was founded by Ahmad Durrani, past chair of Civil and Environmental Engineering at Rice. RGF funds and facilitates interaction with the engineering and construction industry, particularly oil and gas related work. RGF funds $25,000 worth of
scholarships every year. In addition, RGF also consistently sponsors and supports Engineers Without Borders (EWB) and has donated to other student clubs as well in addition to holding an engineering design competition every year in February during National Engineers Week.

Fifth-Year Master’s Degree Option for Rice Undergraduate Students

Rice students have an option to pursue the Master of Civil and Environmental Engineering (MCEE) degree by adding an additional fifth year to their four undergraduate years of science and engineering studies.

Advanced Rice undergraduate students in good academic standing may apply to the MCEE degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master’s degree program. A plan of study will need to be approved by the student’s undergraduate advisor and the (MCEE) chair of the department graduate studies committee.

As part of this option and opportunity, Rice undergraduate students:

1. must complete the requirements for their bachelor’s degree and the master’s degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
2. should be aware of the financial aid implications, if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
3. more information on this Undergraduate Graduate Concurrent Enrollment possibility, including specific information on the registration process can be found here (p. 17).

Student Organizations and Clubs

- American Society of Civil Engineers Student (ASCE): https://www.asce.org/membership/student/
  ASCE seeks to promote civil and environmental engineering, expose students to real world engineering, and connect students to alumni and professionals. Throughout the year we invite speakers from the industry, visit plants and sites, and organize social events. The objectives of this Chapter are to encourage the development of a professional consciousness, to afford an opportunity for civil engineering students to become acquainted and to practice working together effectively, to promote a spirit of congeniality among them, and to provide friendly contact with the engineering profession. We also support the Concrete Canoe competition (see below) and the Seismic Design Competition of the Earthquake Engineering Research Institute (EERI).
- Chi Epsilon: https://www.chi-epsilon.org/xwebgeneral2/
  Chi Epsilon is dedicated to maintaining and promoting the status of civil engineering as an ideal profession. Chi Epsilon was organized to recognize the characteristics of the individual civil engineering deemed to be fundamental to the successful pursuit of an engineering career, and to aid in the development of those characteristics in the civil engineering student.
- Engineers Without Borders (EWB): https://ewb.rice.edu/
  EWB partners with developing communities worldwide to design engineering solutions that will improve their standards of living. It is an important component of the Civil and Environmental Engineering program. BA students with their flexible curriculum are encouraged to participate. This exciting endeavor allows undergraduates to have an experience in a developing country, where they are able to design and build a project to help society. Students have been attracted to the EWB program in large numbers and our local chapter is one of the most successful in the United States. Some CEVE courses are EWB-related, providing the opportunity to also obtain credit hours.
- Concrete Canoe: https://concretecanae.rice.edu/
  Rice Concrete Canoe is a student-run club that creates a functional concrete canoe to race and present at the yearly ASCE sponsored competition. Through the year, members gain engineering experience through the research, planning and constructing of a concrete canoe. By offerings members exposure to the engineering design process, small-group work, software such as Matlab and Adobe Illustrator (and possibly more starting this year), and laser cutters, Concrete Canoe offers a unique experience to students regardless of whether or not they want to become engineers.
- Society of Women Engineers: https://swe.rice.edu
  The Society of Women Engineers aims to empower women to pursue and achieve their full potential in science and engineering related fields. We provide opportunities in professional development, academic and post-graduate planning, community outreach, and social events.

Additional Information

For additional information, please see the Civil and Environmental Engineering website: https://ceve.rice.edu/

Doctor of Philosophy (PhD) Degree in the field of Civil Engineering

Program Learning Outcomes for the PhD Degree in the field of Civil Engineering

Upon completing the PhD degree in the field of Civil Engineering, students will be able to:

1. Demonstrate a solid foundation in civil and environmental engineering at the graduate level.
2. Acquire advanced knowledge of the principles of civil and environmental engineering and apply them to advanced technical problems.
3. Conduct an independent research program.
4. Demonstrate professional written and oral communication skills.

Requirements for the PhD Degree in the field of Civil Engineering

For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the PhD degree in the field of Civil Engineering must:

1. Complete 90 credit hours at the 500-level or above of approved courses past the BS degree (60 credit hours past the MS degree) with high standing (see guidelines at: https://ceve.rice.edu/)
2. Complete at least 6 core courses required by the department.
   - For students focusing on civil, structural engineering, and mechanics, coursework must include one course in each of the following areas: structural mechanics and FEM, structural dynamic systems, earthquake engineering, probabilistic
mechanics, and applied mathematics. Comparable coursework completed previously may be substituted for these core courses. A minimum grade of B- (2.67 grade points) must be achieved for each of these core courses, as well as a minimum GPA of 3.00.

- Spend at least four semesters in full-time study at Rice and successfully accomplish the following:
  - Pass a preliminary examination (https://ceve.rice.edu/graduate-program/msphd-program/preliminary-phd-exam/) in civil engineering (see guidelines at: https://ceve.rice.edu/).
  - Pass a qualifying examination on coursework, proposed research, and related topics.
  - Complete a thesis indicating an ability to conduct original and scholarly research.
  - Pass a formal public oral examination on the thesis and related topics.

Course requirements are stipulated to prepare and train students for rigorous and high quality education, research, and practice. These courses, usually completed within the first two years of graduate school, are designed to train and test the student’s aptitude for higher level thinking, problem solving, and independent research. Core courses also contribute breadth beyond minimum competency as civil and environmental engineers. The students are expected to strive for breadth and depth in core course selection, by working with their advisor and preliminary examination committee, and ensure that minimum core competency expectations are met.

Civil engineering graduate students will be scheduled to take their preliminary examination no later than after two semesters of coursework at Rice. If a student enters in the spring semester, he/she needs to take the exam in the following spring semester along with other students. A student who passes the written and oral parts of the preliminary exam becomes eligible for taking the qualifying exam.

The qualifying examination is administered by the doctoral committee after students develop a research proposal to demonstrate their preparation for the proposed research and identify any areas requiring additional coursework or study. As part of the advanced degree training, we also may require students to assist the faculty in undergraduate courses and laboratory instructions.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEVE 500</td>
<td>ADVANCED MECHANICS OF MATERIALS</td>
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</tr>
<tr>
<td>CEVE 503</td>
<td>NONLINEAR FINITE ELEMENT ANALYSIS</td>
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<tr>
<td>CEVE 519</td>
<td>ELASTICITY, PLASTICITY AND DAMAGE MECHANICS</td>
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<tr>
<td>CEVE 524</td>
<td>TIME-DEPENDENT SYSTEM RELIABILITY METHODS AND APPLICATIONS</td>
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</tr>
<tr>
<td>CEVE 527</td>
<td>COMPUTATIONAL STRUCTURAL MECHANICS AND FEM</td>
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Degree Requirements

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<tr>
<td>CEVE 538</td>
<td>COMPUTATIONAL NANOSCIENCE FOR GREEN INFRASTRUCTURE</td>
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<td>CEVE 554</td>
<td>COMPUTATIONAL FLUID MECHANICS</td>
<td>3</td>
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<tr>
<td>CEVE 555</td>
<td>NUMERICAL METHODS FOR PARTIAL DIFFERENTIAL EQUATIONS</td>
<td>3</td>
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<tr>
<td>CEVE 560</td>
<td>BRIDGE ENGINEERING AND EXTREME EVENTS</td>
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<td>CEVE 571</td>
<td>PRINCIPLES OF SOIL MECHANICS AND FOUNDATION ENGINEERING</td>
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</tr>
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<td>CEVE 576</td>
<td>STRUCTURAL DYNAMIC SYSTEMS</td>
<td>3</td>
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<tr>
<td>CEVE 578</td>
<td>EARTHQUAKE ENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 592</td>
<td>MODELING AND ANALYSIS OF NETWORKED SYSTEMS</td>
<td>3</td>
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<tr>
<td>CEVE 596</td>
<td>SYSTEM IDENTIFICATION OF DYNAMIC SYSTEMS WITH MACHINE LEARNING</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 678</td>
<td>APPLIED STOCHASTIC MECHANICS</td>
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<tr>
<td>CEVE 679</td>
<td>APPLIED MONTE CARLO ANALYSIS</td>
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Additional Coursework as Approved by the Department

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<th>Course</th>
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</thead>
<tbody>
<tr>
<td>CEVE 679 - APPLIED MONTE CARLO ANALYSIS</td>
<td>3</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1 Substitutions will be considered when a Core Requirement is not offered, or under special circumstances related to the professional goals of the student. Substitutions will be considered on a case-by-case basis, and will require approval by the faculty. Potential substitute courses include: CEVE 518, CEVE 520, CEVE 592.

Policies for the PhD Degree in the field of Civil Engineering

Department of Civil and Environmental Engineering Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Civil and Environmental Engineering publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Civil_Environmental_Engineering_Graduate_Handbook.pdf

Admission

Applicants pursuing graduate education in structural engineering, civil engineering, and geotechnical engineering should have a BS in Civil Engineering with a significant emphasis on structural engineering, but students with other undergraduate degrees may apply if they have adequate preparation in mathematics, mechanics, and structural analysis and design.

Applicants pursuing graduate education in environmental engineering or hydrology should have a BS or BA in related areas of science and engineering and preparation in mathematics, science, and engineering or related courses. A BS degree in engineering or a degree in natural science is preferred.

Successful applicants typically have at least a 3.00 (B) grade point average in undergraduate work and high Graduate Record Examination (GRE) scores. For general university requirements, see Graduate Degrees (p. 49) and Admission to Graduate Study (p. 55).
Additional Information
For additional information, please see the Civil and Environmental Engineering website: https://ceve.rice.edu/

Opportunities for the PhD Degree in the field of Civil Engineering

Fellowships and Opportunities

- NASA Internships: multiple opportunities are available for undergraduate and graduate students for spring and fall semesters, as well as year-long appointments.
- NRC Research Associateship Program: the National Academies of Sciences, Engineering, and Medicine offer paid postdoctoral, senior, and graduate appointments.
- NASA Fellowships and other opportunities: NASA offers several internships, fellowships, and scholarships for both undergraduate and graduate students.
- NSF Graduate Research Fellowship Program (NSF-GRFP): provides fellowships to individuals selected early in their graduate careers based on their demonstrated potential for significant achievements in science and engineering.
- Fulbright-Hays Doctoral Dissertation Research Abroad Program (DDRA): provides grants to fund individual doctoral students to conduct research in other countries in modern foreign languages and area studies for periods of 6 to 12 months.
- DOE Computational Science Graduate Fellowship: The Department of Energy Computational Science Graduate Fellowship (DOE CSGF) program provides outstanding benefits and opportunities to students pursuing doctoral degrees in fields of study that utilize high performance computing to solve complex problems in science and engineering.
- DOD National Defense Science and Engineering Graduate Fellowship (NDSEG): it is a highly competitive portable fellowship that is awarded to US citizens and nationals who intend to pursue a doctoral degree in one of fifteen supported disciplines.
- Pathways to Science: it is a project of the Institute for Broadening Participation. The organization places emphasis on connecting underrepresented groups with STEM programs, funding, mentoring, and resources. Fellowships for masters and doctoral students are available, as is funding for travel and summer institutes.

Student Clubs

- Civil and Environmental Department Graduate Student Association: The main purpose of the club is to 1) foster better professional and personal relationships among students and between students and faculty members 2) provide a forum for concerns, both professional and personal, about graduate student life and 3) foster professional growth through mentoring, recruitment, and affiliate/internship relationships.
- Earthquake Engineering Research Institute: http://eeri.rice.edu. The objective of this student chapter is to encourage, facilitate, and promote learning and interest among students in the field of earthquake engineering through interaction with professionals and experts and through interdisciplinary involvement.

Additional Information
For additional information, please see the Civil and Environmental Engineering website: https://ceve.rice.edu/

Doctor of Philosophy (PhD) Degree in the field of Environmental Engineering

Program Learning Outcomes for the PhD Degree in the field of Environmental Engineering

Upon completing the PhD degree in the field of Environmental Engineering, students will be able to:

1. Demonstrate a solid foundation in civil and environmental engineering at the graduate level.
2. Acquire advanced knowledge of the principles of civil and environmental engineering and apply them to advanced technical problems.
3. Conduct an independent research program.
4. Demonstrate professional written and oral communication skills.

Requirements for the PhD Degree in the field of Environmental Engineering

For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the PhD degree in the field of Environmental Engineering must:

- Complete 90 credit hours at the 500-level and above of approved courses past the BS degree (60 credit hours past the MS degree) with high standing (see guidelines on the department website).
- Complete at least 6 core courses required by the department.
- Spend at least four semesters in full time study at Rice and successfully accomplish the following:
  - Pass a preliminary examination in environmental engineering (see guidelines on the department website).
  - Pass a qualifying examination on coursework, proposed research, and related topics.
  - Complete a thesis indicating an ability to conduct original and scholarly research.
  - Pass a formal public oral examination on the thesis and related topics.

Course requirements are stipulated to prepare and train students for rigorous and high quality education, research, and practice. These courses, usually completed within the first two years of graduate school, are designed to train and test the student’s aptitude for higher level thinking, problem solving, and independent research. Core courses also contribute breadth beyond minimum competency as civil and environmental engineers. The students are expected to strive for breadth and depth in core course selection, by working with their advisor and preliminary examination committee, and ensure that minimum core competency expectations are met.

PhD students in the EES field will be scheduled to take their preliminary examination no later than after two semesters of coursework at Rice. If a student enters in the spring semester, he/she needs to take the exam...
in the following spring semester along with other students. A student who passes the written and oral parts of the preliminary exam becomes eligible for taking the qualifying exam.

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<td>CEVE 501</td>
<td>CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE</td>
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<td>ATMOSPHERIC PARTICULATE MATTER</td>
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<td>CEVE 509</td>
<td>HYDROLOGY AND WATER RESOURCES ENGINEERING</td>
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<td>CEVE 511</td>
<td>ATMOSPHERIC PROCESSES</td>
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<td>CEVE 512</td>
<td>ADVANCED HYDROLOGY AND HYDRAULICS</td>
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<td>CEVE 534</td>
<td>FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT</td>
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<td>CEVE 535</td>
<td>PHYSICAL CHEMICAL PROCESSES FOR WATER QUALITY CONTROL</td>
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<td>CEVE 536</td>
<td>ENVIRONMENTAL BIOTECHNOLOGY AND BIOREMEDIATION</td>
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<td>CEVE 544</td>
<td>ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOSYSTEM</td>
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<td>CEVE 550</td>
<td>ENVIRONMENTAL ORGANIC CHEMISTRY</td>
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Additional Coursework as Approved by the Department

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<th>Code</th>
<th>Title</th>
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<td>CEVE 518, CEVE 520, CEVE 592.</td>
<td>Additional Coursework as Approved by the Department</td>
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Footnotes and Additional Information

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Admission

Applicants pursuing graduate education in environmental engineering or hydrology should have a BS or BA in related areas of science and engineering and preparation in mathematics, science, and engineering or related courses. A BS degree in Engineering or a degree in natural science is preferred.

Successful applicants typically have at least a 3.00 (B) grade point average in undergraduate work and high Graduate Record Examination (GRE) scores. For general university requirements, see Graduate Degrees (p. 49) and Admission to Graduate Study (p. 55).

Additional Information

For additional information, please see the Civil and Environmental Engineering website: https://ceve.rice.edu/

Opportunities for the PhD Degree in the field of Environmental Engineering

Fellowships and Opportunities

- NASA Internships: multiple opportunities are available for undergraduate and graduate students for spring and fall semesters, as well as year-long appointments.
- NRC Research Associateship Program: the National Academies of Sciences, Engineering, and Medicine offer paid postdoctoral, senior, and graduate fellowships.
- NASA Fellowships and other opportunities: NASA offers several internships, fellowships, and scholarships for both undergraduate and graduate students.
- NSF Graduate Research Fellowship Program (NSF-GRE): provides fellowships to individuals selected early in their graduate careers based on their demonstrated potential for significant achievements in science and engineering.
- Fullbright-Hays Doctoral Dissertation Research Abroad Program (DDRA): provides grants to fund individual doctoral students to conduct research in other countries in modern foreign languages and area studies for periods of 6 to 12 months.
- DOE Computational Science Graduate Fellowship: The Department of Energy Computational Science Graduate Fellowship (DOE CSGF) program provides outstanding benefits and opportunities to students pursuing doctoral degrees in fields of study that utilize high performance computing to solve complex problems in science and engineering.
- DOD National Defense Science and Engineering Graduate Fellowship (NDSEG): it is a highly competitive portable fellowship that is awarded to US citizens and nationals who intend to pursue a doctoral degree in one of fifteen supported disciplines.
- Pathways to Science: it is a project of the Institute for Broadening Participation. The organization places emphasis on connecting underrepresented groups with STEM programs, funding, mentoring,
and resources. Fellowships for masters and doctoral students are available, as is funding for travel and summer institutes.

Student Clubs

- **Civil and Environmental Department Graduate Student Association**: The main purpose of the club is to 1) foster better professional and personal relationships among students and between students and faculty members 2) provide a forum for concerns, both professional and personal, about graduate student life and 3) foster professional growth through mentoring, recruitment, and affiliate/internship relationships.

- **Earthquake Engineering Research Institute**: [http://eeri.rice.edu](http://eeri.rice.edu). The objective of this student chapter is to encourage, facilitate, and promote learning and interest among students in the field of earthquake engineering through interaction with professionals and experts and through interdisciplinary involvement.

Additional Information

For additional information, please see the Civil and Environmental Engineering website: [https://ceve.rice.edu/](https://ceve.rice.edu/)

Master of Civil and Environmental Engineering (MCEE) Degree in the field of Civil Engineering

Program Learning Outcomes for the MCEE Degree in the field of Civil Engineering

Upon completing the MCEE degree in the field of Civil Engineering, students will be able to:

1. Demonstrate a solid foundation in civil and environmental engineering at the graduate level.
2. Demonstrate professional written and oral communication skills.

Requirements for the MCEE in the field of Civil Engineering

The MCEE degree is a non-thesis master’s degree. For general university requirements, please see [Non-Thesis Master’s Degrees](p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see [All Graduate Students](p. 55). Students pursuing the MCEE degree in the field of Civil Engineering must complete:

- A minimum of 11 courses (30 credit hours) to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University.
- A minimum of one graduate seminar (CEVE 601 or CEVE 602).
- A final project (CEVE 590).
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 3.00 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree.

The Master of Civil and Environmental Engineering (MCEE) degree is a professional non-thesis master’s degree. Students who have a BS or BA degree in any field of engineering or related study may apply. Depending on their background, some students may need to fulfill prerequisites or take remedial engineering courses to earn the MCEE degree. For more information, see the department website ([http://www.ceve.rice.edu/](http://www.ceve.rice.edu/)).

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier ([https://registrar.rice.edu/facstaff/degeworks/officialcertifier/](https://registrar.rice.edu/facstaff/degeworks/officialcertifier/)). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

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<td>NONLINEAR FINITE ELEMENT ANALYSIS</td>
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<td>ELASTICITY, PLASTICITY AND DAMAGE MECHANICS</td>
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<td>CEVE 524</td>
<td>TIME-DEPENDENT SYSTEM RELIABILITY METHODS AND APPLICATIONS</td>
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<td>CEVE 527 / MECH 527</td>
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<td>CEVE 531</td>
<td>DESIGN AND BEHAVIOR OF CONCRETE BUILDINGS AND BUILDING ELEMENTS</td>
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<td>COMPUTATIONAL FLUID MECHANICS</td>
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<td>BRIDGE ENGINEERING AND EXTREME EVENTS</td>
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<td>CEVE 578</td>
<td>EARTHQUAKE ENGINEERING</td>
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<tr>
<td>CEVE 592</td>
<td>MODELING AND ANALYSIS OF NETWORKED SYSTEMS</td>
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CEVE 596  SYSTEM IDENTIFICATION OF DYNAMIC SYSTEMS WITH MACHINE LEARNING
CEVE 678 / MECH 678  APPLIED STOCHASTIC MECHANICS
CEVE 679 / MECH 679  APPLIED MONTE CARLO ANALYSIS

Seminar
Select 1 from the following: 1
CEVE 601  SEMINAR
CEVE 602  SEMINAR

Elective Requirements
Directed Civil Engineering Electives
Select 2 from the Core Requirements or from the following: 6
CAAM 550  NUMERICAL ANALYSIS I
CEVE 517 / MECH 517  FINITE ELEMENT ANALYSIS
CEVE 555 / MECH 502  NUMERICAL METHODS FOR PARTIAL DIFFERENTIAL EQUATIONS
CAAM 536  VIBRATIONS
MECH 665  ANALYSIS OF VIBRATIONS IN NONLINEAR SYSTEMS

Professional Development Electives
Select 1 from the following: 3
ANTH 532  THE SOCIAL LIFE OF CLEAN ENERGY
CEVE 507  ENERGY AND THE ENVIRONMENT
CEVE 528 / ENGI 528  ENGINEERING ECONOMICS
ECON 601  ENERGY ECONOMICS I
ENGI 501  WORKPLACE COMMUNICATION FOR PROFESSIONAL MASTER’S STUDENTS IN ENGINEERING
ENGI 529 / CEVE 529  ETHICS AND ENGINEERING LEADERSHIP
NSCI 511  SCIENCE POLICY, AND ETHICS
NSCI 610 / ENGI 610  MANAGEMENT FOR SCIENCE AND ENGINEERING

MCEE Final Project
CEVE 590  MCEE SPECIAL STUDY 1

Total Credit Hours 30

Footnotes and Additional Information
1  The professional masters final project is overseen by a Civil and Environmental Engineering department faculty member.

Admission
Applicants pursuing graduate education in structural engineering, structural mechanics, and geotechnical engineering should have a BS in Civil Engineering with a significant emphasis on structural engineering, but students with other undergraduate degrees may apply if they have adequate preparation in mathematics, mechanics, and structural analysis and design.

Applicants pursuing graduate education in environmental engineering or hydrology should have a BS or BA in related areas of science and engineering and preparation in mathematics, science, and engineering or related courses. A BS degree in engineering or a degree in natural science is preferred.

Admission into a professional program is granted separately from admission into a research and thesis program. Professional degree programs terminate when the degree is awarded. Students who wish to continue graduate study after completing a professional program must apply for admission into a research program.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the MCEE degree in the field of Civil Engineering or Environmental Engineering should be aware of the following departmental transfer credit guidelines:
- No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the degree.
- Request for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information
For additional information, please see the Civil and Environmental Engineering website:
https://ceve.rice.edu/

Opportunities for the MCEE Degree in the field of Civil Engineering
Fifth-Year Master’s Degree Option for Rice Undergraduate Students
Rice students have an option to pursue the Master of Civil and Environmental Engineering (MCEE) degree by adding an additional fifth year to their four undergraduate years of science and engineering studies.

Advanced Rice undergraduate students in good academic standing may apply to the MCEE degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master’s degree program. A plan of study will need to be approved by the student’s undergraduate advisor and the (MCEE) chair of the department graduate studies committee.
As part of this option and opportunity, Rice undergraduate students:

• must complete the requirements for their bachelor’s degree and the master’s degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
• should be aware of the financial aid implications, if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
• more information on this Undergraduate - Graduate Concurrent Enrollment possibility, including specific information on the registration process can be found here (p. 17).

George R. Brown School of Engineering Scholarships for Professional Master's Degrees in Engineering

The George R. Brown School of Engineering Scholarships for Professional Master’s Degrees in Engineering were established by the Dean of the School of Engineering to encourage outstanding Rice undergraduate engineering students to pursue a professional master’s degree at Rice.

Rice Global Forum (RGF)

The Rice Global Forum (RGF) is a group of industry professionals plus Rice faculty who gather regularly to discuss topics that define their interests. They sponsor the Engineering Competition each year and give out scholarships that are derived from membership dues. The scholarships are geared toward professional master’s and terminal research master’s (MS) students.

Additional Information

For additional information, please see the Civil and Environmental Engineering website: https://ceve.rice.edu/

Master of Civil and Environmental Engineering (MCEE) Degree in the field of Environmental Engineering

Program Learning Outcomes for the MCEE Degree in the field of Environmental Engineering

Upon completing the MCEE degree in the field of Environmental Engineering, students will be able to:

1. Demonstrate a solid foundation in civil and environmental engineering at the graduate level.
2. Demonstrate professional written and oral communication skills.

Requirements for the MCEE Degree in the field of Environmental Engineering

The MCEE degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MCEE degree in the field of Environmental Engineering must complete:

• A minimum of 11 courses (30 credit hours) to satisfy degree requirements.
• A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
• A minimum of 24 credit hours must be taken at Rice University.
• A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University.
• A minimum of one graduate seminar (CEVE 601 or CEVE 602).
• A final project (CEVE 590).
• A minimum overall GPA of 2.67 or higher in all Rice coursework.
• A minimum GPA of 3.00 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree.

The Master of Civil and Environmental Engineering (MCEE) degree is a professional non-thesis master’s degree. Students who have a BS or BA degree in any field of engineering or related study may apply. Depending on their background, some students may need to fulfill prerequisites or take remedial engineering courses to earn the MCEE degree. For more information, see the department website (http://www.ceve.rice.edu/).

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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Degree Requirements

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2019-2020 General Announcements

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Policies for the MCEE Degree in the field of Environmental Engineering

Department of Civil and Environmental Engineering

Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Civil and Environmental Engineering publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Civil_Environmental.Engineering_Graduate_Handbook.pdf

Admission

Applicants pursuing graduate education in structural engineering, structural mechanics, and geotechnical engineering should have a BS in Civil Engineering with a significant emphasis on structural engineering, but students with other undergraduate degrees may apply if they have adequate preparation in mathematics, mechanics, and structural analysis and design.

Applicants pursuing graduate education in environmental engineering or hydrology should have a BS or BA in related areas of science and engineering and preparation in mathematics, science, and engineering or related courses. A BS degree in engineering or a degree in natural science is preferred.

Admission into a professional program is granted separately from admission into a research and thesis program. Professional degree programs terminate when the degree is awarded. Students who wish to continue graduate study after completing a professional program must apply for admission into a research program.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the MCEE degree in the field of Civil Engineering or Environmental Engineering should be aware of the following departmental transfer credit guidelines:

- No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the degree.
- Request for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information

For additional information, please see the Civil and Environmental Engineering website: https://ceve.rice.edu/

Opportunities for the MCEE Degree in the field of Environmental Engineering

Fifth-Year Master's Degree Option for Rice Undergraduate Students

Rice students have an option to pursue the Master of Civil and Environmental Engineering (MCEE) degree by adding an additional fifth year to their four undergraduate years of science and engineering studies.

Advanced Rice undergraduate students in good academic standing may apply to the MCEE degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master’s degree program. A plan of study will need to be approved by the student’s undergraduate advisor and the (MCEE) chair of the department graduate studies committee.

As part of this option and opportunity, Rice undergraduate students:
Master of Science (MS) Degree in the field of Civil Engineering

Program Learning Outcomes for the MS Degree in the field of Civil Engineering

Upon completing the MS degree in the field of Civil Engineering, students will be able to:

1. Demonstrate a solid foundation in civil and environmental engineering at the graduate level.
2. Acquire advanced knowledge of the principles of civil and environmental engineering and apply them to advanced technical problems.
3. Conduct an independent research program.
4. Demonstrate professional written and oral communication skills.

Requirements for the MS Degree in the field of Civil Engineering

The MS degree is a thesis master’s degree. For general university requirements, please see Thesis Master’s Degrees (p. 68). Students pursuing the MS degree in the field of Civil Engineering must:

• must complete the requirements for their bachelor’s degree and the master’s degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
• should be aware of the financial aid implications, if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
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Additional Information
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Policies for the MS Degree in the field of Civil Engineering

Department of Civil and Environmental Engineering Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum guidelines:

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the MS degree in the field of Civil or Environmental Engineering should be aware of the following departmental transfer credit guidelines:

• No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the degree.

Additional Information
For additional information, please see the Civil and Environmental Engineering website: https://ceve.rice.edu/
Opportunities for the MS Degree in the field of Civil Engineering

Fellowships and Opportunities

- **NASA Internships**: multiple opportunities are available for undergraduate and graduate students for spring and fall semesters, as well as year-long appointments.
- **NRC Research Associateship Program**: the National Academies of Sciences, Engineering, and Medicine offer paid postdoctoral, senior, and graduate fellowships.
- **NASA Fellowships and other opportunities**: NASA offers several internships, fellowships, and scholarships for both undergraduate and graduate students.
- **NSF Graduate Research Fellowship Program (NSF-GRFP)**: provides fellowships to individuals selected early in their graduate careers based on their demonstrated potential for significant achievements in science and engineering.
- **Fullbright-Hays Doctoral Dissertation Research Abroad Program (DDRA)**: provides grants to fund individual doctoral students to conduct research in other countries in modern foreign languages and area studies for periods of 6 to 12 months.
- **DOE Computational Science Graduate Fellowship**: The Department of Energy Computational Science Graduate Fellowship (DOE CSGF) program provides outstanding benefits and opportunities to students pursuing doctoral degrees in fields of study that utilize high performance computing to solve complex problems in science and engineering.
- **DOD National Defense Science and Engineering Graduate Fellowship (NDSEG)**: it is a highly competitive portable fellowship that is awarded to US citizens and nationals who intend to pursue a doctoral degree in one of fifteen supported disciplines.
- **Pathways to Science**: it is a project of the Institute for Broadening Participation. The organization places emphasis on connecting underrepresented groups with STEM programs, funding, mentoring, and resources. Fellowships for masters and doctoral students are available, as is funding for travel and summer institutes.

Student Clubs

- **Civil and Environmental Department Graduate Student Association**: The main purpose of the club is to 1) foster better professional and personal relationships among students and between students and faculty members 2) provide a forum for concerns, both professional and personal, about graduate student life and 3) foster professional growth through mentoring, recruitment, and affiliate/internship relationships.
- **Earthquake Engineering Research Institute**: [http://eeri.rice.edu](http://eeri.rice.edu). The objective of this student chapter is to encourage, facilitate, and promote learning and interest among students in the field of earthquake engineering through interaction with professionals and experts and through interdisciplinary involvement.

Additional Information

For additional information, please see the Civil and Environmental Engineering website: [https://ceve.rice.edu/](https://ceve.rice.edu/)

Master of Science (MS) Degree in the field of Environmental Engineering

Program Learning Outcomes for the MS Degree in the field of Environmental Engineering

Upon completing the MS degree in the field of Environmental Engineering, students will be able to:

1. Demonstrate a solid foundation in environmental engineering at the graduate level.
2. Apply principles of environmental engineering and related knowledge to advanced technical problems.
3. Conduct independent research.
4. Demonstrate professional written and oral communication skills.

Requirements for the MS Degree in the field of Environmental Engineering

The MS degree is a thesis master’s degree. For general university requirements, please see Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MS degree in the field of Environmental Engineering must:

- Complete a minimum of 30 total credit hours of graduate-level study (coursework at the 500-level or above) to satisfy degree requirements.
- Complete a minimum of 24 credit hours at Rice University from approved graduate-level courses and 6 credit hours of thesis research.
  - Core courses contribute to breadth, depth, and minimum competency. For students focusing on environmental engineering, coursework must include at least one course in each of the following areas: environmental chemistry, water treatment, bioremediation, hydrology, and air quality. Comparable coursework completed previously may be substituted for these core courses. Students must obtain a minimum grade of B- (2.67 grade points) for each core course, and maintain a minimum GPA of 3.00.
  - Select a thesis committee according to departmental requirements and conduct original research in consultation with the committee.
  - Present and defend in oral examination an approved research thesis.

Students take the oral exam only after the committee determines the thesis to be in a written format acceptable for public defense. Normally, students take two academic years and the intervening summer to complete the degree.

Students intending to extend their studies into the PhD degree program should note that the department does not grant an automatic (candidacy) MS degree to candidates who have not written a satisfactory master’s thesis.

Summary

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Total Credit Hours Required for the MS Degree in the field of Environmental Engineering 30
Policies for the MS Degree in the field of Environmental Engineering

Department of Civil and Environmental Engineering Graduate Program Handbook

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Admission

Applicants pursuing graduate education in environmental engineering or hydrology should have a BS or BA degree in related areas of science and engineering and preparation in mathematics, science, and engineering or related courses. A BS degree in engineering or a degree in natural science is preferred.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the MS degree in the field of Civil or Environmental Engineering should be aware of the following departmental transfer credit guidelines:

- No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the degree.

Additional Information

For additional information, please see the Civil and Environmental Engineering website: "https://ceve.rice.edu/"

Opportunities for the MS Degree in the field of Environmental Engineering

Fellowships and Opportunities

- NASA Internships: multiple opportunities are available for undergraduate and graduate students for spring and fall semesters, as well as year-long appointments.
- NRC Research Associateship Program: the National Academies of Sciences, Engineering, and Medicine offer paid postdoctoral, senior, and graduate fellowships.
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- Earthquake Engineering Research Institute: "http://eeri.rice.edu/"
  The objective of this student chapter is to encourage, facilitate, and promote learning and interest among students in the field of earthquake engineering through interaction with professionals and experts and through interdisciplinary involvement.

Additional Information

For additional information, please see the Civil and Environmental Engineering website: "https://ceve.rice.edu/"

Classical Studies

Contact Information

Classical and European Studies
"https://ces.rice.edu/"
207 Rayzor Hall
713-348-4151

Christian J. Emeden
Department Chair
emden@rice.edu

Classical Studies is a major offered by the Classical and European Studies (CES) Department. The Classical Studies program provides instruction in the Greek and Latin languages, in Greek and Roman literature (studied in the original and in translation), in the classical civilizations surveyed as a whole, and in particular themes, genres, and periods of classical culture and its influence through subsequent ages.

The Classical Studies program offers two specializations that satisfy the requirements for a BA. The Classical Languages specialization emphasizes Greek and Latin and reading classical texts in the original languages. The Classical Civilizations specialization allows for a broader set of approaches and does not include a language requirement.
Bachelor's Program

- Bachelor of Arts (BA) Degree with a Major in Classical Studies (p. 325)

Classical Studies does not currently offer an academic program at the graduate level.

Chair
Christian J. Emden

Program Advisor
Hilary S. Mackie

Professors
Scott McGill
Harvey E. Yunis

Associate Professor
Hilary S. Mackie

Lecturer
Ted Somerville

Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
- Course offerings/subject code for Classical Studies: CLAS
- Course offerings/subject code for Greek: GREE
- Course offerings/subject code for Latin: LATI

Department Description and Code
- Classical and European Studies: CLEU

Undergraduate Degree Description and Code
- Bachelor of Arts degree: BA

Undergraduate Major Description and Code
- Major in Classical Studies: CLST

CIP Code and Description
- CLST Major/Program: CIP Code/Title: 16.1200 - Classics and Classical Languages, Literatures, and Linguistics, General

1 Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Bachelor of Arts (BA) Degree with a Major in Classical Studies

Program Learning Outcomes for the BA Degree with a Major in Classical Studies

Upon completing the BA degree with a major in Classical Studies, students will be able to:

1. Understand texts, artifacts, institutions, events, personalities, and places that are integral to ancient Greek and Roman culture.
2. Analyze, interpret, and think critically about those texts, artifacts, institutions, events, personalities, and places.
3. Situate those texts, artifacts, institutions, events, personalities, and places in their historical and cultural contexts.
4. Relate classical civilization to the world around them, and appreciate the profound influence classical civilization had on later Western civilization.

Additionally, upon completing the major in Classical Studies and an area of specialization in Classical Languages, students will be able to:

1. Read Greek and Latin proficiently and display articulate knowledge of the grammar and style of both languages.

Requirements for the BA Degree with a Major in Classical Studies

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Classical Studies must complete:

- A minimum of 10 courses (30 credit hours) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 2 courses (6 credit hours) taken at the 300-level or above.
- The requirements for one area of specialization (see below for areas of specialization). The BA degree with a major in Classical Studies offers two areas of specialization:
  - Classical Civilizations (p. ), or
  - Classical Languages (p. ).

The Classical Studies major offers instruction in the Greek and Latin languages, in Greek and Roman literature (studied in the original and in translation), in the classical civilizations surveyed as a whole, and in particular themes, genres, and periods of classical culture and their influence through subsequent ages. The program caters to students who wish to prepare for graduate school in classics as well as to students interested in Greek and Roman culture for other reasons and wish to take a less specialized approach. The program provides maximum flexibility without sacrifice of focus. Students will be able to explore ancient Greece and Rome from a variety of different angles and with whatever emphasis best suits their individual needs and goals.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor, or where applicable, the department's Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major's Official Certifier (https://registrar.rice.edu/facstaff/degeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

2019-2020 General Announcements
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Bachelor of Arts (BA) Degree with a Major in Classical Studies

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</tbody>
</table>

Footnotes and Additional Information
1 A minimum of 2 courses (6 credit hours) must be taken at the 300-level or above.

Area of Specialization: Classical Civilizations
Students must complete a total of 8 courses (24 credit hours) as listed below to satisfy the requirements for the area of specialization in Classical Civilizations.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Select 8 courses from Classical Studies (CLAS), Greek (GREE), or Latin (LATI) course offerings</td>
<td>24</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information
1 A minimum of 2 courses (6 credit hours) must be taken at the 300-level or above.

Area of Specialization: Classical Languages
Students must complete a total of 8 courses (24 credit hours) as listed below to satisfy the requirements for the area of specialization in Classical Languages.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Select 1 course from Greek (GREE) course offerings at the 200-level or above</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Select 1 course from Latin (LATI) course offerings at the 200-level or above</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Select 1 from the following:</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Select 1 course from Greek (GREE) at the 300-level or above</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select 1 course from Latin (LATI) at the 300-level or above</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select 5 courses from Classical Studies (CLAS), Greek (GREE), or Latin (LATI) course offerings</td>
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</tr>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>24</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information
1 A minimum of 1 course (3 credit hours) must be taken at the 300-level or above.

Policies for the BA Degree with a Major in Classical Studies

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the major in Classical Studies should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Distribution Credit Information
The determination of distribution eligibility is done as part of the new course creation process (https://registrar.rice.edu/facstaff/courseprocess/). As part of an annual roll call (https://registrar.rice.edu/facstaff/distribution_credit/) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean’s Offices of each of the academic schools.

Faculty and leadership in the academic schools are responsible for ensuring that the courses identified as distribution-eligible meet the criteria as set in the General Announcements (p. 26). Students are responsible for ensuring that they meet graduation requirements (p. 26).
by completing coursework designated as distribution at the time of course registration.

Distribution courses from the Department of Classical and European Studies are broad in theme and scope and provide students with a substantial inquiry into literature, art, media, history, thought, and/or politics, including specific national traditions, linguistic contexts, and historical periods. Such courses involve a broad and often interdisciplinary spectrum of knowledge, providing students with the tools for thinking critically about the formation of European culture, its colonial past, and its national and linguistic traditions from antiquity to the present.

Additional Information
For additional information, please see the Classical and European Studies website: https://ces.rice.edu/.

Opportunities for the BA Degree with a Major in Classical Studies
Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Additional Information
For additional information, please see the Classical and European Studies website: https://ces.rice.edu/.

Classical and European Studies
Contact Information
Classical and European Studies
https://ces.rice.edu/
207 Rayzor Hall
713-348-4151

Christian J. Emden
Department Chair
emden@rice.edu

Bachelor's Programs
- Bachelor of Arts (BA) Degree with a Major in Classical Studies (p. 325)
- Bachelor of Arts (BA) Degree with a Major in European Studies (p. 446)
- Bachelor of Arts (BA) Degree with a Major in French Studies (p. 452)
- Bachelor of Arts (BA) Degree with a Major in German Studies (p. 454)

Minor
- Minor in Politics, Law and Social Thought (p. 777)

Classical and European Studies does not currently offer an academic program at the graduate level.

Chair
Christian J. Emden

Program Advisors
Hilary S. Mackie, Classical Studies
Deborah Nelson-Campbell, French Studies
Astrid Oesmann, German Studies
Philip R. Wood, European Studies

Professors
Christian Emden, German Studies
Scott McGill, Classical Studies
Deborah Nelson-Campbell, French Studies
Uwe Steiner, German Studies
Klaus H.M. Weissenberger, German Studies
Harvey E. Yunis, Classical Studies

Associate Professors
Martin Blumenthal-Barby, German Studies
Jacqueline Couti, French Studies
Julie Fette, French Studies
Deborah A. Harter, French Studies
Hilary S. Mackie, Classical Studies
Astrid Oesmann, German Studies
Philip R. Wood, French Studies

Lecturer
Ted Somerville, Classical Studies

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
- Course offerings/subject code for Classical Studies: CLAS
- Course offerings/subject code for European Studies: EURO
- Course offerings/subject code for French Studies: FREN
- Course offerings/subject code for German Studies: GERM
- Course offerings/subject code for Greek: GREE
- Course offerings/subject code for Latin: LATI
Department Description and Code
• Classical and European Studies: CLEU

Undergraduate Degree Description and Code
• Bachelor of Arts degree: BA

Undergraduate Major Descriptions and Codes
• Major in Classical Studies: CLST
• Major in European Studies: EURO
• Major in French Studies: FREN
• Major in German Studies: GERM

Undergraduate Minor Description and Code
• Minor in Politics, Law, and Social Thought: PLST

CIP Code and Description

Classified Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Cognitive Sciences
Contact Information
Cognitive Sciences
https://cogsci.rice.edu/
209 Herring Hall
713-348-3770

Simon J. Fischer-Baum
Program Director
simon.j.fischer-baum@rice.edu

Researchers in the interdisciplinary field of Cognitive Sciences seek to understand such mental phenomena as perception, thought, memory, the acquisition and use of language, learning, concept formation, and consciousness. Some investigators focus on relations between brain structures and behavior, some work with computer simulation, some use experimental methodology, and others work at more abstract theoretical levels.

Bachelor’s Program
• Bachelor of Arts (BA) Degree with a Major in Cognitive Sciences
(p. 329)

Cognitive Sciences does not currently offer an academic program at the graduate level.

Director
Simon J. Fischer-Baum

Professors
Michel Achard
Michael D. Byrne
James L. Dannemiller
Randi C. Martin
Frederick L. Oswald
James R. Pomerantz
Timothy Schroeder
Devika Subramanian
Marina Vannucci

Associate Professors
Robert Englebretson
Caleb Kemere
Suzanne E. Kemmer
Philip T. Kortum
David M. Lane
Nancy A. Niedzielski

Assistant Professors
Simon J. Fischer-Baum
Alexander Morgan
Xaq Pitkow

Professors Emeriti
Steven J. Cox
Richard E. Grandy
Don Herrick Johnson
Mark Kulstad
Sydney M. Lamb
David J. Schneider
Stephen A. Tyler
James Young

Lecturers
David R. Caprette
John Greiner
Özge Gürcanli
Carissa A. Zimmerman

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: CSCI

Program Description and Code
• Cognitive Sciences: CSCI

Undergraduate Degree Description and Code
• Bachelor of Arts degree: BA
Undergraduate Major Description and Code

- Major in Cognitive Sciences: CSCI

Undergraduate Major Areas of Specialization Descriptions and Attribute Codes*

- Area of Specialization in Linguistics: CSLN
- Area of Specialization in Neuroscience: CSNR
- Area of Specialization in Philosophy: CSPH
- Area of Specialization in Psychology: CSPS

Please Note: Areas of Specialization are department/program-specific and are not formally recognized academic credentials. Unlike Major Concentrations, Areas of Specialization do not appear on the student’s official academic transcript, etc.

CIP Code and Description ¹

- CSCI Major/Program: CIP Code/Title: 30.2501 - Cognitive Science

* Systems Use Only: this information is used solely by internal offices at Rice University (such as OTR, GPS, etc.) and primarily within student information systems and support.

¹ Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Bachelor of Arts (BA) Degree with a Major in Cognitive Sciences

Program Learning Outcomes for the BA Degree with a Major in Cognitive Sciences

Upon completing the BA degree with a major in Cognitive Sciences, students will be able to:

1. Understand cognitive science as an interdisciplinary field and demonstrate the ability to synthesize key knowledge, theories, methods, research, and other elements from many related disciplines and bring these interdisciplinary elements to bear on problems or questions in the cognitive sciences.

2. Demonstrate a breadth of knowledge of the key issues, questions, and perspectives at stake in the multiple disciplines that contribute to the study of the cognitive sciences.

3. Achieve a depth of knowledge in one core area of the cognitive sciences – linguistics, neuroscience, philosophy, or psychology – and develop a knowledge base in that discipline, as well as an understanding of the theories, methods, and research approaches in that discipline.

4. Demonstrate the advanced critical thinking skills necessary to evaluate multiple theories or methods from a variety of related disciplines and choose which to apply to a particular problem or question in the cognitive sciences, as well as the advanced critical thinking ability necessary to evaluate the validity of research results that purport to address the same problem or question, but with different results.

5. Demonstrate the ability to communicate original research or research by other scholars effectively and at a college level in written and oral formats.

Requirements for the BA Degree with a Major in Cognitive Sciences

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Cognitive Sciences must complete:

- A minimum of 14 courses (42-46 credit hours, depending on course selection) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 6 courses (18 credit hours) taken at the 300-level or above.
- A maximum of 4 courses (12 credit hours) from study abroad or transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab.

- The requirements for one area of specialization (see below for areas of specialization). When students declare the major (p. 11) in Cognitive Sciences, students must additionally identify and declare one of four areas of specialization, either in:
  - Linguistics (p. 331), or
  - Neuroscience (p. 331), or
  - Philosophy (p. 332), or
  - Psychology (p. 332).

Because of the common core requirements, it is possible for students to change their area of specialization at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (registrar@rice.edu).

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<td>Total Credit Hours Required for the Major in Cognitive Sciences</td>
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<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Cognitive Sciences</td>
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Degree Requirements

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<td>Core Requirements</td>
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<td>Computer Science Core Course</td>
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<tr>
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<td>Select 1 course from the following:</td>
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<tr>
<td>CAAM 210</td>
<td>INTRODUCTION TO ENGINEERING COMPUTATION</td>
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<tr>
<td>COMP 130</td>
<td>ELEMENTS OF ALGORITHMS AND COMPUTATION</td>
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<td>COMP 140</td>
<td>COMPUTATIONAL THINKING</td>
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<tr>
<td>COMP 160</td>
<td>INTRODUCTION TO GAME PROGRAMMING IN PYTHON</td>
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<tr>
<td>PSYC 342</td>
<td>COMPUTER APPLICATIONS IN PSYCHOLOGY</td>
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</table>

**Advanced Computing Core Course**

Select 1 course from the following: 3-4

- CAAM 415 / THEORETICAL NEUROSCIENCE: FROM CELLS TO LEARNING SYSTEMS
- ELEC 488 / NEUR 415
- COMP 182 / ALGORITHMIC THINKING
- DSCI 303 / MACHINE LEARNING FOR DATA SCIENCE
- ELEC 478 / INTRODUCTION TO MACHINE LEARNING
- NEUR 382 / INTRODUCTION TO COMPUTATIONAL NEUROSCIENCE
- NEUR 383 / INTRODUCTION TO NEUROENGINEERING: MEASURING AND MANIPULATING NEURAL ACTIVITY
- PHIL 357 / INCOMPLETENESS, UNDECIDABILITY, AND COMPUTABILITY
- PSYC 430 / COMPUTATIONAL MODELING OF COGNITIVE PROCESSES
- STAT 413 / INTRODUCTION TO STATISTICAL MACHINE LEARNING

**Linguistics Core Course**

Select 1 course from the following: 3

- LING 200 / INTRODUCTION TO THE SCIENTIFIC STUDY OF LANGUAGE
- ANTH 200
- LING 306 / LANGUAGE, THOUGHT, AND MIND
- LING 315 / PSYC 315 / INTRODUCTION TO SEMANTICS

**Neuroscience Core Course**

Select 1 course from the following: 3

- NEUR 362 / PSYC 362 / COGNITIVE NEUROSCIENCE: EXPLORING THE LIVING BRAIN
- NEUR 380 / BIOL 380 / PSYC 380 / FUNDAMENTAL NEUROSCIENCE SYSTEMS
- NEUR 385 / BIOL 385 / PSYC 380 / FUNDAMENTALS OF CELLULAR AND MOLECULAR NEUROSCIENCE
- NEUR 411 / ANTH 411 / LING 411 / NEUROLINGUISTICS
- NEUR 415 / CAAM 415 / ELEC 488 / THEORETICAL NEUROSCIENCE: FROM CELLS TO LEARNING SYSTEMS
- NEUR 416 / CAAM 416 / ELEC 489 / NEURAL COMPUTATION
- NEUR 430 / FUNDAMENTALS OF HUMAN NEUROIMAGING
- NEUR 481 / BIOL 481 / ELEC 481 / COMPUTATIONAL NEUROSCIENCE AND NEURAL ENGINEERING

**Philosophy Core Course**

Select 1 course from the following: 3

- PHIL 103 / PHILOSOPHICAL ASPECTS OF COGNITIVE SCIENCE
- PHIL 305 / MATHEMATICAL LOGIC
- PHIL 312 / PHILOSOPHY OF MIND

**Psychology Core Course**

Select 1 course from the following: 3

- PSYC 203 / INTRODUCTION TO COGNITIVE PSYCHOLOGY
- PSYC 308 / MEMORY
- PSYC 309 / LING 309 / PSYCHOLOGY OF LANGUAGE
- PSYC 351 / PSYCHOLOGY OF PERCEPTION
- PSYC 461 / REASONING, DECISION MAKING, PROBLEM SOLVING

**Statistics Core Course**

Select 1 course from the following: 3-4

- PSYC 339 / STATISTICAL METHODS-PSYCHOLOGY
- SOSC 302 / QUANTITATIVE ANALYSIS FOR THE SOCIAL SCIENCES
- STAT 280 / ELEMENTARY APPLIED STATISTICS
- STAT 305 / INTRODUCTION TO STATISTICS FOR BIOSCIENCES
- STAT 310 / CON 307 / PROBABILITY AND STATISTICS
- STAT 315 / DSCI 301 / PROBABILITY AND STATISTICS FOR DATA SCIENCE

**Area of Specialization**

Select 1 from the following Areas of Specialization (see Areas of Specialization below): 9-13

- Linguistics
- Neuroscience
- Philosophy
- Psychology

**Elective Requirements**

Select 2-3 elective courses from the other Areas of Specialization or from the following additional electives: 9-10

- COMP 182 / ALGORITHMIC THINKING
- COMP 330 / TOOLS AND MODELS FOR DATA SCIENCE
- COMP 440 / ELEC 440 / ARTIFICIAL INTELLIGENCE
- COMP 450 / ELEC 450 / MECH 450 / ALGORITHMIC ROBOTICS
- COMP 540 / STATISTICAL MACHINE LEARNING
- CSCI 390 / SUPERVISED RESEARCH IN COGNITIVE SCIENCES
- CSCI 481 / HONORS PROJECT
- DSCI 302 / INTRODUCTION TO DATA SCIENCE TOOLS AND MODELS
- ELEC 498 / COMP 498 / MECH 498 / INTRODUCTION TO ROBOTICS
- ENGI 120 / INTRODUCTION TO ENGINEERING DESIGN
**Footnotes and Additional Information**

1. Includes coursework completed as distribution credit, FWIS, LPAR, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

2. If the Cognitive Sciences major chooses 3 courses (9 credit hours minimum) to satisfy the Area of Specialization requirement, they must complete a remainder total of 3 courses (9 credit hours minimum) to fulfill the Elective requirement. If the Cognitive Sciences major chooses 4 courses (12 credit hours minimum) to satisfy the Area of Specialization requirement, they must complete a remainder total of 2 courses (6 credit hours minimum) to fulfill the Elective requirement. The courses that are eligible to fulfill the Electives requirement are the same as the courses required to fulfill the Areas of Specialization outside the student’s chosen Area of Specialization (listed below), with additional approved elective courses also available (listed above). However, courses used to fulfill the Elective Requirements must come from outside the student’s chosen Area of Specialization. For example, if the student’s Area of Specialization is Psychology, all Elective courses must come from areas other than Psychology.

3. Only one of COMP 180 and COMP 182 may be counted toward the Cognitive Sciences major. For example, if COMP 180 was used to satisfy the Advanced Computing Core requirement, COMP 182 cannot be used as an Elective course.

**Areas of Specialization**

Students must complete the requirements as listed for one of the following areas of specialization as offered by the Cognitive Sciences major. A total of 6 courses (minimum of 18-19 credit hours, depending on course selection) must be taken in the area of specialization and elective requirements. See footnote² above.

**Area of Specialization: Linguistics**

To fulfill the remaining Cognitive Sciences major requirements, students pursuing the Linguistics area of specialization must complete:

- a minimum of 3 courses (9 credit hours) from the Linguistics area of specialization
- 2 courses (6-7 credit hours, depending on course selection) from any area of specialization outside Linguistics (from Neuroscience, Philosophy, or Psychology)
- 1 course (3-4 credit hours, depending on course selection) from any area of specialization (including Linguistics) or from approved elective coursework (listed above)

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>LING 200 / ANTH 200</td>
<td>INTRODUCTION TO THE SCIENTIFIC STUDY OF LANGUAGE</td>
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<tr>
<td>LING 300 / ANTH 300</td>
<td>LINGUISTIC ANALYSIS</td>
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<td>LING 301 / ANTH 301</td>
<td>PHONETICS</td>
<td>3</td>
</tr>
<tr>
<td>LING 304</td>
<td>INTRODUCTION TO SYNTAX</td>
<td>3</td>
</tr>
<tr>
<td>LING 306</td>
<td>LANGUAGE, THOUGHT, AND MIND</td>
<td>3</td>
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<tr>
<td>LING 309 / PSYC 309</td>
<td>PSYCHOLOGY OF LANGUAGE</td>
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<td>LING 311 / ANTH 323</td>
<td>INTRODUCTION TO PHONOLOGY</td>
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<td>LING 315 / PSYC 315</td>
<td>INTRODUCTION TO SEMANTICS</td>
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<td>LING 320</td>
<td>ORIGINS AND EVOLUTION OF HUMAN LANGUAGE</td>
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<td>LING 325 / PSYC 325</td>
<td>LANGUAGE ACQUISITION</td>
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<td>LING 397</td>
<td>SPEECH AND HEARING SCIENCE</td>
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<td>LING 400</td>
<td>LINGUISTIC ANALYSIS II</td>
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<td>LING 401</td>
<td>ANALYSIS OF SOUND PATTERNS</td>
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<td>LING 404</td>
<td>RESEARCH METHODOLOGY AND LINGUISTIC THEORIES</td>
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<td>LING 405</td>
<td>DISCOURSE</td>
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<td>LING 409</td>
<td>SPECIAL TOPICS</td>
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<td>LING 411 / ANTH 411 / NEUR 411</td>
<td>NEUROLINGUISTICS</td>
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<td>LING 419</td>
<td>MULTILINGUALISM</td>
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<tr>
<td>LING 427</td>
<td>ADVANCED PHONOLOGY</td>
<td>3</td>
</tr>
</tbody>
</table>

**Footnotes and Additional Information**

1. LING 409 only counts toward the Cognitive Sciences major when the topic is related to Cognitive Science. For example, 'Computational Linguistics' and 'Gesture, Cognition, and Communication' count but 'Variation in U.S. Hip Hop' does not. For questions regarding a specific instance of LING 409, consult a CSCI major advisor.

**Area of Specialization: Neuroscience**

To fulfill the remaining Cognitive Sciences major requirements, students pursuing the Neuroscience area of specialization must complete:

- a minimum of 3 courses (9 credit hours) from the Neuroscience area of specialization
- 2 courses (6-7 credit hours, depending on course selection) from any area of specialization outside Neuroscience (from Linguistics, Philosophy, or Psychology)
- 1 course (3-4 credit hours, depending on course selection) from any area of specialization (including Neuroscience) or from approved elective coursework (listed above)
### Bachelor of Arts (BA) Degree with a Major in Cognitive Sciences

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<td>BIOC 442</td>
<td>MOLECULES, MEMORY AND MODEL ANIMALS: METHODS IN BEHAVIORAL NEUROSCIENCE</td>
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<tr>
<td>NEUR 306</td>
<td>CONCEPTS OF LEARNING AND MEMORY</td>
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<tr>
<td>NEUR 362 / PSYC 362</td>
<td>COGNITIVE NEUROSCIENCE: EXPLORING THE LIVING BRAIN</td>
<td>3</td>
</tr>
<tr>
<td>NEUR 380 / BIOC 380 / PSYC 380</td>
<td>FUNDAMENTAL NEUROSCIENCE SYSTEMS</td>
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<tr>
<td>NEUR 382 / ELEC 382</td>
<td>INTRODUCTION TO COMPUTATIONAL NEUROSCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>NEUR 383 / BIOE 380 / ELEC 380</td>
<td>INTRODUCTION TO NEUROENGINEERING: MEASURING AND MANIPULATING NEURAL ACTIVITY</td>
<td>3</td>
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<tr>
<td>NEUR 385 / BIOC 385</td>
<td>FUNDAMENTALS OF CELLULAR AND MOLECULAR NEUROSCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>NEUR 411 / ANTH 411 / LING 411</td>
<td>NEUROLINGUISTICS</td>
<td>3</td>
</tr>
<tr>
<td>NEUR 415 / CAAM 415 / ELEC 488</td>
<td>THEORETICAL NEUROSCIENCE: FROM CELLS TO LEARNING SYSTEMS</td>
<td>3</td>
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<tr>
<td>NEUR 416 / CAAM 416 / ELEC 489</td>
<td>NEURAL COMPUTATION</td>
<td>3</td>
</tr>
<tr>
<td>NEUR 430 / ELEC 484</td>
<td>FUNDAMENTALS OF HUMAN NEUROIMAGING</td>
<td>3</td>
</tr>
<tr>
<td>NEUR 481 / BIOE 481 / ELEC 481</td>
<td>COMPUTATIONAL NEUROSCIENCE AND NEURAL ENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td>NEUR 525</td>
<td>NEUROSCIENCE AND LAW</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 366</td>
<td>METHODS IN SOCIAL COGNITIVE AND AFFECTIVE NEUROSCIENCE</td>
<td>3</td>
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<tr>
<td>PSYC 375</td>
<td>NEUROPSYCHOLOGY OF LANGUAGE AND MEMORY</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 432</td>
<td>BRAIN AND BEHAVIOR</td>
<td>3</td>
</tr>
</tbody>
</table>

### Select 9-12 credit hours from the following:

- Select 9-12 credit hours from the following:
  - BIOC 442: MOLECULES, MEMORY AND MODEL ANIMALS: METHODS IN BEHAVIORAL NEUROSCIENCE
  - NEUR 306: CONCEPTS OF LEARNING AND MEMORY
  - NEUR 362 / PSYC 362: COGNITIVE NEUROSCIENCE: EXPLORING THE LIVING BRAIN
  - NEUR 380 / BIOC 380 / PSYC 380: FUNDAMENTAL NEUROSCIENCE SYSTEMS
  - NEUR 382 / ELEC 382: INTRODUCTION TO COMPUTATIONAL NEUROSCIENCE
  - NEUR 383 / BIOE 380 / ELEC 380: INTRODUCTION TO NEUROENGINEERING: MEASURING AND MANIPULATING NEURAL ACTIVITY
  - NEUR 385 / BIOC 385: FUNDAMENTALS OF CELLULAR AND MOLECULAR NEUROSCIENCE
  - NEUR 411 / ANTH 411 / LING 411: NEUROLINGUISTICS
  - NEUR 415 / CAAM 415 / ELEC 488: THEORETICAL NEUROSCIENCE: FROM CELLS TO LEARNING SYSTEMS
  - NEUR 416 / CAAM 416 / ELEC 489: NEURAL COMPUTATION
  - NEUR 430 / ELEC 484: FUNDAMENTALS OF HUMAN NEUROIMAGING
  - NEUR 481 / BIOE 481 / ELEC 481: COMPUTATIONAL NEUROSCIENCE AND NEURAL ENGINEERING
  - NEUR 525: NEUROSCIENCE AND LAW
  - PSYC 366: METHODS IN SOCIAL COGNITIVE AND AFFECTIVE NEUROSCIENCE
  - PSYC 375: NEUROPSYCHOLOGY OF LANGUAGE AND MEMORY
  - PSYC 432: BRAIN AND BEHAVIOR

### Footnotes and Additional Information

1. Some of the neuroscience courses are taught by Baylor College of Medicine faculty. Rice - Baylor College of Medicine neuroscience course offerings change frequently. Baylor courses not on the list below may be counted at the discretion of the steering committee. The most up-to-date listing of courses counting as additional courses is found at cogsci.rice.edu (http://cogsci.rice.edu).

### Area of Specialization: Philosophy

To fulfill the remaining Cognitive Sciences major requirements, students pursuing the Philosophy area of specialization must complete:

- a minimum of 3 courses (9-10 credit hours, depending on course selection) from the Philosophy area of specialization
- 2 courses (6 credit hours) from any area of specialization outside Philosophy (from Linguistics, Neuroscience, or Psychology)
- 1 course (3-4 credit hours, depending on course selection) from any area of specialization outside Philosophy (from Linguistics, Neuroscience, or Psychology)

### Area of Specialization: Psychology

To fulfill the remaining Cognitive Sciences major requirements, students pursuing the Psychology area of specialization must complete:

- a minimum of 3 courses (9-10 credit hours, depending on course selection) from the Psychology area of specialization
- 2 courses (6 credit hours) from any area of specialization outside Psychology (from Linguistics, Neuroscience, or Philosophy)
- 1 course (3-4 credit hours, depending on course selection) from any area of specialization (including Psychology) or from approved elective coursework (listed above)

### Select 9-13 credit hours from the following:

- PSYC 308: MEMORY
- PSYC 309 / LING 309: PSYCHOLOGY OF LANGUAGE
- PSYC 321: DEVELOPMENTAL PSYCHOLOGY
- PSYC 325 / LING 325: LANGUAGE ACQUISITION
- PSYC 340: RESEARCH METHODS - PSYCHOLOGY
- PSYC 351: PSYCHOLOGY OF PERCEPTION
- PSYC 362 / NEUR 362: COGNITIVE NEUROSCIENCE: EXPLORING THE LIVING BRAIN
- PSYC 366: METHODS IN SOCIAL COGNITIVE AND AFFECTIVE NEUROSCIENCE
- PSYC 370: INTRODUCTION TO HUMAN FACTORS AND ERGONOMICS
- PSYC 375: NEUROPSYCHOLOGY OF LANGUAGE AND MEMORY
- PSYC 380 / NEUR 380 / BIOC 380: FUNDAMENTAL NEUROSCIENCE SYSTEMS
- PSYC 409: METHODS IN HUMAN-COMPUTER INTERACTION
- PSYC 411: HISTORY OF PSYCHOLOGY
- PSYC 430: COMPUTATIONAL MODELING OF COGNITIVE PROCESSES
- PSYC 432: BRAIN AND BEHAVIOR

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PSYC 441  HUMAN-COMPUTER INTERACTION 3
PSYC 461  REASONING, DECISION MAKING, PROBLEM SOLVING 3
PSYC 462  NON-TRADITIONAL INTERFACES 3
PSYC 463  MEDICAL HUMAN FACTORS 3
PSYC 464  USABILITY ASSESSMENT 3
PSYC 470  ENGINEERING PSYCHOLOGY 3
PSYC 480  ADVANCED TOPICS 1 3

Footnotes and Additional Information
1 PSYC 480 only counts toward the Cognitive Sciences major when the topic is related to Cognitive Science. For example, ‘Genes and Cognition’ counts, but ‘Topics in Clinical Psychology’ does not. For questions regarding a specific instance of PSYC 480, consult a CSCI major advisor.

Policies for the BA Degree with a Major in Cognitive Sciences

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines
Students pursuing the major in Cognitive Sciences should be aware of the following program-specific transfer credit guidelines:

• No more than 4 courses (12 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the major.
• Request for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

Additional Information
For additional information, please see the Cognitive Sciences website: https://cogsci.rice.edu/.

Opportunities for the BA Degree with a Major in Cognitive Sciences

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Honors Program in Cognitive Sciences
Students with a 3.50 major GPA in Cognitive Sciences and 3.30 overall GPA may apply for the cognitive sciences honors program. Students in the honors program are expected to conduct an independent research project of either one or two semesters under the guidance of a member of the cognitive sciences faculty. Students who wish to enter this program should consult with prospective advisors during their junior year and submit a proposal by the end of the semester preceding the initiation of the project. Typically, this means submitting a proposal by the end of the junior year and beginning the project during the fall of the senior year. Proposal will be reviewed by both the supervisor and the program director. Students who undertake a two-semester project will be allowed to continue into the second semester only if their advisor judges that sufficient progress has been made during the first semester. At the end of a project, honors students are expected to submit a final paper to both their advisor and the program director and make an oral presentation to faculty and students. For more details, please contact the program director.

Independent Research
Majors may undertake supervised independent research by enrolling in CSCI 390 or the honors program. Students who wish to take CSCI 390 must complete a CSCI 390 contract and have it approved by their supervisor and the program director prior to the end of the first week of classes. All students taking CSCI 390 also must write a substantive research paper, which is to be submitted to both their advisor and the program director at the end of the semester, and presented in the Rice Undergraduate Research Symposium as a poster. (Copies of the contract form and instructions are available on the “forms” section of the cognitive sciences website.)

Additional Information
For additional information, please see the Cognitive Sciences website: https://cogsci.rice.edu/.

College Courses

One of the colleges’ important activities is their sponsorship of courses and workshops open to all students. By expanding course offerings outside the traditional departments, College Courses promote the academic involvement of the colleges while introducing students to interdisciplinary topics of particular interest.

Students who wish to teach a student-taught course must first take CSCI 390, a course on pedagogy that is taught by faculty magisters in consultation with the Center for Teaching Excellence. As a part of their participation in CSCI 390, students then propose College Courses during the semester before they are offered. Once approved by the Dean of Undergraduates, these 1-credit student-taught College Courses are offered for academic credit on the same basis as departmental courses. More information about student-taught courses can be found here (https://cte.rice.edu/stc/).

No more than three hours of credit for student-taught College Courses (COLL) may be counted toward graduation. This includes all courses COLL 100-199 as well as COLL 200.

For additional information regarding College Courses, see the program’s website: https://cte.rice.edu/stc/.

Undergraduate Requirements

College Courses are taught and overseen by Residential Colleges. Many of these are Student Taught Courses (STC). These courses can be found at the 100-199 level in Rice’s Course Catalog (https://courses.rice.edu). Student-taught courses became part of the Rice curriculum in 2006. These courses provide undergraduates a chance to teach fellow students about subjects in which they consider themselves to be an expert. Since then, hundreds of undergraduates have instructed their peers on a diverse
set of topics. Student-taught courses allow undergraduates to teach and
to take courses in non-traditional subjects, and to thereby supplement
the Rice curriculum. These courses are labeled COLL (College Courses)
and are offered for 1 credit hour on a satisfactory/unsatisfactory basis. A
student may only count up to 3 hours of credit for student-taught courses
towards graduation, including teaching practicum courses.

Guidelines for Student Taught Courses
Students are invited to propose student-taught courses to the Dean of
Undergraduates. Guidelines for student-taught courses are listed below:

1. The courses must be graded on a satisfactory/unsatisfactory scale--
   this is functionally equivalent to pass/fail, but does not count against
   a student's quota for pass/fail courses.

2. All student-taught courses are offered for 1 credit hour.

3. A student instructor cannot be paid a salary, but is awarded 1 credit
   hour. Colleges have the student instructor register in a teaching
   practicum that is overseen by their master. The faculty sponsor of the
   student taught courses would be responsible for the course including
   involvement in its planning, operations, and grading. The sponsor
   is expected to attend at least 1 class and meet with the student
   instructor.

4. A student may have a GPA of 2.50 or higher and be enrolled at Rice
   for at least 2 semesters before teaching a course. Students must be
   enrolled at Rice for at least 1 full semester before proposing a class.

5. A student may take as many student-taught courses as they like.
   Courses are listed on the transcript, but no more than 3 resulting
   credit hours can be applied towards the satisfaction of his/her
   graduation requirements.

6. Student-taught courses must have an enrollment cap of 19 or fewer.

7. Completing COLL 300 is required of all students who wish to teach an
   STC and have not already taught an STC.

For more information regarding Student Taught Courses, including the
procedures for STC proposals, and evaluation criteria, please see the
Center for Teaching Excellence (https://cte.rice.edu/stc/).

There are no College Courses (COLL) offered at the graduate-level (500-
level or above).

Dean of Undergraduates
Bridget K. Gorman

Descriptions and Codes Legend
Note: Internally, the university uses the following descriptions, codes and
abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
Course offerings/subject code: COLL

Computational and Applied
Mathematics

Contact Information
Computational and Applied Mathematics
https://www.caam.rice.edu/
2117 Duncan Hall
713-348-4805

Keith D. Cooper
Department Chair
keith@rice.edu

The coursework within the Computational and Applied Mathematics
(CAAM) major provides foundations applicable to the many fields of
engineering, physical sciences, life sciences, behavioral and social
sciences, and computer science. CAAM students receive training in
foundational mathematics for newly developed algorithms in data
science and training in all aspects of computation from algorithmic
analysis to cost-accuracy performance. CAAM majors can plan a course
of study consistent with their particular interests.

The professional Master of Computational and Applied Mathematics
(MCAAM) is an advanced professional degree program designed for
students interested in a technical career path in industry or business.
The PhD and MA program concentrates on research. Faculty research
interests fall in the four general areas of numerical analysis and scientific
computing; numerical methods for partial differential equations;
operations research and optimization; and mathematical modeling in
physical, biological, or behavioral sciences.

A further advanced interdisciplinary degree program in computational
science and engineering (CSE) addresses the current need for
sophisticated computation in both engineering and the sciences. For
more information, see Computational Science and Engineering (p. 342).

A coordinated MBA/MCAAM degrees program is also offered in
conjunction with the Jesse H. Jones Graduate School of Management.

Bachelor's Program
• Bachelor of Arts (BA) Degree with a Major in Computational and
  Applied Mathematics. (p. 335)

Minor
• Minor in Computational and Applied Mathematics. (p. 341)

Master's Programs
• Master of Computational and Applied Mathematics (MCAAM) Degree
  (p. 338)
• Master of Arts (MA) Degree in the field of Computational and Applied
  Mathematics*

Doctoral Program
• Doctor of Philosophy (PhD) Degree in the field of Computational and
  Applied Mathematics (p. 337)

Coordinated Programs
• Master of Computational and Applied Mathematics (MCAAM)
  Degree / Master of Business Administration (MBA) Degree (p. 339)

* Although students are not normally admitted to a Master of Arts (MA)
  degree program, graduate students may earn the MA as they work
toward the PhD.

Chair
Keith D. Cooper
Professors
Maarten V. de Hoop
Matthias Heinkenschloss
Illya V. Hicks
Beatrice M. Rivièrè
Andrew J. Schaefer
Richard A. Tapia
Yin Zhang

Assistant Professors
Jesse Chan
Joseph Huchette

Professors Emeriti
Robert E. Bixby
Steven J. Cox
Sam H. Davis, Jr.
John E. Dennis
Henry H. Rachford, Jr.
Chao-Cheng Wang

Research Professors
Danny C. Sorensen
William W. Symes

Lecturers
Ricardo Alonso
Anastasiya Protasov

Pfeiffer Postdoctoral Instructor
Mario Bencomo

Professors, Joint Appointments
John Edward Akin

Adjunct Professors
Joakim O. Blanch
Richard Carter
Amr El-Bakry
Roland Glowinski
Detlef Hohl
Hector Klie
Scott A. Morton

Adjunct Associate Professors
F. Omer Alpak
Mauricio Araya Polo
Ed Castillo
Matthew Knepley

Adjunct Assistant Professors
David T. Fuentes
Adrianna Gillman
Paul Hand
Craig Rusin

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: CAAM

Department Description and Code
• Computational and Applied Mathematics: CAAM

Undergraduate Degree Description and Code
• Bachelor of Arts degree: BA

Undergraduate Major Description and Code
• Major in Computational and Applied Mathematics: CAAM

Undergraduate Minor Description and Code
• Minor in Computational and Applied Mathematics: CAMT

Graduate Degree Descriptions and Codes
• Master of Arts degree: MA
• Master of Computational and Applied Mathematics degree: MCAAM
• Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code
• Degree Program in Computational and Applied Mathematics: CAAM

CIP Code and Description ¹
• CAAM Major/Program: CIP Code/Title: 27.0304 - Computational and Applied Mathematics
• CAMT Minor: CIP Code/Title: 27.0304 - Computational and Applied Mathematics

¹ Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Bachelor of Arts (BA) Degree with a Major in Computational and Applied Mathematics

Program Learning Outcomes for the BA Degree with a Major in Computational and Applied Mathematics

Upon completing the BA degree with a major in Computational and Applied Mathematics, students will be able to:

1. Use modern numerical methods to analyze and solve typical problems in linear systems.
2. Design and test a mathematical model, following a multi-stage process.
Requirements for the BA Degree with a Major in Computational and Applied Mathematics

For general university requirements, see Graduation Requirements (p. 26).

Students pursuing the BA degree with a major in Computational and Applied Mathematics must complete:

- A minimum of 17-18 courses (49-52 credit hours), depending on course selection, to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 13 courses (37 credit hours) taken at the 300-level or above.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Computational and Applied Mathematics</td>
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<td>Total Credit Hours Required for the BA Degree with a Major in Computational and Applied Mathematics</td>
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Degree Requirements

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<tr>
<td></td>
<td>Core Requirements</td>
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<td></td>
<td>Introductory Courses</td>
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<td></td>
<td>MATH 101 SINGLE VARIABLE CALCULUS I</td>
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<tr>
<td>or</td>
<td>MATH 105 AP/OTH CREDIT IN CALCULUS I</td>
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</tr>
<tr>
<td>or</td>
<td>MATH 102 SINGLE VARIABLE CALCULUS II</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td>MATH 106 AP/OTH CREDIT IN CALCULUS II</td>
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<td>Select 1 from the following:</td>
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<td>3-6</td>
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<td></td>
<td>MATH 212 MULTIVARIABLE CALCULUS</td>
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<td></td>
<td>MATH 221 HONORS CALCULUS III and HONORS CALCULUS IV</td>
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<tr>
<td>Intermediate Courses</td>
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<tr>
<td></td>
<td>CAAM 336 DIFFERENTIAL EQUATIONS IN SCIENCE AND ENGINEERING</td>
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<td></td>
<td>CAAM 378 INTRODUCTION TO OPERATIONS RESEARCH AND OPTIMIZATION</td>
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<tr>
<td>or</td>
<td>MATH 302 ELEMENTS OF ANALYSIS</td>
<td>3</td>
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<tr>
<td>or</td>
<td>MATH 321 INTRODUCTION TO ANALYSIS I</td>
<td></td>
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<tr>
<td>or</td>
<td>MATH 322 INTRODUCTION TO ANALYSIS II</td>
<td></td>
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<td>Advanced Courses</td>
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<td></td>
<td>CAAM 453 NUMERICAL ANALYSIS I</td>
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<td>CAAM 454 NUMERICAL ANALYSIS II</td>
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<tr>
<td>or</td>
<td>CAAM 471 LINEAR AND INTEGER PROGRAMMING</td>
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<td>Design Project</td>
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<td>Select 2 elective courses at the 300-level or above</td>
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<td>Select 2 elective courses at the 400-level or above</td>
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<td>Additional Credit Hours to Complete BA Degree Requirements</td>
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<td></td>
<td>University Graduation Requirements (p. 26)</td>
<td>3</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1. The Introductory Courses requirement is typically fulfilled during the student’s first two years.
2. Students may petition the Director of Undergraduate Studies to substitute MATH 354 for CAAM 335.
3. Students who plan to pursue graduate studies in Computational and Applied Mathematics should take MATH 302 and MATH 321.
4. The Intermediate Courses requirement is typically fulfilled by the end of the student’s third year.
5. The Advanced Courses requirement is typically completed by the end of the student’s fourth year.
6. The Design Project requirement is typically fulfilled during the student’s fourth year.
To fulfill the remaining Computational and Applied Mathematics major requirements, students must complete 4 additional courses (12 credit hours) at the 300-level or above. At least 2 elective courses (6 credit hours) must be from the departmental (CAAM) course offerings and may not include CAAM 480 or independent study courses (such as CAAM 490 or CAAM 491). Elective courses from other programs must be chosen from a list approved by the CAAM Undergraduate Committee. At least 2 elective courses (6 credit hours) must be at the 400-level or above. The elective courses completed must be taken for a minimum of 3 credit hours. Highly recommended electives may be found in the Highly Recommended Electives list (below).

### Highly Recommended Electives

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
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<td>CAAM 415 / ELEC 488 / NEUR 415</td>
<td>THEORETICAL NEUROSCIENCE: FROM CELLS TO LEARNING SYSTEMS</td>
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<tr>
<td>CAAM 423 / MATH 423</td>
<td>PARTIAL DIFFERENTIAL EQUATIONS I</td>
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<tr>
<td>CAAM 435 / MATH 435</td>
<td>DYNAMICAL SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>CAAM 436</td>
<td>MODELING MATHEMATICAL PHYSICS</td>
<td>3</td>
</tr>
<tr>
<td>CAAM 454</td>
<td>NUMERICAL ANALYSIS II</td>
<td>3</td>
</tr>
<tr>
<td>or CAAM 471</td>
<td>LINEAR AND INTEGER PROGRAMMING</td>
<td>3</td>
</tr>
<tr>
<td>CAAM 519</td>
<td>COMPUTATIONAL SCIENCE I</td>
<td>3</td>
</tr>
<tr>
<td>CAAM 551</td>
<td>NUMERICAL LINEAR ALGEBRA</td>
<td>3</td>
</tr>
<tr>
<td>CAAM 552</td>
<td>FOUNDATIONS OF FINITE ELEMENT METHODS</td>
<td>3</td>
</tr>
<tr>
<td>CAAM 560</td>
<td>OPTIMIZATION THEORY</td>
<td>3</td>
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<tr>
<td>CAAM 564</td>
<td>NUMERICAL OPTIMIZATION</td>
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<tr>
<td>CAAM 565</td>
<td>CONVEX OPTIMIZATION</td>
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</tr>
<tr>
<td>CAAM 570</td>
<td>GRAPH THEORY</td>
<td>3</td>
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<td>CAAM 574</td>
<td>COMBINATORIAL OPTIMIZATION</td>
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<td>INTRODUCTION TO ANALYSIS II</td>
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<td>MATH 425</td>
<td>INTEGRATION THEORY</td>
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<td>MATH 427</td>
<td>COMPLEX ANALYSIS</td>
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</table>

### Policies for the BA Degree with a Major in Computational and Applied Mathematics

#### Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [https://oaa.rice.edu/](https://oaa.rice.edu/). Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

#### Departmental Transfer Credit Guidelines

Students pursuing the major in Computational and Applied Mathematics should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

### Additional Information

For additional information, please see the Computational and Applied Mathematics website: [https://www.caam.rice.edu/](https://www.caam.rice.edu/).

### Opportunities for the BA Degree with a Major in Computational and Applied Mathematics

#### Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

#### Fifth-Year Master’s Degree Option for Rice Undergraduate Students

Rice students have an option to pursue the Master of Computational and Applied Mathematics (MCAAM) degree by adding an additional fifth year to their four undergraduate years of science and engineering studies.

Advanced Rice undergraduate students in good academic standing may apply to the MCAAM degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master's degree program. A plan of study will need to be approved by the student’s undergraduate advisor and the MCAAM program director.

As part of this option and opportunity, Rice undergraduate students:

- must complete the requirements for a bachelor’s degree and the master’s degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
- should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
- more information on this Undergraduate - Graduate Concurrent Enrollment opportunity, including specific information on the registration process can be found here (p. 17).

### Additional Information

For additional information, please see the Computational and Applied Mathematics website: [https://www.caam.rice.edu/](https://www.caam.rice.edu/).

#### Doctor of Philosophy (PhD) Degree in the field of Computational and Applied Mathematics

### Program Learning Outcomes for the PhD Degree in the field of Computational and Applied Mathematics

Upon completing the PhD degree in the field of Computational and Applied Mathematics, students will be able to:
1. Solve problems using advanced foundational knowledge.
2. Conduct an independent research program.
3. Communicate professionally and effectively in writing and when speaking.

Requirements for the PhD Degree in Computational and Applied Mathematics

For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the PhD degree in the field of Computational and Applied Mathematics must:

- Complete a course of study approved by the department to establish a broad foundation in applied mathematics.
- Perform satisfactorily on qualifying examinations and reviews.
- Produce an original thesis acceptable to the department.
- Perform satisfactorily on a final public oral examination on the thesis.

Summary

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
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<td>Credit Hours</td>
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<td>Required</td>
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</tbody>
</table>

Total Credit Hours Required for the PhD Degree in the field of Computational and Applied Mathematics

90

Policies for the PhD Degree in the field of Computational and Applied Mathematics

Department of Computational and Applied Mathematics

Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Computational and Applied Mathematics publishes a graduate program handbook, which can be found here:


Admission

Admission to graduate study in computational and applied mathematics is open to qualified students holding bachelor's or master's degrees (or their equivalent) in engineering, mathematics; or the physical, biological, mathematical, or behavioral sciences. Department faculty evaluate the previous academic record and credentials of each applicant individually. For general information and university requirements, see Graduate Degrees (p. 49) and Admission to Graduate Study (p. 55).

Applicants should be aware that it normally takes two years to obtain a master's degree and an additional two to four years for the doctoral degree.

Financial Assistance

Graduate fellowships, research assistantships, and graduate scholarships are available and are awarded on the basis of merit to qualified students. Current practice in the department is for most doctoral students in good academic standing to receive some financial aid.

Additional Information

For additional information, please see the Computational and Applied Mathematics website:

https://www.caam.rice.edu/

Opportunities for the PhD Degree in the field of Computational and Applied Mathematics

Additional Information

For additional information, please see the Computational and Applied Mathematics website: https://www.caam.rice.edu/

Master of Computational and Applied Mathematics (MCAAM) Degree

Program Learning Outcomes for the MCAAM Degree

Upon completing the MCAAM degree, students will be able to:

1. Acquire broad, advanced knowledge in Computational and Applied Mathematics that is also deep within a major sub-discipline.
2. Demonstrate an ability to gain employment or advancement in a technical field related to Computational and Applied Mathematics.

Requirements for the MCAAM Degree

The MCAAM degree is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MCAAM degree must complete:

- A minimum of 10 courses (30 credit hours) to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master's degree.

This professional degree program emphasizes the applied aspects of mathematics, and requires satisfactory completion of at least 30 credit hours of graduate-level coursework approved by the department.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.
Summary

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<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MCAAM Degree</td>
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</table>

Degree Requirements

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
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</table>

Core Requirements

Select 2 courses from the following:

- CAAM 519 COMPUTATIONAL SCIENCE I
- CAAM 550 NUMERICAL ANALYSIS I
- CAAM 554 NUMERICAL ANALYSIS II
- CAAM 571 LINEAR AND INTEGER PROGRAMMING

Elective Requirements

Select at least 8 courses (24 credit hours) of departmental (CAAM) course offerings at the 500-level or above

Total Credit Hours

30

Footnotes and Additional Information

1. A number of CAAM courses, including CAAM 600, CAAM 698, CAAM 699, and CAAM 800 may not be applied toward the Elective Requirements. Thesis, seminar, or independent study courses cannot be applied towards the Elective Requirements.

2. Students may take up to 3 courses (9 credit hours) at the 500-level or above from course offerings outside of CAAM, with the approval of the student’s mentor.

Opportunities for the MCAAM Degree

Fifth-Year Master’s Degree Option for Rice Undergraduate Students

Rice students have an option to pursue the Master of Computational and Applied Mathematics (MCAAM) degree by adding an additional fifth year to their four undergraduate years of science and engineering studies.

Advanced Rice undergraduate students in good academic standing may apply to the MCAAM degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master’s degree program. A plan of study will need to be approved by the student’s undergraduate advisor and the MCAAM program director.

As part of this option and opportunity, Rice undergraduate students:

- must complete the requirements for a bachelor’s degree and the master’s degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
- should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
- more information on this Undergraduate - Graduate Concurrent Enrollment opportunity, including specific information on the registration process can be found here (p. 17).

Additional Information

For additional information, please see the Computational and Applied Mathematics website: https://www.caam.rice.edu/

Master of Computational and Applied Mathematics (MCAAM) Degree / Master of Business Administration (MBA) Degree

Program Learning Outcomes for the MCAAM Degree

Upon completing the MCAAM degree, students will be able to:

1. Acquire broad, advanced knowledge in Computational and Applied Mathematics that is also deep within a major sub-discipline.
2. Demonstrate an ability to gain employment or advancement in a technical field related to Computational and Applied Mathematics.

Program Learning Outcomes for the MBA Degree

Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.

3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MCAAM/MBA Coordinated Degrees Program

Students may earn a coordinated MBA degree and a non-thesis Master of Engineering degree from the George R. Brown School of Engineering in the following fields:

- Chemical Engineering (MChE)
- Computational and Applied Mathematics (MCAAM)
- Computer Science (MCS)
- Industrial Engineering (MIE)
- Materials Science and Nanoengineering (MMSNE)
- Mechanical Engineering (MME)
- Statistics (MStat)

For the coordinated MBA/Master of Engineering degrees, students must complete:

- A minimum of 69 credit hours in approved coursework*, including:
  - A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the Master of Engineering degree requirements
  - A minimum of 24 credit hours in the corresponding engineering discipline
  - A minimum of 6 credit hours in elective requirements*
- A minimum of 45 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the MBA degree requirements
  - All MBA core requirements, the global field experience, custom core requirements, and coordinated elective requirements

*Note: A maximum of 6 credit hours of the Master of Engineering degree elective requirements may be selected from business course offerings (MGMP, MGMT, or MICO) and used to fulfill the requirements for both the MBA and the Master of Engineering degrees.

Students plan their course schedules in consultation with the George R. Brown School of Engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department. Coordinated degrees candidates can fulfill requirements for both degrees within 2 academic years.

For general university requirements, see Graduate Degrees (p. 49). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Candidates in the MBA/Master of Engineering coordinated degrees program must complete all requirements as listed for both degrees, and must apply and be accepted in both degree programs.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
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<tr>
<td></td>
<td>Total Credit Hours Required for the Coordinated Master of Engineering Degree</td>
<td>Minimum of 30</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the Coordinated MBA Degree</td>
<td>Minimum of 45</td>
</tr>
</tbody>
</table>

Coordinated MCAAM Degree Requirements

Students in the coordinated MBA/MCAAM degrees program must complete the Core Requirements of the MCAAM degree program (p. 338) and the Coordinated MCAAM Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MCAAM Core Requirements</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Coordinated MCAAM Elective Requirements</td>
<td>24</td>
</tr>
</tbody>
</table>

Select a minimum of 18 credit hours from approved departmental (CAAM) course offerings at the 500-level or above

Select a maximum of 6 credit hours from approved course offerings (MGMP, MGMT, or MICO) from the Jones Graduate School of Business at the 500-level or above

Total Credit Hours 30

Coordinated MBA Degree Requirements

Students in the coordinated MBA/Master of Engineering degrees program or in the coordinated MBA/Master of Science degree from the Professional Science Master’s (PSM) degrees program must complete the Core Requirements, Global Field Experience, and Custom Core Requirements of the full-time MBA degree program (p. 214) and the Coordinated MBA Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
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<td>Full-time MBA Core Requirements</td>
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<tr>
<td></td>
<td>Full-time MBA Global Field Experience Requirement</td>
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<tr>
<td></td>
<td>Full-time MBA Custom Core Courses</td>
<td>3-6</td>
</tr>
<tr>
<td></td>
<td>Coordinated MBA Elective Requirements</td>
<td>12-15</td>
</tr>
</tbody>
</table>

Select an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours.

Total Credit Hours 45
Footnotes and Additional Information

1. To fulfill the remaining requirements for the coordinated MBA degree program, students must complete an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours. (MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.) The second year of the program is dedicated entirely to MBA elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. MBA electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.

Policies for the MCAAM/MBA Coordinated Degrees Program

Additional Information

For additional information on these two degrees:
1. Please see the Computational and Applied Mathematics website: https://www.caam.rice.edu/
2. Please see the Jones Graduate School of Business website: https://business.rice.edu/

Opportunities for the MCAAM/MBA Coordinated Degrees Program

Additional Information

For additional information on these two degrees:
1. Please see the Computational and Applied Mathematics website: https://www.caam.rice.edu/
2. Please see the Jones Graduate School of Business website: https://business.rice.edu/

Minor in Computational and Applied Mathematics

Program Learning Outcomes for the Minor in Computational and Applied Mathematics

Upon completing the minor in Computational and Applied Mathematics, students will be able to:

1. Use modern numerical methods to analyze and solve typical problems in linear systems.
2. Design and test a mathematical model, following a multi-stage process.

Requirements for the Minor in Computational and Applied Mathematics

Students pursuing the minor in Computational and Applied Mathematics must complete:

• A minimum of 6 courses (18 credit hours) to satisfy minor requirements.

• A minimum of 5 courses (15 credit hours) taken at the 300-level or above.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the minor’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/)). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>CAAM 210</td>
<td>INTRODUCTION TO ENGINEERING COMPUTATION</td>
<td>3</td>
</tr>
<tr>
<td>CAAM 335</td>
<td>MATRIX ANALYSIS</td>
<td>3</td>
</tr>
<tr>
<td>CAAM 336</td>
<td>DIFFERENTIAL EQUATIONS IN SCIENCE AND ENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td>or CAAM 378</td>
<td>INTRODUCTION TO OPERATIONS RESEARCH AND OPTIMIZATION</td>
<td>3</td>
</tr>
</tbody>
</table>

Elective Requirements

1. Select 1 elective course from departmental (CAAM) course offerings at the 300-level or above

2. Select 2 elective courses from departmental (CAAM) course offerings at the 400-level or above

Footnotes and Additional Information

1. To fulfill the remaining Computational and Applied Mathematics minor requirements, students must complete a total of 3 additional courses (9 credit hours) at the 300-level or above from Computational and Applied Mathematics (CAAM) departmental course offerings. The elective courses completed must be taken for a minimum of 3 credit hours each. At least 2 of these 3 elective courses (6 credit hours) must be completed at the 400-level or above.

Policies for the Minor in Computational and Applied Mathematics

Program Restrictions and Exclusions

Students pursuing the minor in Computational and Applied Mathematics should be aware of the following program restriction:

• As noted in Majors, Minors, and Certificates (p. 11), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.
Transfer Credit
For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the minor in Computational and Applied Mathematics should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

Additional Information
For additional information, please see the Computational and Applied Mathematics website: https://www.caam.rice.edu/

Opportunities for the Minor in Computational and Applied Mathematics

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Additional Information
For additional information, please see the Computational and Applied Mathematics website: https://www.caam.rice.edu/

Computational Science and Engineering

Contact Information
Computational Science and Engineering
https://engrprofmasters.rice.edu/programs

Jan E. Odegard
Program Director
odegard@rice.edu

The advanced multi-disciplinary degree program in Computational Science and Engineering addresses the current need for sophisticated skills in data and computation in both engineering and the sciences. Such skills require an understanding of tools, techniques, and algorithmic capabilities in a range of subjects including simulation, modeling, analytics, parallelization, visualization, networking, and programming. An awareness of a variety of new algorithms and analytic techniques is essential to maximizing the power of the new data and computational tools.
CIP Code and Description

• CSCE Major/Program: CIP Code/Title: 11.0101 - Computer and Information Sciences, General

Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Doctor of Philosophy (PhD) Degree in the field of Computational Science and Engineering

Program Learning Outcomes for the PhD Degree in the field of Computational Science and Engineering

Upon completing the PhD degree in the field of Computational Science and Engineering, students will be able to:

1. Acquire broad, advanced knowledge in Computational and Applied Mathematics, Computer Science, or Statistics that is also deep in one major area within one of the three disciplines.
2. Conduct independent research that demonstrates advanced mastery of a sub-discipline within one of the three disciplines.
3. Communicate advanced technical ideas effectively.

Requirements for the PhD Degree in the field of Computational Science and Engineering

For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the PhD in the field of Computational Science and Engineering must:

• Complete a course of study approved by the Computational Science Committee, including at least 2 courses outside the major area.
• Perform satisfactorily on preliminary and qualifying examinations and reviews.
• Produce an original thesis acceptable to the Computational Science Committee.
• Perform satisfactorily on a final public oral examination on the thesis.

Summary

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<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tr>
<td></td>
<td></td>
<td>Total Credit Hours Required for the PhD Degree in the field of Computational Science and Engineering: 90</td>
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</table>

Recognizing the increasing reliance of modern science and engineering on computation as an aid to research, development, and design, the Department of Computational and Applied Mathematics, in conjunction with the Departments of Biochemistry and Cell Biology, Earth, Environmental, and Planetary Sciences, Computer Science, Chemical and Biomolecular Engineering, Electrical and Computer Engineering, Civil and Environmental Engineering, and Statistics, has established an advanced degree program in computational science and engineering (CSE). The program focuses on modern computational techniques and provides a resource for training and expertise in this area.

The program is administered by a faculty committee chosen by the deans of engineering and natural sciences. The Computational Science Committee (CSC) helps students design an appropriate course of study and sets the examination requirements.

Students may enter the Computational Science and Engineering program either directly or indirectly through one of the participating departments (see list above). In all cases, however, students must fulfill the admissions requirements of their associated department. Students then meet the normal requirements for graduate study within that department in every way (including teaching and other duties), except that the curriculum and examination requirements are set by the Computational Science Committee.

Policies for the PhD Degree in the field of Computational Science and Engineering

Additional Information

For additional information, please see the Computational Science and Engineering website: https://engineering.rice.edu/ (https://engineering.rice.edu/)

Opportunities for the PhD Degree in the field of Computational Science and Engineering

Additional Information

For additional information, please see the Computational Science and Engineering website: https://engineering.rice.edu/ (https://engineering.rice.edu/)

Master of Computational Science and Engineering (MCSE) Degree

Program Learning Outcomes for the MCSE Degree

Upon completing the MCSE degree, students will be able to:

1. Acquire broad, advanced knowledge in modern computational techniques.
2. Possess skills to identify, formulate, and solve advance technical problems related to one of the focus areas.
3. Communicate technical ideas effectively.

Requirements for the MCSE Degree

The MCSE degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MCSE degree must complete:

• A minimum of 30 credit hours to satisfy degree requirements.
• A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
• A minimum of 24 credit hours must be taken at Rice University.
• A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University.
• A minimum overall GPA of 2.67 or higher in all Rice coursework.
• A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree.

The Master in Computational Science and Engineering (MCSE) degree in the School of Engineering is a non-thesis degree program designed to provide training and expertise in computational science and engineering and in data engineering and analytics. The MCSE degree program is intended for students interested in technical and managerial positions such as computational scientist, computational engineering, data engineering, and data analyst. The program offers students opportunities to specialize in areas such as high-performance computing, data analytics, data engineering, data science, machine learning, software engineering, and distributed systems.

The departments of Computational and Applied Mathematics, Computer Science, Electrical and Computer Engineering, and Statistics jointly offer the MCSE degree program. Based on preferences indicated in candidates’ applications, MCSE students are admitted to one of the following four home departments:

- Computational and Applied Mathematics (CAAM),
- Computer Science (COMP),
- Electrical and Computer Engineering (ELEC), or
- Statistics (STAT).

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

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<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Total Credit Hours Required for the MCSE Degree</td>
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</tbody>
</table>

### Degree Requirements

#### Core Requirements

Select 1 course from 3 of the following 4 groups:

- **Group 1 (CAAM)**
  - CAAM 519  COMPUTATIONAL SCIENCE I
  - CAAM 520  COMPUTATIONAL SCIENCE II
  - CAAM 536 / CEVE 555  NUMERICAL METHODS FOR PARTIAL DIFFERENTIAL EQUATIONS
  - CAAM 550  NUMERICAL ANALYSIS I
  - CAAM 553  ADVANCED NUMERICAL ANALYSIS I
  - CAAM 554  NUMERICAL ANALYSIS II
  - CAAM 564  NUMERICAL OPTIMIZATION

Select up to 1 course from the following:

- CAAM 571  LINEAR AND INTEGER PROGRAMMING

**Group 2 (COMP)**

Select up to 1 course from the following:

- COMP 504  GRADUATE OBJECT-ORIENTED PROGRAMMING AND DESIGN
- COMP 506  COMPILER CONSTRUCTION FOR GRADUATE STUDENTS
- COMP 520 / ELEC 520  DISTRIBUTED SYSTEMS
- COMP 521 / ELEC 552  OPERATING SYSTEMS AND CONCURRENT PROGRAMMING
- COMP 522  MULTI-CORE COMPUTING
- COMP 529 / ELEC 529  ADVANCED COMPUTER NETWORKS
- COMP 530  DATABASE SYSTEM IMPLEMENTATION
- COMP 533  INTRODUCTION TO DATABASE SYSTEMS
- COMP 540  STATISTICAL MACHINE LEARNING
- COMP 541  INTRODUCTION TO COMPUTER SECURITY
- COMP 542  LARGE-SCALE MACHINE LEARNING
- COMP 557 / ELEC 557  ARTIFICIAL INTELLIGENCE
- COMP 582 / ELEC 512  GRADUATE DESIGN AND ANALYSIS OF ALGORITHMS

**Group 3 (ELEC)**

Select up to 1 course from the following:

- ELEC 513 / COMP 513  COMPLEXITY IN MODERN SYSTEMS
- ELEC 525 / COMP 525  VIRTUALIZATION AND CLOUD RESOURCE MANAGEMENT
- ELEC 526 / COMP 526  HIGH PERFORMANCE COMPUTER ARCHITECTURE
- ELEC 531  STATISTICAL SIGNAL PROCESSING
- ELEC 533 / CAAM 583 / STAT 583  INTRODUCTION TO RANDOM PROCESSES AND APPLICATIONS
- ELEC 546 / COMP 546  INTRODUCTION TO COMPUTER VISION
- ELEC 547  COMPUTER VISION
- ELEC 549  COMPUTATIONAL PHOTOGRAPHY
- ELEC 553  MOBILE AND EMBEDDED SYSTEM DESIGN AND APPLICATION
- ELEC 554 / COMP 554  COMPUTER SYSTEMS ARCHITECTURE
- ELEC 558  DIGITAL SIGNAL PROCESSING
- ELEC 575  LEARNING FROM SENSOR DATA
- ELEC 576 / COMP 576  A PRACTICAL INTRODUCTION TO DEEP MACHINE LEARNING

**Group 4 (STAT)**

Select up to 1 course from the following:

- STAT 502 / COMP 502 / ELEC 502  NEURAL MACHINE LEARNING I
- STAT 518  PROBABILITY
- STAT 519  STATISTICAL INFERENCE
- STAT 541  MULTIVARIATE ANALYSIS

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STAT 602 / COMP 602 / ELEC 602
NEURAL MACHINE LEARNING AND DATA MINING II

STAT 605
R FOR DATA SCIENCE

STAT 613
STATISTICAL MACHINE LEARNING

STAT 615
REGRESSION AND LINEAR MODELS

STAT 616
ADVANCED STATISTICAL METHODS

STAT 648
GRAPHICAL MODELS AND NETWORKS

Elective Requirements
Select additional courses from departmental (CAAM, COMP, ELEC, or STAT) course offerings at the 500-level or above to reach a minimum of 30 total credit hours

Communication, Leadership, Management and Ethics
Select up to 6 credit hours as Electives from the following:

ENGI 501
WORKPLACE COMMUNICATION FOR PROFESSIONAL MASTER'S STUDENTS IN ENGINEERING

ENGI 510
TECHNICAL AND MANAGERIAL COMMUNICATIONS

ENGI 515
LEADING TEAMS AND INNOVATION

ENGI 528 / CEVE 528
ENGINEERING ECONOMICS

ENGI 529 / CEVE 529
ETHICS AND ENGINEERING LEADERSHIP

ENGI 542
PROFESSIONAL COMMUNICATION FOR ENGINEERING LEADERS

ENG 610 / NSCI 610
MANAGEMENT FOR SCIENCE AND ENGINEERING

ENGI 614
LEARNING HOW TO INNOVATE?

ENGI 615
LEADERSHIP COACHING FOR ENGINEERS

Total Credit Hours
30

Footnotes and Additional Information
1. Other courses may satisfy the Communication, Leadership, Management, and Ethics group requirement. See advisor for more details.
2. Credit hours earned for ENGI 530 Engineering Practicum, thesis, seminar, project based courses, independent study courses, or similar variable credit hour courses may not be applied toward MCSE degree requirements.

Application Information
Students must have completed a BA or BS degree in an engineering or science discipline, with training in engineering mathematics, statistical foundations, and programming methodology to be admitted to the program.

- Fall semester admission application deadline —February 1
- To apply to the program go to MSCE application (https://mcsegradapps.rice.edu/)
- For additional information about the program contact mcse@rice.edu
- Enrollments and degrees awarded for degree programs in the Engineering School are available at: https://engineering.rice.edu/about/enrollment-degrees-awarded/.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

Additional Information
For additional information, please see the Computational Science and Engineering website: https://engrprofmasters.rice.edu/

Opportunities for the MCSE Degree
Fifth-Year Master's Degree Option for Rice Undergraduate Students
Rice students have an option to pursue the Master of Computational Science and Engineering (MCSE) degree by adding an additional fifth year to their four undergraduate years of science and engineering studies.

Advanced Rice undergraduate students in good academic standing may apply to the MCSE degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master’s degree program. A plan of study will need to be approved by the student’s undergraduate advisor and the MCSE program director.

As part of this option and opportunity, Rice undergraduate students:

- must complete the requirements for a bachelor’s degree and the master’s degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
- should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).


2019-2020 General Announcements
PDF Generated 1/29/2020
Computer science is concerned with the study of computers and computing, focusing on algorithms, programs and programming, and computational systems. The main goal of the discipline is to build a systematic body of knowledge, theories, and models that explain the properties of computational systems and to show how this body of knowledge can be used to produce solutions to real-world computational problems.

Computer science is the intellectual discipline underlying information technology, which is widely accepted now as the ascendant technology of the next century. Students in computer science at Rice benefit from the latest in equipment and ideas as well as the flexibility of the educational programs. The research interests of the faculty include algorithms and complexity, artificial intelligence and robotics, compilers, distributed and parallel computation, graphics and visualization, operating systems, and programming languages.

The department offers two undergraduate degrees: the Bachelor of Arts (BA) degree and the Bachelor of Science in Computer Science (BSCS) degree.

At the graduate level, the department offers a PhD degree as well as two master's degrees: the professional Master of Computer Science (MCS) degree and the research-oriented Master of Science (MS) degree.

- The MCS degree is a professional degree for students intending to pursue a technical career. The MCS degree has both an on-premise and a fully online option. Students are admitted directly into one or the other option and cannot switch between the two, but the resulting degree is the same.
- The MS degree is a research degree requiring a thesis in addition to course work. The MS degree is primarily for students pursuing their PhD. Typically students are not admitted directly to the MS program.

Students wishing to pursue a terminal masters degree should apply to the MCS program.

- Students wishing to pursue a PhD should apply directly to the PhD program.

A coordinated MBA/MCS degrees program is also offered in conjunction with the Jesse H. Jones Graduate School of Business.

Bachelor's Programs

- Bachelor of Arts (BA) Degree with a Major in Computer Science (p. 347)
- Bachelor of Science in Computer Science (BSCS) Degree (p. 349)

Master's Programs

- Master of Computer Science (MCS) Degree (p. 352)
- Master of Computer Science (MCS) Degree, Online Program (p. 358)
- Master of Science (MS) Degree in the field of Computer Science (p. 359)

Doctoral Program

- Doctor of Philosophy (PhD) Degree in the field of Computer Science (p. 351)

Coordinated Programs

- Master of Computer Science (MCS) Degree / Master of Business Administration (MBA) Degree (p. 356)
Todd Treangen
Research Professor
Vivek Sarkar

Professors in the Practice
Scott E. Cutler

Lecturers
John Greiner
Mackale Joyner
Risa Myers
Stephen Wong

Professors, Joint Appointments
Richard G. Baraniuk
Joseph R. Cavallaro
Edward W. Knightly
Andrew J. Schaefer
Peter J. Varman

Associate Professors, Joint Appointment
Genevera I. Allen
Ashok Veeraraghavan

Assistant Professors, Joint Appointments
Ankit Patel
Akane Sano

Adjunct Professors
Wah Chiu
Jack Dongarra
Steven J. Wallach

Adjunct Associate Professor
Ken Chen
Matthew Knepley

Adjunct Assistant Professors
Julia Badger
Erez Lieberman-Aiden

Postdoctoral Research Associates
Dinler Antunes
Dipak Chaudhari
Didier Devaurs
Dror Fried
Juan Hernandez-Vega
Huw Ogilvie
Abdullah Al Redwan Newaz

Research Scientists and Programmers
Doug Moore
Vijay Murali
Dung 'Zung' Nguyen
Scott K. Warren
Jia Zou

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: COMP

Department Description and Code
• Computer Science: COMP

Undergraduate Degree Descriptions and Codes
• Bachelor of Arts degree: BA
• Bachelor of Science in Computer Science degree: BSCS

Undergraduate Major Description and Code
• Major in Computer Science (for both the BA and BSCS degrees): COMP

Graduate Degree Descriptions and Codes
• Master of Computer Science degree: MCS
• Master of Science degree: MS
• Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code
• Degree Program in Computer Science: COMP

Graduate Degree Program Option Description and Code*
• Degree Program Option - Online (MCS degree only): OMCS

CIP Code and Description 1
• COMP Major/Program: CIP Code/Title: 11.0101 - Computer and Information Sciences, General

* Systems Use Only: this information is used solely by internal offices at Rice University (such as OTR, GPS, etc.) and primarily within student information systems and support.

1 Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Bachelor of Arts (BA) Degree with a Major in Computer Science

Program Learning Outcomes for the BA Degree with a Major in Computer Science

Upon completing the BA degree with a major in Computer Science, students will be able to:

1. Be knowledgeable about algorithms and their use. Students will analyze new problems, choose appropriate algorithms for their solutions, and develop analytical skills in the manipulation of algorithms.
2. Demonstrate the ability to design and implement complex software systems. Students will demonstrate skill in their design and implementation and function effectively in teams.

3. Be knowledgeable about programming languages and their use. Students will demonstrate an understanding of distinguishing and mapping two different programming languages.

Requirements for the BA Degree with a Major in Computer Science

For general university requirements, see Graduation Requirements (p. 26).

Students pursuing the BA degree with a major in Computer Science must complete:

- A minimum of 17 courses (61-62 credit hours, depending on course selection) to satisfy the major requirements.
- A minimum of 121 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 10 courses (36 credit hours) taken at the 300-level or above.

The undergraduate program in computer science has been designed to accommodate a wide range of student interests. The program is sufficiently flexible for a student to customize it to his or her interests. A student can develop a broad educational program that couples computer science education with a variety of other fields in engineering, natural sciences, the humanities, or social sciences. Alternatively, a program might be designed for a student preparing for graduate study in computer science or for a career in computing and information technology.

The undergraduate program consists of required math and science courses; computer science core courses, including introductory courses and upper-level courses ensuring knowledge in a broad range of areas; and computer science electives, which give students the freedom to explore specific interests.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor, or where applicable, the department's Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major's Official Certifier [https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/].) Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

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<td>MATH 101</td>
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<tr>
<td>or MATH 106</td>
<td>AP/OTH CREDIT IN CALCULUS I</td>
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<tr>
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<tr>
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<td>MULTIVARIABLE CALCULUS</td>
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<td>MATH 221</td>
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<td>MATH 222</td>
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<td>ELEC 303</td>
<td>RANDOM SIGNALS IN ELECTRICAL ENGINEERING SYSTEMS</td>
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<td>STAT 310 / ECON 307</td>
<td>PROBABILITY AND STATISTICS</td>
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<td>STAT 312</td>
<td>PROBABILITY &amp; STATISTICS FOR ENGINEERS</td>
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<td>PROBABILITY AND STATISTICS FOR DATA SCIENCE</td>
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<tr>
<td>CAAM 334</td>
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<td>CAAM 335</td>
<td>MATRIX ANALYSIS</td>
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<td>LINEAR ALGEBRA</td>
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<td>COMP 130</td>
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<td>COMP 140</td>
<td>COMPUTATIONAL THINKING</td>
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<td>COMP 160</td>
<td>INTRODUCTION TO GAME PROGRAMMING IN PYTHON</td>
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<td>COMP 182</td>
<td>ALGORITHMIC THINKING</td>
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<td>COMP 215</td>
<td>INTRODUCTION TO PROGRAM DESIGN</td>
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<td>ELEC 220</td>
<td>FUNDAMENTALS OF COMPUTER ENGINEERING</td>
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<td>ADVANCED OBJECT - ORIENTED PROGRAMMING AND DESIGN</td>
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<td>COMP 321</td>
<td>INTRODUCTION TO COMPUTER SYSTEMS</td>
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<tr>
<td>COMP 322 / ELEC 323</td>
<td>PRINCIPLES OF PARALLEL \ PROGRAMMING</td>
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<td>COMP 328</td>
<td>REASONING ABOUT ALGORITHMS</td>
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<td>COMP 411</td>
<td>PRINCIPLES OF PROGRAMMING LANGUAGES</td>
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<tr>
<td>or COMP 412</td>
<td>COMPILER CONSTRUCTION FOR UNDERGRADUATE STUDENTS</td>
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<tr>
<td>COMP 421 / ELEC 421</td>
<td>OPERATING SYSTEMS AND CONCURRENT \ PROGRAMMING</td>
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### Degree Requirements

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<tr>
<td>MATH 101</td>
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<tr>
<td>or MATH 106</td>
<td>AP/OTH CREDIT IN CALCULUS I</td>
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</table>

### Elective Requirements

Select 2 courses from departmental (COMP) course offerings (a minimum of 3 credit hours each) at the 300-level or above. (The Department of Computer Science does not offer the University Graduation Requirements [p. 26].)

Total Credit Hours Required for the Major in Computer Science 61-62

Total Credit Hours 121-122
Footnotes and Additional Information

1. Typically, the Math and Science courses are taken during the freshman and sophomore years.
2. At most 1 of these 2 courses may be an independent study project (COMP 390, COMP 490, or COMP 491). Students may take courses at the 500-level, however, departmental approval is required to use a course at the 600-level (or above) as an elective.

As part of this option and opportunity, Rice undergraduate students:

- must complete the requirements for a bachelor's degree and the master's degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
- should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
- more information on this Undergraduate - Graduate Concurrent Enrollment opportunity, including specific information on the registration process can be found here (p. 17).

Additional Information

For additional information, please see the Computer Science website: https://www.cs.rice.edu/.

Bachelor of Science in Computer Science (BSCS) Degree

Program Learning Outcomes for the BSCS Degree

Upon completing the BSCS degree, students will be able to:

1. Be knowledgeable about algorithms and their use. Students will analyze new problems, choose appropriate algorithms for their solutions, and develop analytical skills in the manipulation of algorithms.
2. Demonstrate the ability to design and implement complex software systems. Students will demonstrate skill in their design and implementation and function effectively in teams.
3. Be knowledgeable about programming languages and their use. Students will demonstrate an understanding of distinguishing and mapping two different programming languages.
4. Demonstrate a deep knowledge in a subarea of Computer Science. Students will be able to explain issues in the selected subarea and demonstrate a depth of knowledge.
5. Communicate effectively to a client and user.

Requirements for the BSCS Degree

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BSCS degree must complete:

- A minimum of 23-25 courses (84-85 credit hours), depending on course selection, to satisfy the major requirements.
- A minimum of 128-129 credit hours, depending on course selection, to satisfy degree requirements.
- A minimum of 14 courses (51 credit hours) taken at the 300-level or above.

The BSCS degree is designed for students who are interested in an in-depth study of computer science to prepare themselves for a professional career in the computing industry.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor, or where applicable, the department's Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major's...
Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

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Total Credit Hours Required for the Major in Computer Science

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Total Credit Hours Required for the BSCS Degree

**Degree Requirements**

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**Core Requirements**

Math and Science Courses

- MATH 101 SINGLE VARIABLE CALCULUS I 3 or MATH 105 AP/OTH CREDIT IN CALCULUS I
- MATH 102 SINGLE VARIABLE CALCULUS II or MATH 106 AP/OTH CREDIT IN CALCULUS II

**Select 1 course from the following:**

- MATH 211 ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA 3
- MATH 212 MULTIVARIABLE CALCULUS
- MATH 221 HONORS CALCULUS III
- MATH 222 HONORS CALCULUS IV

**Computer Science Courses**

- COMP 130 ELEMENTS OF ALGORITHMS AND COMPUTATION
- COMP 140 COMPUTATIONAL THINKING
- COMP 160 INTRODUCTION TO GAME PROGRAMMING IN PYTHON
- COMP 182 ALGORITHMIC THINKING 4
- COMP 215 INTRODUCTION TO PROGRAM DESIGN 4
- ELEC 220 FUNDAMENTALS OF COMPUTER ENGINEERING
- COMP 310 ADVANCED OBJECT - ORIENTED PROGRAMMING AND DESIGN 4
- COMP 321 INTRODUCTION TO COMPUTER SYSTEMS 4
- COMP 322 / ELEC 323 PRINCIPLES OF PARALLEL PROGRAMMING 4
- COMP 382 REASONING ABOUT ALGORITHMS 4
- COMP 411 PRINCIPLES OF PROGRAMMING LANGUAGES
- COMP 412 COMPILER CONSTRUCTION FOR UNDERGRADUATE STUDENTS
- COMP 421 / ELEC 421 OPERATING SYSTEMS AND CONCURRENT PROGRAMMING 4

**Elective Requirements**

Select 2 courses from departmental (COMP) course offerings (a minimum of 3 credit hours each) at the 300-level or above

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**Capstone Requirement**

**Design Component**

Select 1 course from the following:

- COMP 410 SOFTWARE ENGINEERING METHODOLOGY
- COMP 413 DISTRIBUTED PROGRAM CONSTRUCTION
- COMP 460 / ARTS 460 ADVANCED COMPUTER GAME CREATION

**Capstone**

Select 3 additional courses at the 300-level or above in consultation with a major advisor

Total Credit Hours Required for the Major in Computer Science

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<th>Code</th>
<th>Title</th>
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Total Credit Hours

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<th>Title</th>
<th>Credit Hours</th>
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<td>128-129</td>
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</table>

**Footnotes and Additional Information**

- Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.
- Typically, the Math and Science courses are taken during the freshman and sophomore years.
- At most 1 of these courses may be an independent study project (COMP 390, COMP 490, or COMP 491). Departmental approval is required to use a 600-level course as an elective.
- The capstone sequence represents a coherent set of courses in a computer science specialization chosen by the student. Departmental approval is required for suggested specializations. Including the design component, the capstone requires a minimum of 15 credit hours.
Policies for the BSCS Degree

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the BSCS degree should be aware of the following departmental transfer credit guidelines:

• Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information
For additional information, please see the Computer Science website: https://www.cs.rice.edu/

Opportunities for the BSCS Degree

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Fifth-Year Master’s Degree Option for Rice Undergraduate Students
Rice students have an option to pursue the Master of Computer Science (MCS) degree by adding an additional fifth year to their four undergraduate years of science and engineering studies.

Advanced Rice undergraduate students in good academic standing may apply to the MCS degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master's degree program. A plan of study will need to be approved by the student's undergraduate advisor and the MCS program director.

As part of this option and opportunity, Rice undergraduate students:

• must complete the requirements for a bachelor's degree and the master's degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
• should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
• more information on this Undergraduate - Graduate Concurrent Enrollment opportunity, including specific information on the registration process can be found here (p. 17).

Additional Information
For additional information, please see the Computer Science website: https://www.cs.rice.edu/

Doctor of Philosophy (PhD) Degree in the field of Computer Science

Program Learning Outcomes for the MS and PhD Degrees in the field of Computer Science

Upon completing the MS and PhD degrees in the field of Computer Science, students will be able to:

1. Acquire a solid foundation in Computer Science at graduate level. Students will demonstrate a graduate-level understanding of material across a variety of sub-disciplines, be able to synthesize problem solutions by combining knowledge from different sources, and demonstrate a deep knowledge of sub-area in which they will pursue their thesis.
2. Conduct an independent research program. Students will identify and pose a research problem, place that problem in context within the field's established literature, and conduct an independent investigation that leads to credible scientific results.
3. Demonstrate professional skills in both oral and written communication. Students will write well-organized, coherent technical prose, deliver a professional presentation on par with a solid conference presentation, demonstrate the ability to describe scientific issues and techniques in writing and in presentation, and be able to answer unanticipated technical questions in a public setting.

Requirements for the MS and PhD Degrees in the field of Computer Science

MS Degree Program
The MS degree is a thesis master's degree. For general university requirements, please see Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students who successfully meet the first three requirements listed in the requirements for the PhD degree below are awarded the Master of Science degree.

Summary

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<tr>
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<tbody>
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Requirements for the PhD Degree in the field of Computer Science

PhD Degree Program
For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the PhD degree in the field of Computer Science must:

• Meet departmental course requirements as described in the Computer Science Department’s graduate student handbook available at: https://www.cs.rice.edu/academics/graduate-studies/phd/.
• Complete a COMP 590 project by the end of the third semester.
• Complete a master's thesis by the end of the fifth semester, if a previous master's thesis has not been approved by the graduate committee.
• Pass a qualifying examination in an area of specialization within seven semesters after entering the PhD program.
• Conduct original research, submit an acceptable PhD thesis proposal, and successfully defend the thesis proposal.
• Submit an acceptable PhD thesis that reports research results and pass a final oral defense.

The PhD degree is for students planning to pursue a career in computer science research and education. The doctoral program normally requires four to six years of study.

Summary

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Policies for the PhD Degree in the field of Computer Science

Department of Computer Science Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Computer Science publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Computer_Science_Graduate_Handbook.pdf

Financial Assistance

Fellowships and research assistantships are available to students in the PhD program. Both provide a monthly stipend for the academic year and cover all tuition expenses. More substantial monthly stipends may be available during the summer for students working on departmental research projects. In all cases, continued support is contingent on satisfactory progress in the program. PhD students also are expected to assist in the teaching and administration of undergraduate and graduate courses.

Additional Information

For additional helpful information, please refer to the Graduate Study in Computer Science web page at https://www.cs.rice.edu/academics/graduate-studies/ or contact the department at gradapp@rice.edu.

Opportunities for the PhD Degree in the field of Computer Science

Additional Information

For additional helpful information, please refer to the Graduate Study in Computer Science web page at https://www.cs.rice.edu/academics/graduate-studies/ or contact the department at gradapp@rice.edu.

Master of Computer Science (MCS) Degree

Program Learning Outcomes for the MCS Degree

Upon completing the MCS degree, students will be able to:

1. Solve advanced Computer Science problems. Students will acquire and apply a graduate-level understanding of material in sub-areas of Computer Science.
2. Design and implement complex software systems. Students will demonstrate skill in their design and implementation and function effectively in teams.
3. Communicate effectively to a client and user.

Requirements for the MCS Degree

The MCS degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MCS degree must complete:

• A minimum of 30 credit hours to satisfy degree requirements.
• A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
• A minimum of 24 credit hours must be taken at Rice University.
• A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University.
• The requirements for one area of specialization (see below for areas of specialization). The MCS degree program offers twelve areas of specialization:
  • AI and Robotics (p. ), or
  • Architecture (p. 354), or
  • Compilers (p. 354), or
  • Computer Vision (p. ), or
  • Data Science (p. ), or
  • Database (p. 355), or
  • Networking (p. 355), or
  • Optimization (p. 355), or
  • Parallel Computing (p. ), or
  • PL Theory and Logic (p. ), or
  • Software Engineering (p. ), or
  • Systems and Security (p. ).
• A 3-6 month internship (or COMP 539). Students are responsible for obtaining and selecting an internship that best aligns with their career goals.
• A minimum overall GPA of 2.67 or higher in all Rice coursework.
• A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree.

The MCS degree is a terminal degree for students intending to pursue a technical career in the computer industry. MCS degree areas of specialization include artificial intelligence and robotics, computer vision, data science, databases, operating systems and security, computer networks, computer architecture, parallel computing, compiler construction, programming languages, and software engineering. The MCS degree program normally requires three semesters of study.
Students in the MCS degree program are expected to pay full tuition and all fees. No financial aid is available from the university or the department for MCS students.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/degeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

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<tr>
<td></td>
<td>Total Credit Hours Required for the MCS Degree</td>
<td>30</td>
</tr>
</tbody>
</table>

**Degree Requirements**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Core Requirements ²</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select 1 course from 3 of the following 4 Core Requirement areas:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Applications</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select up to 1 course from the following:</td>
<td>3-4</td>
</tr>
<tr>
<td>COM 502 / ELEC 502 / STAT 502</td>
<td>NEURAL MACHINE LEARNING I</td>
<td></td>
</tr>
<tr>
<td>COM 530</td>
<td>DATABASE SYSTEM IMPLEMENTATION</td>
<td></td>
</tr>
<tr>
<td>COM 531</td>
<td>WEB DEVELOPMENT AND DESIGN</td>
<td></td>
</tr>
<tr>
<td>COM 533</td>
<td>INTRODUCTION TO DATABASE SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>COM 540</td>
<td>STATISTICAL MACHINE LEARNING</td>
<td></td>
</tr>
<tr>
<td>COM 542</td>
<td>LARGE-SCALE MACHINE LEARNING</td>
<td></td>
</tr>
<tr>
<td>COM 543</td>
<td>GRADUATE TOOLS AND MODELS - DATA SCIENCE</td>
<td></td>
</tr>
<tr>
<td>COM 546 / ELEC 546</td>
<td>INTRODUCTION TO COMPUTER VISION</td>
<td></td>
</tr>
<tr>
<td>COM 550 / ELEC 550 / MECH 550</td>
<td>ALGORITHMIC ROBOTICS</td>
<td></td>
</tr>
<tr>
<td>COM 557 / ELEC 557</td>
<td>ARTIFICIAL INTELLIGENCE</td>
<td></td>
</tr>
<tr>
<td>COM 560</td>
<td>COMPUTER GRAPHICS AND GEOMETRIC MODELING</td>
<td></td>
</tr>
<tr>
<td>COM 571 / BIOC 571</td>
<td>BIOINFORMATICS: SEQUENCE ANALYSIS</td>
<td></td>
</tr>
<tr>
<td>COM 576 / ELEC 576</td>
<td>A PRACTICAL INTRODUCTION TO DEEP MACHINE LEARNING</td>
<td></td>
</tr>
<tr>
<td>COM 602 / ELEC 602 / STAT 602</td>
<td>NEURAL MACHINE LEARNING AND DATA MINING II</td>
<td></td>
</tr>
<tr>
<td>ELEC 549</td>
<td>COMPUTATIONAL PHOTOGRAPHY</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Languages and Compilers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select up to 1 course from the following:</td>
<td>3-4</td>
</tr>
<tr>
<td></td>
<td>Area of Specialization</td>
<td>6-8</td>
</tr>
<tr>
<td></td>
<td>Select 1 from the following Areas of Specialization (see Areas of Specialization below):</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AI and Robotics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Architecture</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Compilers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Computer Vision</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data Science</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Database</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM 506</td>
<td>COMPILER CONSTRUCTION FOR GRADUATE STUDENTS</td>
<td></td>
</tr>
<tr>
<td>COM 511</td>
<td>PRINCIPLES OF PROGRAMMING LANGUAGES</td>
<td></td>
</tr>
<tr>
<td>COM 512</td>
<td>ADVANCED COMPILER CONSTRUCTION</td>
<td></td>
</tr>
<tr>
<td>COM 515</td>
<td>ADVANCED COMPILATION FOR VECTOR PARALLEL PROCESSORS</td>
<td></td>
</tr>
<tr>
<td>COM 535</td>
<td>APPROXIMATE COMPUTING SYSTEM FOR BIG DATA, SUPERCOMPUTING AND EMBEDDED SYSTEMS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Systems</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select up to 1 course from the following:</td>
<td>3-4</td>
</tr>
<tr>
<td>COM 508 / ELEC 511</td>
<td>DESIGN AND ANALYSIS OF SECURE EMBEDDED SYSTEMS FOR IOT ERA</td>
<td></td>
</tr>
<tr>
<td>COM 513 / ELEC 513</td>
<td>COMPLEXITY IN MODERN SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>COM 521 / ELEC 552</td>
<td>OPERATING SYSTEMS AND CONCURRENT PROGRAMMING</td>
<td></td>
</tr>
<tr>
<td>COM 522</td>
<td>MULTI-CORE COMPUTING</td>
<td></td>
</tr>
<tr>
<td>COM 524 / ELEC 524</td>
<td>MOBILE AND WIRELESS NETWORKING</td>
<td></td>
</tr>
<tr>
<td>COM 526 / ELEC 526</td>
<td>HIGH PERFORMANCE COMPUTER ARCHITECTURE</td>
<td></td>
</tr>
<tr>
<td>COM 528</td>
<td>INTRODUCTION TO VIRTUALIZATION</td>
<td></td>
</tr>
<tr>
<td>COM 529 / ELEC 529</td>
<td>ADVANCED COMPUTER NETWORKS</td>
<td></td>
</tr>
<tr>
<td>COM 532</td>
<td>INTRODUCTION TO DISTRIBUTED COMPUTER SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>COM 534</td>
<td>PARALLEL COMPUTING</td>
<td></td>
</tr>
<tr>
<td>COM 538 / ELEC 528</td>
<td>SECURITY OF HW EMBEDDED SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>COM 541</td>
<td>INTRODUCTION TO COMPUTER SECURITY</td>
<td></td>
</tr>
<tr>
<td>COM 554 / ELEC 554</td>
<td>COMPUTER SYSTEMS ARCHITECTURE</td>
<td></td>
</tr>
<tr>
<td>COM 556 / ELEC 556</td>
<td>INTRODUCTION TO COMPUTER NETWORKS</td>
<td></td>
</tr>
<tr>
<td>ELEC 553</td>
<td>MOBILE AND EMBEDDED SYSTEM DESIGN AND APPLICATION</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Theory</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select up to 1 course from the following:</td>
<td>3-4</td>
</tr>
<tr>
<td>COM 507</td>
<td>COMPUTER-AIDED PROGRAM DESIGN</td>
<td></td>
</tr>
<tr>
<td>COM 509</td>
<td>ADVANCED LOGIC IN COMPUTER SCIENCE</td>
<td></td>
</tr>
<tr>
<td>COM 581</td>
<td>AUTOMATA, FORMAL LANGUAGES, AND COMPUTABILITY</td>
<td></td>
</tr>
<tr>
<td>COM 582 / ELEC 512</td>
<td>GRADUATE DESIGN AND ANALYSIS OF ALGORITHMS</td>
<td></td>
</tr>
</tbody>
</table>

2019-2020 General Announcements

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Master of Computer Science (MCS) Degree

Networking
Optimization
Parallel Computing
PL Theory and Logic
Software Engineering
Systems and Security

Design Project
Select 1 course from the following: 4
COMP 501 PRODUCTION PROGRAMMING
COMP 504 GRADUATE OBJECT-ORIENTED PROGRAMMING AND DESIGN
COMP 539 SOFTWARE ENGINEERING METHODOLOGY
COMP 590 COMPUTER SCIENCE PROJECTS 3

Three to Six Month Internship
A three to six month internship (or COMP 539) is required. 4

Elective Requirements
Select an additional 6-11 credit hours from departmental (COMP) course offerings at the 500-level or above to reach 30 total credit hours. 5

Elective Requirements

Footnotes and Additional Information
1 These specializations are representative, but not comprehensive. Students may design their own specialization with approval by the MCS advisor.
2 Students demonstrating that they have passed one or more courses of comparable depth to a course listed for a core requirement area may petition to use one or more of those courses to waive requirements for that core requirement area.
3 MCS advisor approval is required to use COMP 590 Computer Science Projects to satisfy the MCS design project requirement. To be eligible to satisfy the MCS design project requirement, the proposed COMP 590 project must include a significant programming design and implementation effort.
4 Students are required to complete either 1) an approved 3-6 month internship or 2) COMP 539. Students are responsible for obtaining an selecting an internship that best aligns with their career goals.
5 Elective coursework must be approved professional development coursework (see below) and/or 500-level or above departmental (COMP) course offerings other than independent study projects (e.g. COMP 590). At most, 3 credit hours total, of 1-credit-hour and 2-credit-hour courses, may be applied toward MCS degree requirements. Up to 6 credit hours of professional development courses may be applied toward MCS degree requirements. See below for a list of approved professional development courses. Credit hours earned for ENGI 530 Engineering Practicum may not be applied toward MCS degree requirements.

Areas of Specialization
Students must complete a tightly coupled two-course area of specialization (6-8 credit hours). Approved specialization areas appear below. Student-designed specialization areas are permitted if approved by the student’s MCS advisor. Custom specialization areas may include coursework from departments other than Computer Science (COMP) and may include one independent study project (e.g. COMP 590).

Area of Specialization: AI and Robotics
Select 2 courses from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 502 / ELEC 502 / STAT 502</td>
<td>NEURAL MACHINE LEARNING I</td>
<td>7-8</td>
</tr>
<tr>
<td>COMP 540</td>
<td>STATISTICAL MACHINE LEARNING</td>
<td></td>
</tr>
<tr>
<td>COMP 542</td>
<td>LARGE-SCALE MACHINE LEARNING</td>
<td></td>
</tr>
<tr>
<td>COMP 550 / ELEC 550 / MECH 550</td>
<td>ALGORITHMIC ROBOTICS</td>
<td></td>
</tr>
<tr>
<td>COMP 557 / ELEC 557</td>
<td>ARTIFICIAL INTELLIGENCE</td>
<td></td>
</tr>
<tr>
<td>COMP 576 / ELEC 602 / STAT 602</td>
<td>NEURAL MACHINE LEARNING AND DATA MINING II</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours 7-8

Area of Specialization: Architecture
Select 2 courses from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 526 / ELEC 526</td>
<td>HIGH PERFORMANCE COMPUTER ARCHITECTURE</td>
<td>6-7</td>
</tr>
<tr>
<td>COMP 535</td>
<td>APPROXIMATE COMPUTING SYSTEM FOR BIG DATA, SUPERCOMPUTING AND EMBEDDED SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>COMP 554 / ELEC 554</td>
<td>COMPUTER SYSTEMS ARCHITECTURE</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours 6-7

Area of Specialization: Compilers
Select 2 courses from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 506</td>
<td>COMPILER CONSTRUCTION FOR GRADUATE STUDENTS</td>
<td>7-8</td>
</tr>
<tr>
<td>COMP 512</td>
<td>ADVANCED COMPILER CONSTRUCTION</td>
<td></td>
</tr>
<tr>
<td>COMP 515</td>
<td>ADVANCED COMPILATION FOR VECTOR PARALLEL PROCESSORS</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours 7-8

Area of Specialization: Computer Vision
Select 2 courses from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 546 / ELEC 546</td>
<td>INTRODUCTION TO COMPUTER VISION</td>
<td>6-7</td>
</tr>
<tr>
<td>COMP 560</td>
<td>COMPUTER GRAPHICS AND GEOMETRIC MODELING</td>
<td></td>
</tr>
<tr>
<td>ELEC 549</td>
<td>COMPUTATIONAL PHOTOGRAPHY</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours 6-7

2019-2020 General Announcements
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### Area of Specialization: Data Science

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 502 / ELEC 502 / STAT 502</td>
<td>NEURAL MACHINE LEARNING I</td>
<td>6-8</td>
</tr>
<tr>
<td>COMP 530</td>
<td>DATABASE SYSTEM IMPLEMENTATION</td>
<td></td>
</tr>
<tr>
<td>COMP 533</td>
<td>INTRODUCTION TO DATABASE SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>COMP 540</td>
<td>STATISTICAL MACHINE LEARNING</td>
<td></td>
</tr>
<tr>
<td>COMP 542</td>
<td>LARGE-SCALE MACHINE LEARNING</td>
<td></td>
</tr>
<tr>
<td>COMP 576</td>
<td>A PRACTICAL INTRODUCTION TO DEEP MACHINE LEARNING</td>
<td></td>
</tr>
<tr>
<td>COMP 602</td>
<td>NEURAL MACHINE LEARNING AND DATA MINING II</td>
<td></td>
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</tbody>
</table>

Total Credit Hours: 6-8

### Area of Specialization: PL Theory and Logic

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 507</td>
<td>COMPUTER-AIDED PROGRAM DESIGN</td>
<td>8</td>
</tr>
<tr>
<td>COMP 509</td>
<td>ADVANCED LOGIC IN COMPUTER SCIENCE</td>
<td></td>
</tr>
<tr>
<td>COMP 511</td>
<td>PRINCIPLES OF PROGRAMMING LANGUAGES</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours: 8

### Area of Specialization: Database

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>COMP 530</td>
<td>DATABASE SYSTEM IMPLEMENTATION</td>
<td>3-4</td>
</tr>
<tr>
<td>COMP 533</td>
<td>INTRODUCTION TO DATABASE SYSTEMS</td>
<td>4</td>
</tr>
</tbody>
</table>

Total Credit Hours: 7-8

### Area of Specialization: Networking

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 524 / ELEC 524</td>
<td>MOBILE AND WIRELESS NETWORKING</td>
<td>8</td>
</tr>
<tr>
<td>COMP 529 / ELEC 529</td>
<td>ADVANCED COMPUTER NETWORKS</td>
<td></td>
</tr>
<tr>
<td>COMP 556 / ELEC 556</td>
<td>INTRODUCTION TO COMPUTER NETWORKS</td>
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</tbody>
</table>

Total Credit Hours: 8

### Area of Specialization: Optimization

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAAM 560</td>
<td>OPTIMIZATION THEORY</td>
<td>6</td>
</tr>
<tr>
<td>CAAM 564</td>
<td>NUMERICAL OPTIMIZATION</td>
<td></td>
</tr>
<tr>
<td>CAAM 565</td>
<td>CONVEX OPTIMIZATION</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours: 6

### Area of Specialization: Parallel Computing

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 515</td>
<td>ADVANCED COMPILATION FOR VECTOR PARALLEL PROCESSORS</td>
<td>6</td>
</tr>
<tr>
<td>COMP 522</td>
<td>MULTI-CORE COMPUTING</td>
<td></td>
</tr>
<tr>
<td>COMP 534</td>
<td>PARALLEL COMPUTING</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours: 6

### Area of Specialization: Database

Students may take up to 6 credit hours from the following approved Professional Development coursework, which is encouraged, but not required.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 694 / ELEC 694</td>
<td>HOW TO BE A CHIEF TECHNOLOGY OFFICER</td>
<td>0-6</td>
</tr>
<tr>
<td>ENGI 501</td>
<td>WORKPLACE COMMUNICATION FOR PROFESSIONAL MASTER'S STUDENTS IN ENGINEERING</td>
<td></td>
</tr>
<tr>
<td>ENGI 510</td>
<td>TECHNICAL AND MANAGERIAL COMMUNICATIONS</td>
<td></td>
</tr>
<tr>
<td>ENGI 515</td>
<td>LEADING TEAMS AND INNOVATION</td>
<td></td>
</tr>
</tbody>
</table>
ENGI 528 / CEVE 528  ENGINEERING ECONOMICS
ENGI 529 / CEVE 529  ETHICS AND ENGINEERING LEADERSHIP
ENGI 542  PROFESSIONAL COMMUNICATION FOR ENGINEERING LEADERS
ENGI 610 / NSCI 610  MANAGEMENT FOR SCIENCE AND ENGINEERING
ENGI 614  LEARNING HOW TO INNOVATE?
ENGI 615  LEADERSHIP COACHING FOR ENGINEERS

Policies for the MCS Degree

Department of Computer Science Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Computer Science publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Computer_Science_Graduate_Handbook.pdf

Financial Aid

No financial aid is available from Rice University or the Computer Science Department for students in the MCS degree program.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the MCS degree should be aware of the following departmental transfer credit guidelines:

- No more than 6 credit hours of credit from another U.S. or international universities of similar standing at Rice may apply towards the degree. Transferred courses must be comparable in content and depth to the corresponding course at Rice, and must not have counted toward another degree.
- Request for transfer credit will be considered by the Computer Science Graduate Committee Chair, and the instructor of the equivalent Rice course.

Additional Information

For additional helpful information, please refer to the Graduate Study in Computer Science web page at https://www.cs.rice.edu/academics/graduate-studies/ or contact the department at gradapp@rice.edu.

Master of Computer Science (MCS) Degree / Master of Business Administration (MBA) Degree

Program Learning Outcomes for the MCS Degree

Upon completing the MCS degree, students will be able to:

1. Solve advanced Computer Science problems. Students will acquire and apply a graduate-level understanding of material in sub-areas of Computer Science.
2. Design and implement complex software systems. Students will demonstrate skill in their design and implementation and function effectively in teams.
3. Communicate effectively to a client and user.

Program Learning Outcomes for the MBA Degree

Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

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Requirements for the MCS/MBA
Coordinated Degrees Program

Students may earn a coordinated MBA degree and a non-thesis Master of Engineering degree from the George R. Brown School of Engineering in the following fields:

- Chemical Engineering (MChE)
- Computational and Applied Mathematics (MCAAM)
- Computer Science (MCS)
- Industrial Engineering (MIE)
- Materials Science and Nanoengineering (MMSNE)
- Mechanical Engineering (MME)
- Statistics (MStat)

For the coordinated MBA/Master of Engineering degrees, students must complete:

- A minimum of 69 credit hours in approved coursework*, including:
  - A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the Master of Engineering degree requirements
  - A minimum of 24 credit hours in the corresponding engineering discipline
  - A minimum of 6 credit hours in elective requirements*
  - A minimum of 45 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the MBA degree requirements
  - A minimum of 45 credit hours of business coursework
  - All MBA core requirements, the global field experience, custom core requirements, and coordinated elective requirements

*Note: A maximum of 6 credit hours of the Master of Engineering degree elective requirements may be selected from business course offerings (MGMP, MGMT, or MICO) and used to fulfill the requirements for both the MBA and the Master of Engineering degrees.

Students plan their course schedules in consultation with the George R. Brown School of Engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department. Coordinated degrees candidates can fulfill requirements for both degrees within 2 academic years.

For general university requirements, see Graduate Degrees (p. 49). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Candidates in the MBA/Master of Engineering coordinated degrees program must complete all requirements as listed for both degrees, and must apply and be accepted in both degree programs.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Coordinated Master of Engineering Degree</td>
<td>Minimum of 30</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the Coordinated MBA Degree</td>
<td>Minimum of 45</td>
</tr>
</tbody>
</table>

**Coordinated MCS Degree Requirements**

Students in the coordinated MBA/MCS degrees program must complete the Core Requirements, Area of Specialization, and Design Project of the MCS degree program (p. 352) and Coordinated MCS Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MCS Core Requirements</td>
<td>9-12</td>
</tr>
<tr>
<td></td>
<td>MCS Area of Specialization</td>
<td>6-8</td>
</tr>
<tr>
<td></td>
<td>MCS Design Project</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Coordinated MCS Elective Requirements</td>
<td>6-11</td>
</tr>
</tbody>
</table>

Select a minimum of 0-5 credit hours from departmental (COMP) course offerings at the 500-level or above. Select a maximum of 6 credit hours from approved course offerings (MGMP, MGMT, or MICO) from the Jones Graduate School of Business at the 500-level or above.

Total Credit Hours: 30

**Coordinated MBA Degree Requirements**

Students in the coordinated MBA/Master of Engineering degrees program or in the coordinated MBA/Master of Science degree from the Professional Science Master’s (PSM) degrees program must complete the Core Requirements, Global Field Experience, and Custom Core Requirements of the full-time MBA degree program (p. 214) and the Coordinated MBA Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Full-time MBA Core Requirements</td>
<td>25.5</td>
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<tr>
<td></td>
<td>Full-time MBA Global Field Experience Requirement</td>
<td>1.5</td>
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<td></td>
<td>Full-time MBA Custom Core Courses</td>
<td>3-6</td>
</tr>
<tr>
<td></td>
<td>Coordinated MBA Elective Requirements</td>
<td>12-15</td>
</tr>
</tbody>
</table>

Select an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours.  

Total Credit Hours: 45
Footnotes and Additional Information

1. To fulfill the remaining requirements for the coordinated MBA degree program, students must complete an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours. (MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.) The second year of the program is dedicated entirely to MBA elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. MBA electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.

Policies for the MCS/MBA Coordinated Degrees Program

Additional Information

For additional information on these two degrees:

1. Please see the Computer Science website: https://www.cs.rice.edu/
2. Please see the Jones Graduate School of Business website: https://business.rice.edu/

Opportunities for the MCS/MBA Coordinated Degrees Program

Additional Information

For additional information on these two degrees:

1. Please see the Computer Science website: https://www.cs.rice.edu/
2. Please see the Jones Graduate School of Business website: https://business.rice.edu/

Master of Computer Science (MCS) Degree, Online Program

Program Learning Outcomes for the MCS Degree

Upon completing the MCS degree, students will be able to:

1. Solve advanced Computer Science problems. Students will acquire and apply a graduate-level understanding of material in sub-areas of Computer Science.
2. Design and implement complex software systems. Students will demonstrate skill in their design and implementation and function effectively in teams.
3. Communicate effectively to a client and user.

Requirements for the MCS Degree, Online Program

The MCS degree is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MCS degree must complete:

• A minimum of 30 credit hours to satisfy degree requirements.
• A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
• A minimum of 24 credit hours must be taken at Rice University.
• A minimum overall GPA of 2.67 or higher in all Rice coursework.
• A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master's degree.

Students in the MCS degree program are expected to pay full tuition and all fees. No financial aid is available from the university or the department for MCS students. The MCS degree is a terminal degree for students intending to pursue a career in the computer industry.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
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<tr>
<td>COMP 621</td>
<td>SYSTEMS SOFTWARE</td>
<td>3</td>
</tr>
<tr>
<td>COMP 625</td>
<td>COMPUTER ARCHITECTURE</td>
<td>3</td>
</tr>
<tr>
<td>COMP 628</td>
<td>NETWORKS AND SECURITY</td>
<td>3</td>
</tr>
<tr>
<td>COMP 630</td>
<td>DATABASES</td>
<td>3</td>
</tr>
<tr>
<td>COMP 642</td>
<td>MACHINE LEARNING</td>
<td>3</td>
</tr>
<tr>
<td>COMP 643</td>
<td>BIG DATA</td>
<td>3</td>
</tr>
<tr>
<td>COMP 665</td>
<td>DATA VISUALIZATION</td>
<td>3</td>
</tr>
<tr>
<td>COMP 610</td>
<td>SOFTWARE CONSTRUCTION</td>
<td>3</td>
</tr>
<tr>
<td>COMP 613</td>
<td>PROGRAMMING LANGUAGES AND DESIGN</td>
<td>3</td>
</tr>
<tr>
<td>COMP 682</td>
<td>PRINCIPLES OF ALGORITHMS AND SOFTWARE AREA</td>
<td>3</td>
</tr>
</tbody>
</table>

Summary

Total Credit Hours Required for the MCS Degree, Online Program 30

Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 621</td>
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<td>COMP 625</td>
<td>COMPUTER ARCHITECTURE</td>
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<td>COMP 628</td>
<td>NETWORKS AND SECURITY</td>
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<td>COMP 630</td>
<td>DATABASES</td>
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<td>COMP 642</td>
<td>MACHINE LEARNING</td>
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<tr>
<td>COMP 643</td>
<td>BIG DATA</td>
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<td>COMP 665</td>
<td>DATA VISUALIZATION</td>
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<td>COMP 610</td>
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<tr>
<td>COMP 613</td>
<td>PROGRAMMING LANGUAGES AND DESIGN</td>
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<tr>
<td>COMP 682</td>
<td>PRINCIPLES OF ALGORITHMS AND SOFTWARE AREA</td>
<td>3</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1. Computer Architecture (COMP 625), Databases (COMP 630), Programming Languages and Design (COMP 613), and Principles of Algorithms and Software Area (COMP 682) are prerequisites to other required courses and must be taken first.
Program Learning Outcomes for the MS Degree in the field of Computer Science

Upon completing the MS degree in the field of Computer Science, students will be able to:

1. Acquire a solid foundation in Computer Science at the graduate level.
2. Conduct an independent research program.
3. Demonstrate professional skills in both oral and written communication.

Requirements for the MS Degree in the field of Computer Science

The MS degree is a thesis master’s degree. For general university requirements, please see Thesis Master’s Degrees (p. 60). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MS degree in the field of Computer Science must complete:

- A minimum of 30 credit hours at the 500-level or above to satisfy degree requirements.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MS Degree in the field of Computer Science</td>
<td>30</td>
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</tbody>
</table>

The MS degree is a research degree requiring a thesis in addition to coursework. Students enrolled in the PhD program must meet additional requirements before they receive the MS degree. See the PhD program section for further information.

Policies for the MS Degree in the field of Computer Science

Department of Computer Science Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Computer Science publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Computer_Science_Graduate_Handbook.pdf

Opportunities for the MCS Degree, Online Program

Additional Information

For additional helpful information, please refer to the Graduate Study in Computer Science web page at https://www.cs.rice.edu/academics/graduate-studies/ or contact the department at gradapp@rice.edu.

Master of Science (MS) Degree in the field of Computer Science

Additional Information

For additional helpful information, please refer to the Graduate Study in Computer Science web page at https://www.cs.rice.edu/academics/graduate-studies/ or contact the department at gradapp@rice.edu.

Department of Computer Science Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Computer Science publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Computer_Science_Graduate_Handbook.pdf

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.
Opportunities for the MS Degree in the field of Computer Science

Additional Information
For additional helpful information, please refer to the Graduate Study in Computer Science web page at https://www.cs.rice.edu/academics/graduate-studies/ or contact the department at gradapp@rice.edu.

Critical and Cultural Theory

Contact Information
Critical and Cultural Theory
https://3ct.rice.edu/
116 Humanities Building
713-348-4810

Cary E. Wolfe
Director
cewolf@rice.edu

The Center for Critical and Cultural Theory (3CT) was founded to promote intellectual synergy and community among Rice faculty and graduate students whose work is informed by a deep and sustained engagement with critical and cultural theory and their ongoing development and permutations. Though housed in the School of Humanities, and drawing primarily on faculty and students from the Humanities, Social Sciences, and Architecture, 3CT welcomes and encourages faculty and students in any field whose work is framed by an intensive engagement with critical and cultural theory and its methodological innovations.

The program’s primary pedagogical aim is to help equip students to engage ambitious and synthetic research projects of social and cultural significance in a wide range of areas such as new media studies, race and ethnicity studies, science and technology studies, ecocriticism and environmental humanities, animal studies, medical humanities, transnationalism, art and architecture, psychoanalysis, and political and social theory - just to name a few of the more established pursuits in which a strong theoretical background is indispensable. 3CT is therefore committed to the view that rigorous theoretical training enables empowering reflection upon the dominant forms of disciplinary norms, practices, and protocols and their historically and socially constituted nature. 3CT aims to strengthen and enrich how its participants understand and relate to their ‘home’ disciplines.

The Center for Critical and Cultural Theory does not currently offer an academic program at the undergraduate level.

Certificate

- Certificate in Critical and Cultural Theory (p. 360)

Director
Cary E. Wolfe

Professors
Elias K. Bongmba
Dominic C. Boyer
Joseph A. Campana Jr.
April D. DeConick
Elaine Howard Ecklund
James D. Faubion
Rosemary Hennessy
Jeffrey J. Kripal
Lars Lerup
Timothy Morton
Kirsten Ostherr
Albert H. Pope
Alexander T. Regier
Judith Roof
Cary E. Wolfe

Associate Professors
Andrea Ballesteros
Leo Costello
Sarah Ellenzweig
A. Cymene Howe
Betty Joseph
Fabiola López-Durán
Susan Lurie
Nicole Waligora-Davis

Assistant Professors
Scott Colman
Zöe Wool

Steering Committee
James D. Faubion
Timothy Morton
Judith Roof

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
- Course offerings/subject codes: Courses from various subjects may apply towards this program

Center Description and Code
- Center for Critical and Cultural Theory: CCCT

Graduate Certificate Description and Code
- Certificate in Critical and Cultural Theory: CCT

CIP Code and Description ¹
- CCT Certificate: CIP Code/Title: 30.2601 - Cultural Studies/Critical Theory and Analysis

¹ Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Certificate in Critical and Cultural Theory
Program Learning Outcomes for the Certificate in Critical and Cultural Theory

Upon completing the certificate in Critical and Cultural Theory, students will be able to:

1. Demonstrate knowledge of a range of approaches in contemporary critical and cultural theory.
2. Articulate the relationship between concepts and methodologies drawn from critical and cultural theory and the current state of the specific discipline(s) in which they work.
3. Incorporate concepts and methodologies from critical and cultural theory into their own intellectual and academic practice in forms such as oral and written exchange, conference papers, academic publications, and thesis research and writing.

Requirements for the Certificate in Critical and Cultural Theory

The certificate in Critical and Cultural Theory is a graduate certificate. For general university requirements, please see Graduate Certificates (p. 54). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the certificate in Critical and Cultural Theory must complete:

- A minimum of 4 courses (12 credit hours) to satisfy certificate requirements.
- A minimum of 1 course (3 credit hours) outside of the student's home department.
- A minimum of 1 3CT Annual Colloquium.
- No graduate-level coursework from transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the graduate certificate with a minimum grade of B-(2.67 grade points) in each course.

This certificate is not a freestanding degree program; in addition to fulfilling the certificate requirements outlined below, candidates will be required to complete successfully the degree program to which they have been admitted in order to receive this certificate. Upon completion, the certificate is awarded at the same time as the conferral of the student's Rice degree, along with a formal notation on their academic transcript.

The courses listed below satisfy the requirements for this certificate. In certain instances, courses not on this official list may be substituted upon approval of the certificate's academic advisor, or where applicable, the Program Director. Course substitutions must be formally applied and entered into Degree Works by the certificate’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Certificate in Critical and Cultural Theory</td>
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Certificate Requirements

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<th>Title</th>
<th>Credit Hours</th>
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<td>Required Courses 1</td>
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<td>Select a minimum of 4 courses (at least 12 credit hours) from the following:</td>
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<tr>
<td>ANTH 507</td>
<td>ANTHROPOLOGICAL DIRECTIONS FROM SECOND WORLD WAR TO PRESENT</td>
<td></td>
</tr>
<tr>
<td>ANTH 508</td>
<td>THE ANTHROPOLOGY OF THE HISTORICAL IMAGINATION</td>
<td></td>
</tr>
<tr>
<td>ANTH 548</td>
<td>ANTHROPOLOGIES OF NATURE</td>
<td></td>
</tr>
<tr>
<td>ANTH 549</td>
<td>THE ANTHROPOLOGY OF ETHICS</td>
<td></td>
</tr>
<tr>
<td>ANTH 554 / SWGS 554</td>
<td>ILLNESS, DISABILITY, AND THE GENDERED BODY</td>
<td></td>
</tr>
<tr>
<td>ANTH 615</td>
<td>THEORIES OF MODERNITY/POSTMODERNITY</td>
<td></td>
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<tr>
<td>ANTH 616</td>
<td>CLASSICAL SOCIAL THEORY</td>
<td></td>
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<tr>
<td>ANTH 617</td>
<td>ONTOLOGIES, VITALITIES, THINGS</td>
<td></td>
</tr>
<tr>
<td>ANTH 648</td>
<td>PHENOMENOLOGICAL ANTHROPOLOGY</td>
<td></td>
</tr>
<tr>
<td>ARCH 612 / HART 612</td>
<td>ADVANCED SEMINAR IN ARCHITECTURE</td>
<td></td>
</tr>
<tr>
<td>ARCH 631</td>
<td>URBANISM I: THE CITY THEORETICALLY CONSIDERED</td>
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<tr>
<td>ARCH 633</td>
<td>THE CULLINAN SEMINAR</td>
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<td>ARCH 651</td>
<td>PRESENT FUTURE SEMINAR</td>
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<tr>
<td>ENGL 525 / HART 518</td>
<td>LITERATURE AND VISUAL ART</td>
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<td>ENGL 527</td>
<td>STUDIES IN RENAISSANCE LITERATURE</td>
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<td>ENGL 537</td>
<td>19TH CENTURY STUDIES</td>
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<tr>
<td>ENGL 570</td>
<td>AFRICAN AMERICAN STUDIES</td>
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<td>ENGL 577</td>
<td>EMERGENT MEDIA: TECHNOLOGIES, NETWORKS, CULTURE</td>
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<tr>
<td>ENGL 581 / SWGS 581</td>
<td>CULTURAL STUDIES: CONTEMPORARY LITERATURE, CULTURE AND POLITICS</td>
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<tr>
<td>ENGL 591</td>
<td>STUDIES IN LITERATURE AND OTHER DISCIPLINES</td>
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<tr>
<td>ENGL 592</td>
<td>STUDIES IN MODERNISM</td>
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</tr>
<tr>
<td>ENGL 594 / HART 594</td>
<td>STUDIES IN CONTEMPORARY LITERATURE AND CULTURE</td>
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<tr>
<td>ENGL 596</td>
<td>STUDIES IN MAJOR AMERICAN AUTHORS</td>
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<tr>
<td>ENGL 599</td>
<td>STUDIES IN LITERARY THEORY</td>
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<tr>
<td>HART 504</td>
<td>INDEPENDENT STUDY</td>
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<tr>
<td>HART 566</td>
<td>LATIN AMERICAN BODIES: ON MODERNISM</td>
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<tr>
<td>HART 568</td>
<td>FROM THE SUBLIME TO THE SUSTAINABLE: ART, ARCHITECTURE AND NATURE</td>
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<tr>
<td>HART 590</td>
<td>METHODS OF ART HISTORY</td>
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<tr>
<td>HURC 502</td>
<td>HRC MELLON RESEARCH SEMINAR</td>
<td></td>
</tr>
</tbody>
</table>
Footnotes and Additional Information
1 Required core courses for other graduate degree or certificate programs may not count toward the minimum of 4 courses requirement. However, elective courses used to fulfill requirements for other graduate degree or certificate programs at Rice may count toward this requirement. The Center recommends that students interested in applying for the certificate seek approval for courses as they are taken. Students may petition the Center for approval of courses not listed above.
2 HURC 602 is taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade. As a S/U course, it does not apply to the requirement of a minimum grade of B- (2.67 grade points) in each required course.
3 The 3CT Annual Colloquium consists of two modules: a lecture and seminar given by a visiting scholar in the Spring semester and a second lecture/seminar module in the Fall semester. Students need not complete the modules in consecutive semesters, but must complete two modules within three years from the date of acceptance into the program.

Policies for the Certificate in Critical and Cultural Theory

Application Procedures
1. Status: The Certificate in Critical and Cultural Theory (CCT) program is open only to students already enrolled and in good academic standing in a Rice graduate-level degree-granting program.
2. Application: Students must apply for admission to the Certificate program by the end of the registration period for Fall semester each year. The application should consist of a vita, a 2-3 page single-spaced description of the student’s research interests, of the primary theoretical commitments that frame those interests, and how the research intervenes in the current state of critical and cultural theory. A brief (one or two paragraph) letter of endorsement from the faculty member directing the student’s research is also required. Only students in good academic standing in their home departments may apply. Students will be informed promptly early in the Fall semester each year of their acceptance, and students not accepted may reapply once to the Certificate program.

Program Restrictions and Exclusions
Students pursuing the certificate in Critical and Cultural Theory should be aware of the following program restriction:

• Graduate students may declare their intent to pursue a university certificate only after they have first been admitted into a graduate-level Rice degree-granting program.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program's advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines
Students pursuing the certificate in Critical and Cultural Theory should be aware of the following program-specific transfer credit guidelines:

• The Certificate in Critical and Cultural Theory (CCT) program does not allow any of its course requirements to be met by transfer credit.

Additional Information
For additional information, please see the Center for Critical and Cultural Theory website: https://3ct.rice.edu/

Opportunities for the Certificate in Critical and Cultural Theory

Additional Information
For additional information, please see the Center for Critical and Cultural Theory website: https://3ct.rice.edu/

See https://humanities.rice.edu/student-life (https://humanities.rice.edu/student-life/) for tables of fellowships, prizes, and internships/practica that may be relevant to this program.

Data Science

Contact Information
Data Science
https://datascience.rice.edu

Christopher M. Jermaine
Program Director
christopher.m.jermaine@rice.edu

Rudy Guerra
Minor Advisor
rguerra@rice.edu

The minor in Data Science is an interdisciplinary undergraduate program administered by the George R. Brown School of Engineering.

The Data Science minor curriculum emphasizes doing data science and aims to teach students best practices in the field. Students learn technical competencies by taking core courses in statistics, computer science, and machine learning. This knowledge base is complemented with courses that inform the student of the broader impact of the information age on human activity, including discussions on data privacy, ethics, reproducibility, communication, decision-making, and data visualization. This program culminates with a capstone experience whereby students work in teams to complete a semester-long data science project selected from a variety of disciplines and industries. The curriculum is summarized in terms of four foundational competencies: quantitative, communications, ethics, and substantive application.

Minor

• Minor in Data Science (p. 363)

Data Science does not currently offer an academic program at the graduate level.
Co-Chairs
Frederick L. Oswald, Psychological Sciences
Devika Subramanian, Computer Science, Electrical and Computer Engineering

Program Director
Christopher M. Jermaine, Computer Science

Minor Advisor
Rudy Guerra, Statistics

Steering Committee
David Alexander, Physics and Astronomy
Rudy Guerra, Statistics
Matthias Heinkenschloss, Computational and Applied Mathematics
Christopher M. Jermaine, Computer Science
Luay K. Nakhleh, Computer Science, Biochemistry and Cell Biology
Barbara Ostdiek, Finance and Statistics
Kirsten Ostherr, English
Frederick L. Oswald, Psychological Sciences
Renata Ramos, Bioengineering
Devika Subramanian, Computer Science, Electrical and Computer Engineering
Marina Vannucci, Statistics
Ashok Veeraraghavan, Electrical and Computer Engineering
Jennifer Wilson, Program in Writing and Communication

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: DSCI

Program Description and Code
• Data Science: DSCI

Undergraduate Minor Description and Code
• Minor in Data Science: DSCI

CIP Code and Description
• DSCI Minor: CIP Code/Title: 27.0304 - Computational and Applied Mathematics

1 Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Minor in Data Science

Program Learning Outcomes for the Minor in Data Science
Upon completing the minor in Data Science, students will be able to:

1. Formulate questions in a domain that can be answered with data.
2. Use tools and algorithms from statistics, applied mathematics, and computer science for analyses.
3. Visualize, interpret, and explain results cogently, accurately, and persuasively.
4. Understand the underlying social, political, and ethical contexts that are importantly and inevitably tied to data-driven decision-making.

Requirements for the Minor in Data Science
Students pursuing the minor in Data Science must complete:

• A minimum of 9 courses (27-30 credit hours, depending on course selection) to satisfy minor requirements.
• A minimum of 6 courses (18-20 credit hours, depending on course selection) taken at the 300-level or above.
• 3 courses (9-10 credit hours, depending on course selection) to satisfy Prerequisites.
• 5 courses (15-17 credit hours, depending on course selection) to satisfy the Core Requirements.
• A capstone project (3 credit hours).

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the minor’s Official Certifier (https://registrar.rice.edu/facstaff/degeworks/officialcertifier)). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

Total Credit Hours Required for the Minor in Data Science 27-30

Minor Requirements

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
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<td>DSCI</td>
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</table>

Prerequisites

Mathematics

<table>
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<tr>
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<th>Title</th>
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</tr>
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<tbody>
<tr>
<td>MATH 101</td>
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<tr>
<td>or MATH 105AP/OTH CREDIT IN CALCULUS I</td>
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<td></td>
</tr>
<tr>
<td>or MATH 211ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA</td>
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Programming

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>COMP 140</td>
<td>COMPUTATIONAL THINKING</td>
<td>3-4</td>
</tr>
<tr>
<td>or CAAM 21</td>
<td>INTRODUCTION TO ENGINEERING COMPUTATION</td>
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</table>

Core Requirements

<table>
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<tr>
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</tr>
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<tbody>
<tr>
<td>DSCI 301</td>
<td>PROBABILITY AND STATISTICS FOR DATA SCIENCE</td>
<td>3-4</td>
</tr>
<tr>
<td>or STAT 310</td>
<td>PROBABILITY AND STATISTICS</td>
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</tr>
</tbody>
</table>
DSCI 302 INTRODUCTION TO DATA SCIENCE TOOLS AND MODELS 2 3
or COMP 330 TOOLS AND MODELS FOR DATA SCIENCE 3
DSCI 303 MACHINE LEARNING FOR DATA SCIENCE 3-4
or STAT 413 INTRODUCTION TO STATISTICAL MACHINE LEARNING 3
or COMP 540 STATISTICAL MACHINE LEARNING 3
DSCI 304 INTRODUCTION TO EFFECTIVE DATA VISUALIZATION 3
DSCI 305 DATA, ETHICS, AND SOCIETY 3
Capstone Requirement
STAT 435 DATA SCIENCE PROJECTS 3

Footnotes and Additional Information
1 Students may substitute a higher-level MATH course for the MATH 101/MATH 105/MATH 211 and MATH 102/MATH 106/MATH 212 prerequisites.
2 As a programming prerequisite, COMP 140 is highly recommended (due to its inclusion of Python programming in its course material). Students will only be able to register for DSCI 302 if they have COMP 140 in their academic history, or in exceptional circumstances, by permission of the DSCI 302 instructor.
3 In certain situations the DSCI Official Certifier may approve various and specific course substitutions.

Policies for the Minor in Data Science
Program Restrictions and Exclusions
Students pursuing the minor in Data Science should be aware of the following program restrictions:

• As noted in Majors, Minors, and Certificates (p. 11), i.) students may declare their intent to pursue a minor only after they have first declared a major; and ii.) students may not major and minor in the same subject.

• Students pursuing the major in Statistics and the minor in Data Science may fulfill the Data Science minor requirements according to the following guidelines: i.) DSCI 301 may be fulfilled by STAT 310 or STAT 315; ii.) DSCI 302 may be used as the STAT major’s Advanced Computing elective; and iii.) DSCI 303 must be substituted with STAT 413.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines
Students pursuing the minor in Data Science should be aware of the following program-specific transfer credit guidelines:

• Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information
For additional information, please see the Data Science website: https://datascience.rice.edu/

Opportunities for the Minor in Data Science
Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Earth, Environmental, and Planetary Sciences
Contact Information
Earth, Environmental, and Planetary Sciences
https://earthscience.rice.edu/
105 Keith Wiess Geological Labs
713-348-4880
Cin-Ty Lee
Department Chair
citlee@rice.edu

The Department of Earth, Environmental, and Planetary Sciences offers students the opportunity to work with open-ended, complex, and highly interconnected problems, giving them the skills to become leaders and entrepreneurs in the real world - field and laboratory opportunities abound! Future opportunities in the field include academia, running a business, or working with and for societal issues. Field and laboratory opportunities abound. Many students also present their own research projects at national and international professional conferences. Faculty members have joint research projects with scientists at over 100 institutions worldwide, giving an international scope to the department with research programs on all the continents, in all of the oceans, and on four planets. Their research interests span a wide range of topics and fall broadly under two principal research themes: Earth Structure and Dynamics, and Earth Systems Science. Many departmental research programs involve substantial field activities, both on land and at sea. Similarly, several course offerings include field trips to a variety of destinations and geologic settings.

All undergraduate majors in earth science take a five-course core sequence, typically in the sophomore and junior years, on earth processes, materials, observations, and history. Majors also take a course in geological field techniques and introductory courses in mathematics, chemistry, and in many cases, physics and biology.

The selection of upper-division courses and additional science courses depends on which degree, BA or BS, and, for the BS degree, which...
of five areas of specialization are chosen by the student: geology, geochemistry, geophysics, environmental earth science, or an area of specialization designed by the student subject to the approval of the department undergraduate advisor. The program of study typically includes experience with analytical equipment, computer systems, and fieldwork.

The BS degree should be chosen by students planning a career or further study in earth science or a related field. The BA degree has fewer requirements and might be a good choice for students planning a career or further study to which earth science is incidental.

Bachelor's Programs
- Bachelor of Arts (BA) Degree with a Major in Earth Science (p. 366)
- Bachelor of Science (BS) Degree with a Major in Earth Science (p. 368)

Master's Programs
- Master of Science (MS) Degree in the field of Earth Science (p. 374)

Doctoral Program
- Doctor of Philosophy (PhD) Degree in the field of Earth Science (p. 373)

Chair
Cin-Ty Lee

Professors
Rajdeep Dasgupta
Gerald R. Dickens
André W. Droxler
Richard G. Gordon
Cin-Ty Lee
Adrian Lenardic
Alan R. Levander
Caroline A. Masiello
Julia K. Morgan
Fenglin Niu
Dale S. Sawyer
Colin A. Zelt

Associate Professor
Helge Gonnermann

Assistant Professors
Sylvia Dee
Melodie French
Jeffrey Nittrouer
Kirsten Siebach
Mark Torres
Laurence Yeung

Professors Emeriti
John B. Anderson
Albert W. Bally
Dieter Heymann
William P. Leeman
Andreas Lüttinge
Manik Talwani
Peter R. Vail

Lecturers
Kenneth Abdullah
Vitor dos Santos Abreu
Gary G. Gray
Eric Scott
Robert R. Stewart
John R. Sumner

Wiess Visiting Scholars
Francis Albarede
Yehuda Ben-Zion
Janne Blichert-Toft

Adjunct Faculty
Kevin Biddle
K. K. Bissada
Christian Davies
Jeffrey J. Dravis
Brandon Dugan
Paul M. ’Mitch’ Harris
N. Ross Hill
Stephen J. Mackwell
Patrick J. McGovern
Chin Man William Mok
David L. Olgaard
James Pindell
Malcolm Ross
Kurt Rudolph
Stephanie S. Shipp
Lori Summa
Robert Wegner

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
- Course offerings/subject code: ESCI

Department Description and Code
- Earth, Environmental, and Planetary Sciences: EEPS

Undergraduate Degree Description and Code
- Bachelor of Arts degree: BA
- Bachelor of Science degree: BS

Undergraduate Major Description and Code
- Major in Earth Science (for both the BA and BS degrees): ESCI

Graduate Degree Descriptions and Codes
- Master of Science degree: MS
- Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code
- Degree Program in Earth Science: ESCI
Bachelor of Arts (BA) Degree with a Major in Earth Science

Program Learning Outcomes for the BA Degree with a Major in Earth Science

Upon completing the BA degree with a major in Earth Science, students will be able to:

1. Demonstrate comprehensive knowledge of how the Earth system operates over geologic and modern timescales.
2. Demonstrate the ability to make and record observations in the field, and to analyze and interpret these data in the context of the geologic history.
3. Demonstrate effective oral and written communication skills.
4. Demonstrate the ability to apply critical thinking and problem-solving skills to evaluate published research in the Earth, Environmental and Planetary sciences.

Requirements for the BA Degree with a Major in Earth Science

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Earth Science must complete:

- A minimum of 24 courses (60-63 credit hours, depending on course selection) to satisfy major requirements.
- A minimum of 120-123 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 9 courses (31 credit hours) taken at the 300-level or above.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier: https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/.) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<tr>
<td></td>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Earth Science</td>
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Degree Requirements

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<td>MATH 102</td>
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<td>or MATH 106</td>
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<td>CHEM 121</td>
<td>GENERAL CHEMISTRY I</td>
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<tr>
<td>or CHEM 111</td>
<td>AP/OTH CREDIT IN GENERAL CHEMISTRY I</td>
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<td>GENERAL CHEMISTRY LABORATORY I</td>
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<td>or CHEM 113</td>
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<td>or CHEM 112</td>
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<td>or CHEM 114</td>
<td>AP/OTH CREDIT IN GENERAL CHEMISTRY LAB II</td>
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<td>ESCI 115</td>
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<td>ESCI 321</td>
<td>EARTH SYSTEM EVOLUTION AND CYCLES</td>
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<td>ESCI 322</td>
<td>EARTH CHEMISTRY AND MATERIALS</td>
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<td>ESCI 323</td>
<td>EARTH STRUCTURE AND DEFORMATION</td>
<td>4</td>
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<td>ESCI 324</td>
<td>EARTH’S INTERIOR</td>
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<tr>
<td>ESCI 334</td>
<td>GEOLOGICAL TECHNIQUES</td>
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Elective Requirements

Directed Electives in Fields Outside Earth Science

Select 2-4 courses from either Group A or Group B: 6-8

Group A

Select 1 from the following:

<table>
<thead>
<tr>
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<th>Credit Hours</th>
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<tbody>
<tr>
<td>BIOL 201 &amp; EBIO 202</td>
<td>INTRODUCTORY BIOLOGY I &amp; INTRODUCTORY BIOLOGY II</td>
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</tr>
<tr>
<td>PHYS 101 &amp; PHYS 103 &amp; PHYS 102 &amp; PHYS 104</td>
<td>MECHANICS (WITH LAB), and MECHANICS DISCUSSION, and ELECTRICITY &amp; MAGNETISM (WITH LAB), and ELECTRICITY AND MAGNETISM DISCUSSION</td>
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<tr>
<td>PHYS 125 &amp; PHYS 126</td>
<td>GENERAL PHYSICS (WITH LAB), and GENERAL PHYSICS II (WITH LAB)</td>
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</table>

Group B

Select 2 from the following Option Categories:

Option Category - 1

Select 1 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>PHYS 101 &amp; PHYS 103</td>
<td>MECHANICS (WITH LAB), and MECHANICS DISCUSSION</td>
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</tr>
<tr>
<td>PHYS 125</td>
<td>GENERAL PHYSICS (WITH LAB)</td>
<td></td>
</tr>
<tr>
<td>PHYS 102 &amp; PHYS 104</td>
<td>ELECTRICITY &amp; MAGNETISM (WITH LAB), and ELECTRICITY AND MAGNETISM DISCUSSION</td>
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</tr>
<tr>
<td>PHYS 126</td>
<td>GENERAL PHYSICS II (WITH LAB)</td>
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</tbody>
</table>

Option Category - 2
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

**Departmental Transfer Credit Guidelines**

Students pursuing the major in Earth Science should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

### Additional Information

For additional information, please see the Earth Science major page, on the Department of Earth, Environmental, and Planetary Sciences website: https://earthscience.rice.edu/academics/undergraduate-program/

### Opportunities for the BA Degree with a Major in Earth Science

#### Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

#### Honors Research

Undergraduates are encouraged to embark on an undergraduate honors thesis. The purpose of the honors thesis is for students to develop and demonstrate their creative and independent research potential. Students are recommended to begin in the fall of their junior year to provide ample time for research projects to be developed, executed, and written. Students are expected to enroll in at least two semesters of the course ESCI 481, spanning their senior year. Juniors who have identified a research project and mentor can also enroll in ESCI 481. Students should sign up for ESCI 481 for 3 credits.

#### Criteria for Participating in Undergraduate Honors Thesis Research

- Strong performance in ESCI courses, in particular, ESCI 321, ESCI 322, ESCI 323, ESCI 324, and ESCI 334
- A grade of A- or better in ESCI 481
- Letter of recommendation of a faculty research mentor
- Research proposal

#### Requirements for Completing an Undergraduate Honors Thesis

**Spring Semester of Junior Year**

Each honors thesis candidate should choose a research topic, identify a faculty research advisor, and initiate independent research. The student should select a thesis committee, consisting of a faculty advisor, one member of the honors thesis committee, and one other faculty member of their choosing. Candidates are expected to turn in a preliminary written proposal (2 pages) at the end of their spring semester, accompanied by a formal application, both of which will be evaluated by the honors thesis committee for consideration of acceptance into the honors thesis program in their senior year. Required course:

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESCI 401</td>
<td>SEMINAR: UNDERGRADUATE HONORS THESIS</td>
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</table>

And if they have research project and mentor identified, they can also take:

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<thead>
<tr>
<th>Code</th>
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<tr>
<td>ESCI 481</td>
<td>UNDERGRADUATE RESEARCH IN EARTH SCIENCE</td>
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</tbody>
</table>

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**Policies for the BA Degree with a Major in Earth Science**

**Transfer Credit**

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.
Fall Semester of Senior Year
Students accepted into the honors thesis program continue to develop and refine their proposed research in concert with their research advisor and thesis committee. Students participate in meetings with other honors thesis candidates to discuss basic research protocols and philosophies, and meet independently with their chosen scientific advisor, and generate data, experiments or models. Students will give oral presentations of their research proposals in public by mid-semester, in the presence of their examining committee. At the end of the semester, students must submit final versions of their proposals, describing motivation, hypothesis, methodology, and preliminary results. The honors thesis committee will evaluate the proposals, and if approved, students can continue in the honors thesis program. Required courses:

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>ESCI 401</td>
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</tr>
<tr>
<td>ESCI 481</td>
<td>UNDERGRADUATE RESEARCH IN EARTH SCIENCE</td>
<td>3</td>
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</tbody>
</table>

Spring Semester of Senior Year
Students continue and complete their research. A mid-semester progress report must be submitted to the thesis committee for feedback. At the end of the spring semester, students submit their final theses, and give public oral exit talks. To complete the honors thesis program, student theses must be approved by the honors thesis committee. Required courses:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>ESCI 401</td>
<td>SEMINAR: UNDERGRADUATE HONORS THESIS</td>
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<tr>
<td>ESCI 481</td>
<td>UNDERGRADUATE RESEARCH IN EARTH SCIENCE</td>
<td>3</td>
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</tbody>
</table>

Further details about the program, and expectations and criteria for the thesis proposal and final thesis can be found on the Department of Earth, Environmental, and Planetary Sciences website [https://earthscience.rice.edu/academics/undergraduate-program/honors-thesis/](https://earthscience.rice.edu/academics/undergraduate-program/honors-thesis/).

Application Process
Students must apply and be accepted to participate in the senior honors research program. The application form can be downloaded from Department of Earth, Environmental, and Planetary Sciences website [https://earthscience.rice.edu/academics/undergraduate-program/honors-thesis/](https://earthscience.rice.edu/academics/undergraduate-program/honors-thesis/), and should be submitted along with a ~two page thesis proposal at the end of the spring semester of the junior year. Students will be informed of their acceptance into the honors thesis program before the start of the following fall semester.

Other Points of Consideration
Students who are accepted into the 'RUSP Rice Undergraduate Scholars Program' can substitute ESCI 481 courses for semesters 2 and 3 with HONS 470 and HONS 471. However, the students will have to meet all other requirements of the honors thesis set by the department of the honors thesis set by the department.

Other expectations, conditions, and opportunities related to carrying out an Earth Science Honors Thesis can be found on the Department of Earth, Environmental, and Planetary Sciences website [https://earthscience.rice.edu/](https://earthscience.rice.edu/).

Bachelor of Science (BS) Degree with a Major in Earth Science

Program Learning Outcomes for the BS Degree with a Major in Earth Science

Upon completing the BS degree with a major in Earth Science, students will be able to:

1. Demonstrate a comprehensive knowledge of the structure of the Earth from core to atmosphere, and how it has changed over time.
2. Demonstrate the ability to make and record observations in the field, and to analyze and interpret these data in the context of the geologic history.
3. Demonstrate effective oral and written communication skills.
4. Demonstrate the ability to apply critical thinking and problem-solving skills to evaluate published research in the Earth, Environmental and Planetary sciences.
5. Demonstrate an understanding of the scientific method and its application to the study of Earth, Environmental and Planetary sciences.

Requirements for the BS Degree with a Major in Earth Science

For general university requirements, see [Graduation Requirements](#) (p. 26). Students pursuing the BS degree with a major in Earth Science must complete:

- A minimum of 20-22 courses (69-73 credit hours), depending on course selection, to satisfy major requirements.
- A minimum of 129-133 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 8-12 courses (28-40 credit hours), depending on course selection, taken at the 300-level or above.
- The requirements for one area of specialization (see below for areas of specialization). The BS degree with a major in Earth Science offers five areas of specialization:
  - Environmental Earth Science (p. 370), or
  - Geochemistry (p. 370), or
  - Geology (p. 370), or
  - Geophysics (p. 371), or
  - Self-Designed (p. 371).

Bachelor of Science (BS) Degree with a Major in Earth Science
The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor, or where applicable, the department's Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<th>Code</th>
<th>Title</th>
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<tr>
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Degree Requirements

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<th>Title</th>
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<tbody>
<tr>
<td></td>
<td><strong>Core Requirements</strong></td>
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</tr>
<tr>
<td>MATH 101</td>
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<td>or CHEM 111</td>
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<td>PHYS 112</td>
<td>HONORS ELECTRICITY &amp; MAGNETISM (WITH LAB)</td>
<td></td>
</tr>
<tr>
<td>ESCI 101 /</td>
<td>THE EARTH</td>
<td>3 or 4</td>
</tr>
<tr>
<td>ENST 101</td>
<td>or INTRODUCTION TO THE EARTH</td>
<td></td>
</tr>
<tr>
<td>ESCI 321</td>
<td>EARTH SYSTEM EVOLUTION AND CYCLES</td>
<td>4</td>
</tr>
<tr>
<td>ESCI 322</td>
<td>EARTH CHEMISTRY AND MATERIALS</td>
<td>4</td>
</tr>
<tr>
<td>ESCI 323</td>
<td>EARTH STRUCTURE AND DEFORMATION</td>
<td>4</td>
</tr>
<tr>
<td>ESCI 324</td>
<td>EARTH'S INTERIOR</td>
<td>4</td>
</tr>
<tr>
<td>ESCI 334</td>
<td>GEOLOGICAL TECHNIQUES</td>
<td>3</td>
</tr>
</tbody>
</table>

Area of Specialization

Select 1 from the following Areas of Specialization (see Areas of Specialization below):

- Environmental Earth Science
- Geochemistry
- Geology
- Geophysics
- Self-Designed

Total Credit Hours Required for the Major in Earth Science: 68-73

University Graduation Requirements (p. 26): 60

Total Credit Hours: 128-133

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 CHEM 121 or CHEM 111 can be satisfied by completing CHEM 151; CHEM 123 or CHEM 113 can be satisfied by completing CHEM 153; CHEM 122 or CHEM 112 can be satisfied by completing CHEM 152; CHEM 124 or CHEM 114 can be satisfied by completing CHEM 154.

Areas of Specialization

To fulfill the remaining Earth Science major requirements, students must complete the requirements for one of the following areas of specialization.

Area of Specialization: Environmental Earth Science

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC 201</td>
<td>INTRODUCTORY BIOLOGY I</td>
<td>3</td>
</tr>
<tr>
<td>CAAM 210</td>
<td>INTRODUCTION TO ENGINEERING COMPUTATION</td>
<td>3</td>
</tr>
<tr>
<td>ESCI 391</td>
<td>EARTH SCIENCE FIELD EXPERIENCE (at least 3 credit hours)</td>
<td>3</td>
</tr>
<tr>
<td>MATH 211</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA</td>
<td>3</td>
</tr>
<tr>
<td>STAT 280</td>
<td>ELEMENTARY APPLIED STATISTICS</td>
<td>4</td>
</tr>
</tbody>
</table>

Elective Requirements

Select 3-4 courses from the following with a minimum of 2 courses (6 credit hours) taken from ESCI course offerings:

CEVE 401 | CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE LAB | 3 |
CEVE 406 / ENST 406 | INTRODUCTION TO ENVIRONMENTAL LAW | 3 |
CEVE 412 | HYDROLOGY AND WATER RESOURCES ENGINEERING | 3 |
CEVE 434 | FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT | 3 |
CHEM 211 | ORGANIC CHEMISTRY I | 3 |
CHEM 213 | ORGANIC CHEMISTRY DISCUSSION | 3 |
EBIO 202 | INTRODUCTORY BIOLOGY II | 3 |
ESCI 340 / EBIO 340 / ENST 340 | GLOBAL BIOGEOCHEMICAL CYCLES | 3 |
ESCI 410 | OPTICAL MINERALOGY AND PETROGRAPHY | 3 |
ESCI 418 | QUANTITATIVE HYDROGEOLOGY | 3 |
### Geochemistry Area of Specialization

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required Courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOC 201</td>
<td>INTRODUCTORY BIOLOGY I</td>
<td>3</td>
</tr>
<tr>
<td>MATH 211</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA</td>
<td>3</td>
</tr>
<tr>
<td>ESCI 391</td>
<td>EARTH SCIENCE FIELD EXPERIENCE (at least 3 credit hours)</td>
<td>3</td>
</tr>
</tbody>
</table>

**Elective Requirements**

Upper-Level Electives (ESCI course offerings)

Select 4 courses from the following: 12

- ESCI 340 / EBIO 340 / ENST 340: GLOBAL BIOGEOCHEMICAL CYCLES
- ESCI 410: OPTICAL MINERALOGY AND PETROGRAPHY
- ESCI 411: ADVANCED PETROLOGY II
- ESCI 412: ADVANCED PETROLOGY
- ESCI 419: CHARACTERIZATION OF EARTH, ENVIRONMENTAL, AND PLANETARY MATERIALS
- ESCI 421: PALEOCEANOGRAPHY
- ESCI 425 / CHEM 425 / ENST 425: ORGANIC GEOCHEMISTRY
- ESCI 426: INTRODUCTION TO SEISMIC INTERPRETATION: STRUCTURAL STYLES AND SEISMIC STRATIGRAPHY
- ESCI 429: MAGMATIC, VOLCANIC AND HYDROTHERMAL PROCESSES
- ESCI 430: TRACE-ELEMENT AND ISOTOPE GEOCHEMISTRY FOR EARTH AND ENVIRONMENTAL SCIENCE
- ESCI 472: EARTH SYSTEMS MODELING: NUMERICAL TECHNIQUES AND APPLICATIONS

Select 2-4 courses from the following or any ESCI course offerings at the 300-level or above: 6

- BIOC 211: INTERMEDIATE EXPERIMENTAL BIOSCIENCES
- CAAM 210: INTRODUCTION TO ENGINEERING COMPUTATION
- CEVE 401: CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE LAB
- CEVE 434: FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT
- CEVE 550: ENVIRONMENTAL ORGANIC CHEMISTRY
- CHEM 211: ORGANIC CHEMISTRY I & CHEM 213 and ORGANIC CHEMISTRY DISCUSSION
- CHEM 212: ORGANIC CHEMISTRY II & CHEM 214 and ORGANIC CHEM DISCUSSION II
- CHEM 415: CHEMICAL KINETICS AND DYNAMICS
- CHEM 495: TRANSITION METAL CHEMISTRY
- EBIO 202: INTRODUCTORY BIOLOGY II
- MATH 212: MULTIVARIABLE CALCULUS

### Geology Area of Specialization

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required Courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 211</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA</td>
<td>3</td>
</tr>
<tr>
<td>ESCI 390</td>
<td>GEOLOGY FIELD CAMP (at least 3 credit hours)</td>
<td>3</td>
</tr>
<tr>
<td>CAAM 210</td>
<td>INTRODUCTION TO ENGINEERING COMPUTATION</td>
<td>3</td>
</tr>
<tr>
<td>ESCI 412</td>
<td>ADVANCED PETROLOGY</td>
<td>3</td>
</tr>
</tbody>
</table>

Select 2 courses from the following: 6

- ESCI 421: PALEOCEANOGRAPHY
- ESCI 427: SEQUENCE STRATIGRAPHY
- ESCI 431: GEOMORPHOLOGY
- ESCI 435: MECHANICS OF SEDIMENT TRANSPORT
- ESCI 504: SILICICLASTIC DEPOSITIONAL SYSTEMS
- ESCI 506: CARBONATE DEPOSITIONAL SYSTEMS
- ESCI 552: MARINE GEOLOGY SYSTEMS
### Group B

Select 2 courses from the following: 6

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESCI 410</td>
<td>OPTICAL MINERALOGY AND PETROGRAPHY</td>
<td></td>
</tr>
<tr>
<td>ESCI 411</td>
<td>ADVANCED PETROLOGY II</td>
<td></td>
</tr>
<tr>
<td>ESCI 418/CEVE 418</td>
<td>QUANTITATIVE HYDROGEOLOGY</td>
<td></td>
</tr>
<tr>
<td>ESCI 419</td>
<td>CHARACTERIZATION OF EARTH, ENVIRONMENTAL, AND PLANETARY MATERIALS</td>
<td></td>
</tr>
<tr>
<td>ESCI 426</td>
<td>INTRODUCTION TO SEISMIC INTERPRETATION: STRUCTURAL STYLES AND SEISMIC STRATIGRAPHY</td>
<td></td>
</tr>
<tr>
<td>ESCI 429</td>
<td>MAGMATIC, VOLCANIC AND HYDROTHERMAL PROCESSES</td>
<td></td>
</tr>
<tr>
<td>ESCI 442</td>
<td>EXPLORATION GEOPHYSICS</td>
<td></td>
</tr>
<tr>
<td>ESCI 463</td>
<td>STRUCTURE AND EVOLUTION OF TECTONIC SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>ESCI 464</td>
<td>GLOBAL TECTONICS</td>
<td></td>
</tr>
<tr>
<td>ESCI 467</td>
<td>GEOMECHANICS</td>
<td></td>
</tr>
<tr>
<td>ESCI 472</td>
<td>EARTH SYSTEMS MODELING: NUMERICAL TECHNIQUES AND APPLICATIONS</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credit Hours**: 24

### Area of Specialization: Geophysics

Courses chosen from the list of ESCI course offerings must be 3 credit hours or more.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Required Courses</strong></td>
<td></td>
</tr>
<tr>
<td>CAAM 210</td>
<td>INTRODUCTION TO ENGINEERING COMPUTATION</td>
<td>3</td>
</tr>
<tr>
<td>ESCI 391</td>
<td>EARTH SCIENCE FIELD EXPERIENCE (at least 3 credit hours)</td>
<td>3</td>
</tr>
<tr>
<td>MATH 211</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA</td>
<td>3</td>
</tr>
<tr>
<td>MATH 212</td>
<td>MULTIVARIABLE CALCULUS</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 201</td>
<td>WAVES, LIGHT, AND HEAT</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 231</td>
<td>ELEMENTARY PHYSICS LAB</td>
<td>1</td>
</tr>
</tbody>
</table>

**Total Credit Hours**: 24

### Elective Requirements

Upper-Level Electives (ESCI course offerings)

Select 2 courses from the following: 6

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESCI 418/CEVE 418</td>
<td>QUANTITATIVE HYDROGEOLOGY</td>
<td></td>
</tr>
<tr>
<td>ESCI 426</td>
<td>INTRODUCTION TO SEISMIC INTERPRETATION: STRUCTURAL STYLES AND SEISMIC STRATIGRAPHY</td>
<td></td>
</tr>
<tr>
<td>ESCI 440</td>
<td>GEOPHYSICAL DATA ANALYSIS: DIGITAL SIGNAL PROCESSING</td>
<td></td>
</tr>
<tr>
<td>ESCI 441</td>
<td>GEOPHYSICAL DATA ANALYSIS: INVERSE METHODS</td>
<td></td>
</tr>
<tr>
<td>ESCI 442</td>
<td>EXPLORATION GEOPHYSICS</td>
<td></td>
</tr>
<tr>
<td>ESCI 450/CEVE 450</td>
<td>REMOTE SENSING</td>
<td></td>
</tr>
<tr>
<td>ESCI 452</td>
<td>GIS FOR SCIENTISTS AND ENGINEERS</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credit Hours**: 24

### Geophysics Area of Specialization Electives

Select 2 courses from the following: 6

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESCI 461</td>
<td>SEISMOLOGY I</td>
<td></td>
</tr>
<tr>
<td>ESCI 462</td>
<td>TECTONOPHYSICS</td>
<td></td>
</tr>
<tr>
<td>ESCI 463</td>
<td>STRUCTURE AND EVOLUTION OF TECTONIC SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>ESCI 464</td>
<td>GLOBAL TECTONICS</td>
<td></td>
</tr>
<tr>
<td>ESCI 467</td>
<td>GEOMECHANICS</td>
<td></td>
</tr>
<tr>
<td>ESCI 472</td>
<td>EARTH SYSTEMS MODELING: NUMERICAL TECHNIQUES AND APPLICATIONS</td>
<td></td>
</tr>
<tr>
<td>ESCI 542</td>
<td>SEISMOLOGY II</td>
<td></td>
</tr>
<tr>
<td>ESCI 564</td>
<td>SEISMEIC REFLECTION DATA PROCESS</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credit Hours**: 28

### Area of Specialization: Self-Designed

The department recognizes the interdisciplinary nature of modern earth science and the opportunity for students to specialize in nontraditional and emerging fields. Therefore, students can design their own area of specialization, normally in close consultation with one faculty member and followed by approval from the department’s undergraduate advisor.

In addition to required earth science courses and related courses, these areas of specialization will generally comprise 18 additional hours that target a coherent theme from an approved list of coursework at the 300-level or above, from inside or outside the department. Interested students are expected to submit a statement of rationale by the beginning of their third year.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESCI 391</td>
<td>EARTH SCIENCE FIELD EXPERIENCE (at least 3 credit hours)</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total Credit Hours**: 28
Policies for the BS Degree with a Major in Earth Science

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in Earth Science should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information

For additional information, please see the Earth Science major page, on the Department of Earth, Environmental, and Planetary Sciences website: https://earthscience.rice.edu/academics/undergraduate-program/

Opportunities for the BS Degree with a Major in Earth Science

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Honors Research

Undergraduates are encouraged to embark on an undergraduate honors thesis. The purpose of the honors thesis is for students to develop and demonstrate their creative and independent research potential. Students are recommended to begin in the fall of their junior year to provide ample time for research projects to be developed, executed and written. Students are expected to enroll in at least two semesters of the course ESCI 481, spanning their senior year. Juniors who have identified a research project and mentor can also enroll in ESCI 481. Students should sign up for ESCI 481 for 3 credits.

Criteria for Participating in Undergraduate Honors Thesis Research

- Strong performance in ESCI courses, in particular, ESCI 321, ESCI 322, ESCI 323, ESCI 324, and ESCI 334
- A grade of A- or better in ESCI 481
- Letter of recommendation of a faculty research mentor
- Research proposal

Requirements for Completing an Undergraduate Honors Thesis

Spring Semester of Junior Year

Each honors thesis candidate should choose a research topic, identify a faculty research advisor, and initiate independent research. The student should select a thesis committee, consisting of a faculty advisor, one member of the honors thesis committee, and one other faculty member of their choosing. Candidates are expected to turn in a preliminary written proposal (2 pages) at the end of their spring semester, accompanied by a formal application, both of which will be evaluated by the honors thesis committee for consideration of acceptance into the honors thesis program in their senior year. Required course:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESCI 401</td>
<td>SEMINAR: UNDERGRADUATE HONORS THESIS</td>
<td>1</td>
</tr>
</tbody>
</table>

Fall Semester of Senior Year

Students accepted into the honors thesis program continue to develop and refine their proposed research in concert with their research advisor and thesis committee. Students participate in meetings with other honors thesis candidates to discuss basic research protocols and philosophies, and meet independently with their chosen scientific advisor, and generate data, experiments or models. Students will give oral presentations of their research proposals in public by mid-semester, in the presence of their examining committee. At the end of the semester, students must submit final versions of their proposals, describing motivation, hypothesis, methodology, and preliminary results. The honors thesis committee will evaluate the proposals, and if approved, students can continue in the honors thesis program. Required courses:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESCI 401</td>
<td>SEMINAR: UNDERGRADUATE HONORS THESIS</td>
<td>1</td>
</tr>
<tr>
<td>ESCI 481</td>
<td>UNDERGRADUATE RESEARCH IN EARTH SCIENCE</td>
<td>3</td>
</tr>
</tbody>
</table>

Spring Semester of Senior Year

Students continue and complete their research. A mid-semester progress report must be submitted to the thesis committee for feedback. At the end of the spring semester, students submit their final theses, and give public oral exit talks. To complete the honors thesis program, student theses must be approved by the honors thesis committee. Required courses:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESCI 401</td>
<td>SEMINAR: UNDERGRADUATE HONORS THESIS</td>
<td>1</td>
</tr>
<tr>
<td>ESCI 481</td>
<td>UNDERGRADUATE RESEARCH IN EARTH SCIENCE</td>
<td>3</td>
</tr>
</tbody>
</table>

Further details about the program, and expectations and criteria for the thesis proposal and final thesis can be found on the Department of Earth, Environmental, and Planetary Sciences website (https://earthscience.rice.edu/academics/undergraduate-program/honors-thesis/).
Application Process
Students must apply and be accepted to participate in the senior honors research program. The application form can be downloaded from the Department of Earth, Environmental, and Planetary Sciences website (https://earthscience.rice.edu/academics/undergraduate-program/honors-thesis/), and should be submitted along with a ~two page thesis proposal at the end of the spring semester of the junior year. Students will be informed of their acceptance into the honors thesis program before the start of the following fall semester.

Other Points of Consideration
Students who are accepted into the ‘RUSP: Rice Undergraduate Scholars Program’ can substitute ESCI 481 courses for semesters 2 and 3 with HONS 470 and HONS 471. However, the students will have to meet all other requirements of the honors thesis set by the department of the honors thesis set by the department.

Other expectations, conditions, and opportunities related to carrying out an Earth Science Honors Thesis can be found on the Department of Earth, Environmental, and Planetary Sciences website (https://earthscience.rice.edu/academics/undergraduate-program/honors-thesis/).

Undergraduate Independent Research
The department encourages, but does not require, Earth Science undergraduate majors to pursue independent supervised research in ESCI 481. This can also be carried out as part of the Earth Science Honors Thesis Program.

Additional Information
For additional information, please see the Earth Science major page, on the Department of Earth, Environmental, and Planetary Sciences website: https://earthscience.rice.edu/academics/undergraduate-program/.

Doctor of Philosophy (PhD) Degree in the field of Earth Science

Program Learning Outcomes for the PhD Degree in the field of Earth Science
Upon completing the PhD degree in the field of Earth Science, students will be able to:

1. Understand the structure and composition of the Earth and Planets, their evolution, and how the Earth changes over time.
2. Use appropriate computational or analytical techniques in the conduct of research investigations.
3. Demonstrate significant skills in scientific communication, written and oral.
4. Demonstrate peer-reviewed literature, and to write and publish a substantial contribution.

Requirements for the PhD Degree in the field of Earth Science
For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). All incoming students should have a strong background in physics, chemistry, and mathematics and should have, or should acquire, a broad grounding in fundamental earth science. The department encourages applications from well-qualified students with degrees in the other sciences, mathematics, or engineering. The requirements for the MS and PhD Degrees in earth science are similar, but the PhD demands a significantly higher level of knowledge, research skills, and scholarly independence. Most students need at least two years beyond the bachelor’s degree to complete the MS or four years beyond the bachelor’s degree to complete the PhD.

Candidates determine, with their major professor and thesis committee, a course of study following the Guidelines for Advanced Degrees in the Department of Earth Science handbook, distributed to all incoming students. Students pursuing the MS and PhD degrees in the field of Earth Science must:

- Complete 20 semester hours of course work at the 500-level or above (or other approved courses), not including research hours
- Pass a written preliminary exam
- Maintain a grade point average of 3.00 (B) or better
- Prepare a written thesis comprised of peer-reviewed publication(s) that represent an original contribution to science
- Defend the research and conclusions of the thesis in an oral examination

Students with a bachelor’s degree and department approval may work directly toward the PhD, in which case the course of study is equivalent to that required for both degrees; performance on the examinations and the thesis, however, should be at the level required for the PhD. Because the graduate programs require full-time study and close interaction with faculty and fellow students, the department discourages students from holding full-time (or nearly full-time) jobs outside the university. Outside employment must be approved by the chair.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>90</td>
</tr>
</tbody>
</table>

Policies for the PhD Degree in the field of Earth Science

Department of Earth, Environmental, and Planetary Science Graduate Program Handbook
The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Earth, Environmental, and Planetary Science publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/EEPS_Graduate_Handbook.pdf

Additional Information
For additional information, please see the Earth, Environmental, and Planetary Science website: https://earthscience.rice.edu/
Opportunities for the PhD Degree in the field of Earth Science

Additional Information

For additional information, please see the Earth, Environmental, and Planetary Science website: https://earthscience.rice.edu/

Master of Science (MS) Degree in the field of Earth Science

Program Learning Outcomes for the MS Degree in the field of Earth Science

Upon completing the MS degree in the field of Earth Science, students will be able to:

1. Understand the structure and composition of the Earth and Planets, their evolution, and how the Earth changes over time.
2. Use appropriate computational or analytical techniques in the conduct of research investigations.
3. Demonstrate significant skills in scientific communication, written and oral.
4. Develop the ability to contribute to the peer-reviewed literature.

Requirements for the MS Degree in the field of Earth Science

The MS degree is a thesis master’s degree. For general university requirements, please see Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). All incoming students should have a strong background in physics, chemistry, and mathematics and should have, or should acquire, a broad grounding in fundamental earth science. The department encourages applications from well-qualified students with degrees in the other sciences, mathematics, or engineering. The requirements for the MS and PhD in earth science are similar, but the PhD demands a significantly higher level of knowledge, research skills, and scholarly independence. Most students need at least 2 years beyond the bachelor's degree to complete the MS or 4 years beyond the bachelor's degree to complete the PhD.

Candidates determine, with their major professor and thesis committee, a course of study following the Guidelines for Advanced Degrees in the Department of Earth Science handbook, distributed to all incoming students. For both degrees, candidates must:

• Complete 20 semester hours of coursework at the 500-level or above (or other approved courses), not including research hours
• Pass a written preliminary exam
• Maintain a grade point average of 3.00 (B) or better
• Prepare a written thesis comprised of peer-reviewed publication(s) that represent an original contribution to science
• Defend the research and conclusions of the thesis in an oral examination

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>30</td>
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</tbody>
</table>

Policies for the MS Degree in the field of Earth Science

Department of Earth, Environmental, and Planetary Science Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Earth, Environmental, and Planetary Science publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/EEPS_Graduate_Handbook.pdf

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program's advisor when considering transfer credit possibilities.

Additional Information

For additional information, please see the Earth, Environmental, and Planetary Science website: https://earthscience.rice.edu/

Opportunities for the MS Degree in the field of Earth Science

Additional Information

For additional information, please see the Earth, Environmental, and Planetary Science website: https://earthscience.rice.edu/

Economics

Contact Information

Economics
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Kenneth Medlock
Students will learn the basic principles of microeconomics, macroeconomics, and econometrics, and how to apply those principles in studying economic phenomena and analyzing public policy issues.

Undergraduates may major in economics or mathematical economic analysis (but not both). The major in mathematical economic analysis is a mathematically-intensive course of study recommended for students who intend to pursue graduate work in economics or a business or governmental job in which extensive analytical and quantitative skills are required.

Master of Energy Economics (MEEcon) students will be able to produce insightful analyses of energy markets to inform such things as capital asset decisions, firm strategic direction, and future market orientation.

The PhD program in economics equips students with the theoretical and empirical skills essential to entering research careers in academia, business, and government.

**Bachelor's Programs**
- Bachelor of Arts (BA) Degree with a Major in Economics (p. 376)
- Bachelor of Arts (BA) Degree with a Major in Mathematical Economic Analysis (p. 545)

**Minor**
- Minor in Financial Computation and Modeling (p. 450)

**Master's Programs**
- Master of Energy Economics (MEEcon) Degree (p. 407)
- Master of Arts (MA) Degree in the field of Economics*

**Doctoral Programs**
- Doctor of Philosophy (PhD) Degree in the field of Economics (p. 378)
- and a Major Concentration in Economics and Finance (p. 379)

*Although students are not normally admitted to a Master of Arts (MA) degree program, graduate students may earn the MA as they work towards the PhD.

**Chair**
George Zodrow

**Professors**
Kerry E. Back
Richard Thomas Boylan
Bryan W. Brown
James N. Brown
Flávio Cunha
Mahmoud A. El-Gamal
Hülya Eraslan
Jeremy Fox
Peter Reginald Hartley
Vivian Ho
Ted Loch-Temzelides

Isabelle Perrigne
Robin Sickles
Xun Tang
George Zodrow

**Associate Professors**
Marc Peter Dudey
Mallesh Pai

**Assistant Professors**
Rosella Calvi
Yinghua He
Yunmi Kong

**Professors Emeriti**
Dagobert Brito
John B. Bryant
Donald L. Huddle
Peter Mieszkowski
Ronald Soligo

**Lecturers**
Maria Bejan
Michele Biavati
Amelie Carlton
James P. DeNicco

**Adjunct Professors**
David R. Lairson
John Michael Swint

**Adjunct Associate Professor**
Charles E. Begley

**Adjunct Assistant Professors**
John Diamond
Kenneth Medlock

**Description and Code Legend**
*Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:*

**Course Catalog/Schedule**
- Course offerings/subject code: ECON

**Department Description and Code**
- Economics: ECON

**Undergraduate Degree Description and Code**
- Bachelor of Arts degree: BA

**Undergraduate Major Descriptions and Codes**
- Major in Economics: ECON
- Major in Mathematical Economic Analysis: MTEC
Undergraduate Minor Description and Code
• Minor in Financial Computation and Modeling: FCAM

Graduate Degree Descriptions and Codes
• Master of Arts degree: MA
• Master of Energy Economics degree: MEEcon
• Doctor of Philosophy degree: PhD

Graduate Degree Program Descriptions and Codes
• Degree Program in Economics: ECON
• Degree Program in Energy Economics: ENEC

Graduate Major Concentration Descriptions and Codes
• Major Concentration in Economics and Finance: EEFI (attached to the PhD degree)

CIP Code and Description
1
• ECON Major/Program: CIP Code/Title: 45.0601 - Economics, General
• ENEC Major/Program: CIP Code/Title: 45.0603 - Econometrics and Quantitative Economics
• MTEC Major/Program: CIP Code/Title: 45.0603 - Econometrics and Quantitative Economics
• EEFI Major Concentration: CIP Code/Title: 27.0305 - Financial Mathematics
• FCAM Minor: CIP Code/Title: 27.0305 - Financial Mathematics
1 Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Bachelor of Arts (BA) Degree with a Major in Economics

Program Learning Outcomes for the BA Degree with a Major in Economics
Upon completing the BA degree with a major in Economics, students will have:

1. Learned various statistical and econometric skills, including a thorough knowledge of applied econometrics and the ability to use statistical software packages to analyze economic data and interpret statistical results.

2. Learned the core principles of microeconomics, including supply and demand, utility maximization by consumers and profit maximization by firms, and equilibrium market structures, as well as advanced topics in microeconomics, especially economic applications of game theory.

3. Learned the core principles of macroeconomics, including the macroeconomic effects of monetary and fiscal policy, the nature of the business cycle, and the determinants of growth, and learn alternative approaches to analyzing the performance of the macroeconomy.

4. Learned how the basic economic principles that have been absorbed in the core courses are utilized in economic analyses of critical policy issues in a wide variety of applied subject areas.

Additionally, students completing the two-semester departmental honors program will have:

1. Learned how to conduct economic research, beginning with framing of a research idea and progressing to a critical review and evaluation of the relevant literature, the construction of an economic model to analyze the issue under consideration, the identification of testable hypotheses, the collection of data and econometric testing of their hypotheses, the presentation of a research paper that presents those results.

Requirements for the BA Degree with a Major in Economics
For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Economics must complete:

• A minimum of 14 or 15 courses (44-48 credit hours), depending on course selection, to satisfy major requirements.
• A minimum of 120 hours to satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
• A minimum of 5 courses (15 credit hours) taken at the 300-level or above.
• A maximum of 5 courses (15 credit hours) from study abroad or transfer credit after matriculation at Rice may be applied towards specific major requirements. For additional departmental guidelines regarding transfer credit, see the Policies tab.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Economics</td>
<td>44-48</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Economics</td>
<td>120</td>
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Degree Requirements

Core Requirements

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<th>Code</th>
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<th>Credit Hours</th>
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<tr>
<td></td>
<td><strong>Select 1 from the following:</strong></td>
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<tr>
<td></td>
<td>MATH 101 SINGLE VARIABLE CALCULUS I</td>
<td>3 or 6</td>
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<tr>
<td></td>
<td>or MATH 101AP/OTH CREDIT IN CALCULUS I</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MATH 111 CALCULUS: DIFFERENTIATION AND ITS APPLICATIONS</td>
<td></td>
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<tr>
<td></td>
<td>&amp; MATH 112 &amp; CALCULUS: INTEGRATION AND ITS APPLICATIONS</td>
<td></td>
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<tr>
<td></td>
<td>MATH 102 SINGLE VARIABLE CALCULUS II 2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>or MATH 106 AP/OTH CREDIT IN CALCULUS II</td>
<td></td>
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ECON 307 / STAT 310  PROBABILITY AND STATISTICS  3 or 4
or STAT 315 / DSCI 301  PROBABILITY AND STATISTICS FOR DATA SCIENCE

Economics and Econometrics 1
ECON 100  PRINCIPLES OF ECONOMICS  2  3
ECON 200  MICROECONOMICS  4
ECON 203  MACROECONOMICS  3
ECON 209  APPLIED ECONOMETRICS  4
ECON 300  GAME THEORY AND OTHER MICRO TOPICS FOR ECON MAJORS  3

Elective Requirements 1, 2, 3
Select 3 courses from the following:  9
  ECON 210  BEHAVIORAL ECONOMICS
  ECON 239  LAW AND ECONOMICS
Courses between ECON 343-ECON 495
ECON 498  HONORS PROGRAM IN ECONOMICS-I
Select 3 courses from ECON 410-ECON 495 and ECON 498.  9
Total Credit Hours Required for the Major in Economics  44-48
Additional Credit Hours to Complete BA Degree Requirements  12-16
University Graduation Requirements (p. 26)  60
Total Credit Hours  120

Footnotes and Additional Information
4 Includes coursework completed as distribution credit, FWIS, LPAR upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.
1 After matriculation: In some cases, transfer credit may be awarded by the economics department for courses completed at other schools after the student has matriculated at Rice. Students may present a maximum of 2 such transfer courses in fulfilling the mathematics and statistics core requirements, and a maximum of 3 such transfer courses in fulfilling the economics/econometrics core requirements and elective requirements combined. (Additional transfer courses may count toward meeting university graduation requirements, but not toward fulfillment of requirements for the major.)
Before matriculation: Credits awarded to transfer students for courses taken prior to matriculation at Rice are not counted against the departmental limit on transfer courses, but all students must complete more than half of their upper-level major coursework (300-level and 400-level courses) at Rice.

2 Students who have received credit for ECON 111 and ECON 113 and have made a grade of B- or better in MATH 102 (taken at Rice University) may substitute any Economics major elective for ECON 100. Students must notify the department’s Director of Undergraduate Studies if they wish to exercise this option.

3 As specified in their course descriptions, the following courses do not satisfy the Electives requirement for the major in Economics: ECON 101, ECON 103, ECON 111, ECON 113, ECON 260, ECON 265, ECON 270, ECON 275, ECON 499. In addition, BUSI 343 may be substituted for ECON 343, and STAT 449 may be substituted for ECON 449.

Policies for the BA Degree with a Major in Economics
Program Restrictions and Exclusions
Students pursuing the BA degree with a major in Economics should be aware of the following program restriction:

• Students pursuing the major in Economics may not additionally declare the major in Mathematical Economic Analysis.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the major in Economics should be aware of the following departmental transfer credit guidelines:

• Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

• No more than 5 courses (15 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards specific major requirements after matriculation at Rice as follows:
  • No more than 2 courses (6 credit hours) of transfer credit may apply towards the mathematics and statistics core requirements
  • No more than 3 courses (9 credit hours) of transfer credit may apply towards the economics/econometrics core requirements and the elective requirements combined

Please Note: Additional transfer courses may count toward meeting university graduation requirements, but not toward fulfillment of requirements for the major. Credits awarded to transfer students for courses taken prior to matriculation at Rice are not counted against the departmental limit on transfer courses, but all students must complete more than half of their upper-level major coursework (300-level and 400-level courses) at Rice.

Additional Information
For additional information, please see the Economics website: https://economics.rice.edu/.

Opportunities for the BA Degree with a Major in Economics
Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.
Requirements for Departmental Honors
1. To earn departmental honors in economics, students must earn a grade of B+ (3.33 grade points) or better in each semester of the department’s two-semester honors program, ECON 498 and ECON 499.
2. The honors program is available to both ECON and MTEC majors.
3. To be admitted to the honors program, students:
   a. must have a GPA of 3.67 or better in all courses taken toward fulfilling their departmental major requirements at the beginning of the academic year in which they enter the honors program;
   b. must have completed all of the core requirements for their major;
   c. must have completed the 400-level course or courses most closely related to their area of research, and
   d. must be accepted to the honors program by the professor supervising the program.
4. For additional information, consult the Economics Department Honors Program at [https://economics.rice.edu/undergraduate-program/honors-program](https://economics.rice.edu/undergraduate-program/honors-program).

Additional Information
For additional information, please see the Economics website: https://economics.rice.edu/.

Doctor of Philosophy (PhD) Degree in the field of Economics

Program Learning Outcomes for the MA and PhD Degrees in the field of Economics

Upon completing the MA and PhD degrees in the field of Economics, students will be able to:

1. Carry out independent research in economics, using mathematical, statistical, econometric, and computational tools.
2. Write an independent and original thesis that is of sufficient quality to merit publication in a top economics journal.
3. Conduct a focused review of the literature and develop a research design to carry out independent research.
4. Defend their research design and modeling choices by presenting their paper in a seminar environment.
5. Communicate their research effectively by writing clearly, concisely, and cogently.
6. Read critically and assess research manuscripts related to their field of study and in other fields.

Requirements for the MA and PhD Degrees in the field of Economics

MA Degree Program
The MA degree is a non-thesis master’s degree. For general university requirements for non-thesis masters degrees, please see [Non-Thesis Master’s Degrees](p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see [All Graduate Students](p. 55). Although students are not normally admitted to study for an MA, graduate students may earn the MA along the way to the PhD. In order to obtain the MA Degree in the field of Economics:

- Students must pass the first year core courses with a grade point average of 2.67 or better
- Students must complete 6 field courses with passing grades

Summary
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MA Degree in the field of Economics</td>
<td>30</td>
</tr>
</tbody>
</table>

Requirements for the PhD Degree in the field of Economics

PhD Degree Program
For general university requirements, please see [Doctoral Degrees](p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see [All Graduate Students](p. 55). Candidates for the PhD usually spend from 2 to 2-1/2 years in full-time coursework and at least 1 year writing the thesis; 5 years is a reasonable goal for completing the program. For the PhD degree in the field of Economics, students must:

1. Attend the statistics and mathematics camp before starting their first year courses.
2. Complete an approved program of at least 18 courses (including approved courses in other departments), no more than 4 of which are research workshops. At least 2 years of full-time study must be in residence at Rice.
3. Perform satisfactorily on the written general exams in economic theory and econometrics.
4. Write a research paper proposal before the start of their third year.
5. Write and present a research paper before the end of their third year.
6. Choose a thesis advisor by the end of their seventh semester.
7. Attend a research workshop every semester after their first year and present their own research in a workshop once every year after their second year.
8. Submit a written progress report in every semester they register for ECON 800.
9. Submit a thesis progress report every year starting with their fourth year.

Summary
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the PhD Degree in the field of Economics</td>
<td>90</td>
</tr>
</tbody>
</table>

Policies for the PhD Degree in the field of Economics

Department of Economics Graduate Program Handbook
The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Economics publishes a graduate program handbook, which can be found here: [https://gradhandbooks.rice.edu/2019_20/Economics_PhD_Graduate_Handbook.pdf](https://gradhandbooks.rice.edu/2019_20/Economics_PhD_Graduate_Handbook.pdf)
Admission
Preparation for PhD Program: Applicants to the PhD program should have a strong background in mathematics and statistics. All applicants are required to take the Graduate Record Exam (GRE).

Additional Information
For additional information, please see the Economics website: https://economics.rice.edu/

Opportunities for the PhD Degree in the field of Economics
Additional Master’s Degrees Options for the PhD Degree in the field of Economics, or the PhD Degree in the field of Statistics

Students pursuing the PhD degree in the field of Economics, or in the field of Statistics, have the opportunity to also earn a Master of Arts (MA) degree in either the fields of Economics or Statistics, respectively.

Requirements for the PhD Degree in the field of Economics with an MA Degree in the field of Statistics
Students pursuing the PhD degree in the field of Economics and the MA degree with coordinated work in Statistics must complete:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>ECON 504 / STAT 604</td>
<td>COMPUTATIONAL ECONOMICS</td>
<td>3</td>
</tr>
<tr>
<td>ECON 505 / BUSI 521</td>
<td>FINANCIAL ECONOMICS I</td>
<td>3</td>
</tr>
<tr>
<td>ECON 508</td>
<td>MICROECONOMICS II</td>
<td>5</td>
</tr>
<tr>
<td>ECON 511 / STAT 611</td>
<td>ECONOMETRICS II</td>
<td>3</td>
</tr>
</tbody>
</table>

Elective Requirements
Select 5 courses from departmental (STAT) course offerings 15

Qualifier in Statistics at the comparable level of a field of examination from the MA degree in the field of Economics.

A Major Project 2

Total Credit Hours 32

Footnotes and Additional Information
1 Courses that are jointly listed (cross-listed) between the 2 departments are counted towards the number of courses in the ‘home’ department of the particular course.
2 This may be directed by Statistics faculty, but must have strong econometrics content. The doctoral proposal in Statistics can count toward this requirement.

Requirements for the PhD Degree in the field of Statistics with an MA Degree in the field of Economics
Students pursuing the PhD degree in the field of Statistics and the MA degree with coordinated work in Economics must complete:

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>ECON 501</td>
<td>MICROECONOMICS I</td>
<td>3</td>
</tr>
<tr>
<td>ECON 502</td>
<td>MACROECONOMICS</td>
<td>3</td>
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</table>

Select 1 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>ECON 503</td>
<td>COMPUTATIONAL ECONOMICS</td>
<td>3</td>
</tr>
<tr>
<td>ECON 504</td>
<td>MICROECONOMICS II</td>
<td>5</td>
</tr>
<tr>
<td>ECON 511</td>
<td>ECONOMETRICS II</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credit Hours 30

Additional Information
For additional information, please see the Economics website: https://economics.rice.edu/

Doctor of Philosophy (PhD) Degree in the field of Economics and a Major Concentration in Economics and Finance

Program Learning Outcomes for the PhD Degree in the field of Economics and a Major Concentration in Economics and Finance

Upon completing the PhD degree in the field of Economics and a major concentration in Economics and Finance, students will be able to:

1. Carry out independent research in economics and finance, using mathematical, statistical, econometric, and computational tools.
2. Write an independent and original thesis that is of sufficient quality to merit publication in a top economics or finance journal.
3. Conduct a focused review of the literature and develop a research design to carry out independent research.
4. Defend their research design and modeling choices by presenting their paper in a seminar environment.
5. Communicate their research effectively by writing clearly, concisely, and cogently.
6. Read critically and assess research manuscripts related to their field of study and in other fields.
Requirements for the MA and PhD Degrees in the field of Economics

MA Degree Program
The MA degree is a non-thesis master's degree. For general university requirements for non-thesis masters degrees, please see Non-Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Although students are not normally admitted to study for an MA, graduate students may earn the MA along the way to the PhD. In order to obtain the MA Degree in the field of Economics:

- Students must pass the first year core courses with a grade point average of 2.67 or better
- Students must complete 6 field courses with passing grades

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<tr>
<td>Total Credit Hours Required for the MA Degree in the field of Economics</td>
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</table>

Requirements for the PhD Degree in the field of Economics

PhD Degree Program
For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Candidates for the PhD usually spend from 2 to 2-1/2 years in full-time coursework and at least 1 year writing the thesis; 5 years is a reasonable goal for completing the program. For the PhD degree in the field of Economics, students must:

1. Attend the statistics and mathematics camp before starting their first year courses.
2. Complete an approved program of at least 18 courses (including approved courses in other departments), no more than 4 of which are research workshops. At least 2 years of full-time study must be in residence at Rice.
3. Perform satisfactorily on the written general exams in economic theory and econometrics.
4. Write a research paper proposal before the start of their third year.
5. Write and present a research paper before the end of their third year.
6. Choose a thesis advisor by the end of their seventh semester.
7. Attend a research workshop every semester after their first year and present their own research in a workshop once every year after their second year.
8. Submit a written progress report in every semester they register for ECON 800.
9. Submit a thesis progress report every year starting with their fourth year.

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<tr>
<td>Total Credit Hours Required for the PhD Degree in the field of Economics</td>
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</table>

Requirements for the Major Concentration: Economics and Finance

Students pursuing the PhD degree program in the field of Economics and a major concentration in Economics and Finance must:

1. Achieve a minimum grade of B (3.00 grade points) in each of the 10 required courses (32 credit hours), including Microeconomics, Macroeconomics, Econometrics, Real Analysis, Computational Economics, and Financial Economics.
2. Successfully pass comprehensive exams in Economic Theory and Econometrics administered by the Economics faculty at the end of the first year.
4. Successfully complete 6 credit hours of elective requirements from the following courses: BUSI 524, BUSI 525, BUSI 526, BUSI 527, and ECON 575.
5. Successfully pass a comprehensive exam on Corporate Finance and Empirical Methods administered by the Finance faculty at the end of the Fall semester of the second year.
6. Write and present a paper in the third year of the program. The paper and its presentation must be approved by two faculty advisors, one of whom must be in the Economics department and one of whom must be a member of the Finance group in the Business school.
7. Write and defend a thesis. The thesis committee must include at least one member from the Economics department and at least one member from the Finance group in the Business School.

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<tr>
<td>Total Credit Hours Required for the Major Concentration: Economics and Finance</td>
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</table>

Degree Requirements

| Core Requirements 1 |
| --- | --- | --- |
| Code | Title | Credit Hours |
| ECON 501 | MICROECONOMICS I | 3 |
| ECON 502 | MACROECONOMICS | 3 |
| ECON 504 / STAT 604 | COMPUTATIONAL ECONOMICS | 3 |
| ECON 505 / BUSI 521 | FINANCIAL ECONOMICS I | 3 |
| ECON 508 | MICROECONOMICS II | 5 |
| ECON 510 / STAT 610 | ECONOMETRICS I | 3 |
| ECON 511 / STAT 611 | ECONOMETRICS II | 3 |
| MATH 321 | INTRODUCTION TO ANALYSIS I | 3 |
| BUSI 522 | CORPORATE FINANCE | 3 |
| BUSI 523 | EMPIRICAL METHODS IN FINANCE | 3 |

| Elective Requirements |
| --- | --- |
| Select a minimum of 6 credit hours from the following: | |
| BUSI 524 | FINANCE: SPECIAL TOPICS I | |
| BUSI 525 | FINANCE: SPECIAL TOPICS II | |
Footnotes and Additional Information
1 Each of the 10 core requirements (32 credit hours) must be completed with a minimum grade of B (3.00 grade points) or above.

Policies for the PhD Degree in the field of Economics

Department of Economics Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Economics publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Economics_PhD_Graduate_Handbook.pdf

Preparation for PhD Program: Applicants to the PhD program should have a strong background in mathematics and statistics. All applicants are required to take the Graduate Record Exam (GRE).

Additional Information
For additional information, please see the Economics website: https://economics.rice.edu/

Opportunities for the PhD Degree in the field of Economics

Additional Information
For additional information, please see the Economics website: https://economics.rice.edu/

Education

Contact Information

Education
https://glasscock.rice.edu/departments/education-department (https://glasscock.rice.edu/departments/education-department/)
Anderson-Clarke Center
713-348-4826

Judy Radigan
Program Director
jradigan@rice.edu

The Education program at Rice University’s Susanne M. Glasscock School of Continuing Studies offers a comprehensive educational program that integrates work in courses with field-work experience. Additionally, we facilitate a network of support for our students and alumni so that we ensure our teacher leaders continue to grow and evolve as professionals.

Education courses are open to Rice students studying for careers in teaching and to Rice students interested in studying the complexities of the educational system and its role in society. The program provides fieldwork grounded in education research and theory. All of the courses include field-based experiences that encourage students to compare and apply their theoretical work to what is actually happening in schools. Our 21st century mission is to prepare and support teacher leaders to work with diverse students and be responsive to the paradigm shift in education that moves us from teaching academic content to teaching skills and strategies that foster lifelong learning.

The Education program engages, prepares, and supports its leaders for student-centered classrooms in a diverse society. The program emphasizes the value of equity in education and the political and educational policies that should undergird that equity. Students acquire a strong foundation in educational leadership, assessment, classroom culture, instructional strategies, literacy across the curriculum, and human developmental processes. All students will implement culturally relevant content and pedagogy in working with English language and diverse learners as this program acknowledges the changing face of Houston and the nation.

Rice offers four education plans:

1. a program leading to the state of Texas Teacher Certification in combination with the undergraduate degree in the elected subject field(s), including notation of Texas Teacher Certification on the recipient’s Rice academic transcript,
2. a Master of Arts in Teaching (MAT) that can be completed concurrently with a Rice bachelor’s degree with generally one additional year of study,
3. a Master of Arts in Teaching (MAT) for pre-service, and
4. a Master of Arts in Teaching (MAT) for experienced teachers with an optional route to principal certification.

The Rice Education program balances academic integrity with Texas Education Agency (TEA) compliance. Students seeking additional information about the Education program are encouraged to meet with an advisor in the Education department in Rice University's Susanne M. Glasscock School of Continuing Studies.

Texas Teaching (TEA) Credentials (Texas Teacher and Principal Certifications)

Rice is approved by the State of Texas to offer teacher preparation programs in the following fields: art, English language arts and reading, history, Latin, life sciences, mathematics, physical sciences, physics/mathematics, science, social studies, Spanish, and principalship.

After satisfactory completion of the Rice Education program, which includes the state-mandated examinations for teachers, students are recommended for a Texas teaching credential. The Texas Education Agency (TEA) then awards Texas Teacher Certification (for Grades 7–12) or Principal Certification.

Higher Education Act Title II Reports

The Higher Education Act (HEA) of the U.S. Congress requires each institution of higher education with a teacher preparation program that enrolls students receiving federal assistance under this act to report annually “to the State and the general public” certain information. This information includes the pass rate of their program completers on assessments required by the state for teacher licensure or certification, the statewide pass rate on those assessments and other basic information on their teacher preparation program.

Rice University's Education program is accredited by the state of Texas. The first year pass rate for program completers on assessments required by the state for 2017-2018 was 100%, compared with 97% for the overall
state pass rate. Thirteen students were enrolled in the program. Student teachers spent an average of 40 hours per week in supervised student teaching with a student/faculty ratio of 1.33-to-1. Rice Education program graduates are regularly recruited by school districts in Houston and the surrounding areas because of their innovative ideas, content knowledge, expertise, leadership abilities, and dedication to the teaching profession.

Texas Teacher (TEA) Certification for Rice Undergraduates

The Rice University Education program seeks to engage, prepare, and support teacher leaders for student-centered classrooms in a diverse society. While Rice does not award a formal undergraduate academic major, minor or certificate in education, the Education program does offer an academic plan to current Rice degree-seeking undergraduate students, one that fulfills all requirements for Texas Teacher (TEA) Certification for grades 7-12. Upon completion of the Education program, all undergraduate degree requirements, and certification by the State of Texas, Rice students will receive an acknowledgement and formal notation of their Texas Teacher Certification on their official Rice academic transcript.

Undergraduate students participating in the Education program, who wish to obtain Texas Teacher (TEA) Certification must complete:

- A minimum of 30 credit hours to satisfy the Texas Teacher (TEA) Certification requirements. Students must meet with an Education program advisor to develop a course of study.
- All university and major requirements for a Rice University bachelor's degree.
- All courses in teaching field and education with a grade of B (2.67 grade points) or better.
- All of the content courses specified by the certification field advisor(s). Lists of courses for each subject are available online and in the Education office.
- A minimum of 75 hours of field-based experience in local secondary schools, in conjunction with satisfactory results on background check with participating school districts.

In addition, undergraduate students in the Education program must satisfy the following requirements:

- Students must begin two-semester work in assigned school with first semester curriculum development and theory and methods courses and a second semester full-day practicum with a cooperating teacher (EDUC 421, EDUC 460, EDUC 461, EDUC 462, EDUC 463, EDUC 464, EDUC 465, EDUC 466, and EDUC 467).
- Students must pass the appropriate TExES exams.
- Students must apply with the appropriate (Texas) state agency for Texas Teacher (TEA) Certification when all requirements are completed.

Professional Education Courses

The following courses fulfill requirements for Texas Teacher (TEA) Certification. For additional information regarding requirements, students should contact the Education program (https://teach.rice.edu/texas-teacher-certification-rice-undergraduates/).

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tbody>
<tr>
<td>EDUC 304 or HIST 421</td>
<td>RACE, CLASS, GENDER IN EDUCATION RACE, EDUCATION AND SOCIETY IN THE URBAN SOUTH</td>
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<td>EDUC 305</td>
<td>EDUCATIONAL PSYCHOLOGY</td>
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<tr>
<td>EDUC 316</td>
<td>ASSESSMENT</td>
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<td>EDUC 319</td>
<td>TEACHING AND LEARNING WITH INQUIRY</td>
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<td>EDUC 320</td>
<td>TEACHING DIVERSE LEARNERS</td>
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<td>EDUC 421</td>
<td>CURRICULUM DEVELOPMENT</td>
<td>3</td>
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<tr>
<td>EDUC 422</td>
<td>LITERACY ACROSS THE CURRICULUM</td>
<td>3</td>
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Theory and Methods

Select 1 from the following:

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<th>Title</th>
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<tr>
<td>EDUC 460</td>
<td>THEORY AND METHODS: ART</td>
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<tr>
<td>EDUC 461</td>
<td>THEORY AND METHODS: ENGLISH LANGUAGE ARTS &amp; READING (ELAR)</td>
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<tr>
<td>EDUC 462</td>
<td>THEORY AND METHODS: LOTE</td>
<td>3</td>
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<tr>
<td>EDUC 463</td>
<td>THEORY AND METHODS: MATHEMATICS</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 464</td>
<td>THEORY AND METHODS: PHYSICAL EDUCATION</td>
<td>3</td>
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<td>EDUC 465</td>
<td>THEORY AND METHODS: SCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 466</td>
<td>THEORY AND METHODS: SOCIAL STUDIES</td>
<td>3</td>
</tr>
</tbody>
</table>

Spring Semester Senior Year, Full-time Clinical Teaching

EDUC 467 | PRACTICUM FOR PRESERVICE TEACHERS         | 6      |

Total Credit Hours 30

Admission

Rice undergraduate students may apply for admission to the Rice University Education program. In support of their application, candidates must submit:

- Official transcripts of previous and current university studies
- Proof of SAT or ACT scores
- Three letters of reference accompanied by the forms provided with the application
- Minimum 2.50 GPA
- Applications submitted during sophomore year with minimum 12 credit hours in the content area (15 credit hours for math and science) completed before admission
- Evidence of adequate physical vigor and speech to perform as a teacher in a classroom.

The Texas Education Agency (TEA) requires candidates to undergo a criminal background check prior to field-based experience, prior to clinical training, and prior to being hired as a first-year teacher. Candidates may go through the fingerprinting process before applying for admission. If the results are unsatisfactory, the candidate may petition the TEA for reconsideration of the results. More information on this important rule is on the Education program website at: https://glasscock.rice.edu/departments/education/teacher-certification-undergraduate-students (https://glasscock.rice.edu/departments/education/teacher-certification-undergraduate-students/)

Master’s Program

- Master of Arts in Teaching (MAT) Degree (p. 383) for Current Rice Undergraduates
• **Master of Arts in Teaching (MAT) Degree** for New Teachers
• **Master of Arts in Teaching (MAT) Degree** for Experienced Teachers
• **Master of Arts in Teaching (MAT) Degree** for Experienced Teachers with Principal Certification

**Dean**
Robert Bruce

**Senior Associate Dean**
Jennifer Gigliotti

**Director**
Judy Radigan

**Professor**
Linda M. McNeil

**Lecturers**
Steve Amstutz
Margaret Crawford
Shelah Crear
Scott Hochberg
Judy Radigan
Sheila Whitford

**Description and Code Legend**

*Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

**Course Catalog/Schedule**
- Course offerings/subject code: EDUC

**Program Description and Code**
- Education: EDUC

**Graduate Degree Description and Code**
- Master of Arts in Teaching degree: MAT

**Graduate Degree Program Description and Code**
- Degree Program in Education: EDUC

**Graduate Degree Program Option Descriptions and Codes*”**
- Degree Program Option - Current Rice Undergraduates: MAT
- Degree Program Option - New Teachers: MAT
- Degree Program Option - Experienced Teachers: MAT-EXP
- Degree Program Option - Experienced Teachers with Principal Certification: MAT-PRN

**CIP Code and Description ¹**
- **EDUC Major/Program:** CIP Code/Title: 13.1205 - Secondary Education and Teaching
- Systems *Use Only: this information is used solely by internal offices at Rice University (such as OTR, GPS, etc.) and primarily within student information systems and support.

**Master of Arts in Teaching (MAT) Degree, for Current Rice Undergraduates**

**Program Learning Outcomes for the MAT Degree**

Upon completing the MAT degree, students will be able to:

1. Create environments where students discover and construct meaning from content (using classroom students’ unique perceptions, thoughts, and feelings).
2. Facilitate teaching strategies for diverse learners.
3. Assess students’ progress and content mastery to guide instruction.
5. Demonstrate instructional leadership.

**Requirements for the MAT Degree, for Current Rice Undergraduates**

The MAT degree is a non-thesis master’s degree. For general university requirements, please see *Non-Thesis Master’s Degrees* (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see *All Graduate Students* (p. 55). Students pursuing the MAT degree must complete:

- A minimum of 11 courses (36 credit hours) to satisfy degree requirements.
- A minimum of 36 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree with a minimum grade of B- (2.67 grade points) in each course.

The MAT is a non-thesis degree program for students who want to qualify for secondary school teaching following the completion of a bachelor’s degree. Most MAT degree candidates entering the program have had no professional education courses. MAT degree and Education program participants who wish to obtain Texas Teacher (TEA) Certification (for grades 7-12) must satisfy the following requirements:

- Students must begin two-semesters of work in assigned school with first semester curriculum development and theory and methods courses and a second semester full-day field-based study with a cooperating teacher (EDUC 521, EDUC 560, EDUC 561, EDUC 562, EDUC 563, EDUC 564, EDUC 565, EDUC 566, and EDUC 570).
- Students must complete a two-semester supervised teaching internship by acquiring and fulfilling all professional responsibilities of a teaching position in a local accredited secondary school and completing a seminar course (EDUC 540).

¹ Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/
• Students must complete 75 hours of field-based experience in local secondary schools, in conjunction with satisfactory results on background check with participating school districts.
• Students must earn grades of B- (2.67 grade points) or better in all teaching field and education courses.
• Students must pass the appropriate TExES exams.
• Students must apply with the appropriate (Texas) state agency for Texas Teacher (TEA) Certification when all requirements are completed.

The cooperating school districts pay a regular salary for internship teaching.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
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<td>Total Credit Hours Required for the MAT Degree, for Current Rice Undergraduates</td>
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### Degree Requirements

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<tr>
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<td>or HIST 521</td>
<td>RACE, EDUCATION AND SOCIETY IN THE URBAN SOUTH</td>
<td></td>
</tr>
<tr>
<td>EDUC 505</td>
<td>EDUCATIONAL PSYCHOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 516</td>
<td>ASSESSMENT</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 519</td>
<td>TEACHING AND LEARNING WITH INQUIRY</td>
<td>3</td>
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<td>EDUC 520</td>
<td>TEACHING DIVERSE LEARNERS</td>
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<td>EDUC 521</td>
<td>CURRICULUM DEVELOPMENT</td>
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<td>EDUC 522</td>
<td>LITERACY ACROSS THE CURRICULUM</td>
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### Theory and Methods

Select 1 course from the following:

<table>
<thead>
<tr>
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</thead>
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<tr>
<td>EDUC 561</td>
<td>THEORY AND METHODS: ENGLISH LANGUAGE ARTS &amp; READING (ELAR)</td>
<td>3</td>
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<tr>
<td>EDUC 562</td>
<td>THEORY AND METHODS: LOTE</td>
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<td>EDUC 563</td>
<td>THEORY AND METHODS: LOTE</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 564</td>
<td>THEORY AND METHODS: PHYSICAL EDUCATION</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 565</td>
<td>THEORY AND METHODS: SCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 566</td>
<td>THEORY AND METHODS: SOCIAL STUDIES</td>
<td>3</td>
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</tbody>
</table>

### Senior Year, Full-time Practice Teaching

<table>
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<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>EDUC 570</td>
<td>FIELD-BASED STUDIES IN TEACHING AND LEARNING</td>
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</table>

### Fifth-Year MAT Degree Option for Rice Undergraduate Students

Rice students have the option to pursue the MAT degree by adding an additional fifth year to their four undergraduate years of study. For more information, please see the Opportunities (p. 385) tab.

### Policies for the MAT Degree, for Current Rice Undergraduates

#### Department of Education Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, Education publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Education_Graduate_Handbook.pdf

#### Admission

Applicants must have a bachelor’s degree, scholarly ability, and a commitment to teaching, and they must have taken the Graduate Record Examination (GRE) within 5 years. Specific requirements include:

- Completion of a bachelor’s degree before admission to the program.
- Completion of 24 credit hours in a specified content area is required.
- Grades of B- (2.67 grade points) or better in all semester hours attempted in the teaching field and a grade point average of 3.00 or better, both in courses for the teaching field and overall.
- Evidence of adequate physical vigor and speech to perform as a teacher in a classroom.

The Texas Education Agency (TEA) requires candidates to undergo a criminal background check prior to field-based experience, prior to clinical training, and prior to being hired as a first-year teacher. Candidates may go through the fingerprinting process before applying for admission. If the results are unsatisfactory, the candidate may petition the TEA for reconsideration of the results. More information on this important rule is on the Education program website at: https://glasscock.rice.edu/degrees-certificates/degrees/master-arts-teaching/master-arts-teaching-new-teachers/ (https://glasscock.rice.edu/degrees-certificates/degrees/master-arts-teaching/master-arts-teaching-new-teachers/)

Education team members review each application. Limited tuition assistance is available. See Admission to Graduate Study (https://graduate.rice.edu/admissions/).

### Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.
Additional Information
For additional information, please see the Education program website: https://glasscock.rice.edu/departments/education-department
(https://glasscock.rice.edu/departments/education-department/)

Opportunities for the MAT Degree, for Current Rice Undergraduates
Fifth-Year Master’s Degree Option for Rice Undergraduate Students
Rice students have an option to pursue the Master of Arts in Teaching (MAT) degree by adding an additional fifth year to their four undergraduate years of studies.

Advanced Rice undergraduate students in good academic standing may apply to the MAT degree program during their sophomore year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master’s degree program during their junior year. A plan of study will need to be approved by the student’s undergraduate advisor and the MAT program director.

As part of this option and opportunity, Rice undergraduate students:

• must complete the requirements for a bachelor's degree (a minimum of 120 credit hours) and the master’s degree (an additional 36 credit hours) independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
• must complete at least 24 credit hours in the selected teaching area.
• should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
• more information on this Undergraduate - Graduate Concurrent Enrollment opportunity, including specific information on the registration process can be found here (p. 17).

Requirements for Visiting Post-Baccalaureate (VPB) Certification
A non-degree (Visiting Post-Baccalaureate) plan leading to secondary teacher certification or principal certification is available for those who have earned a BA and/or MA degree, but do not choose to pursue a Rice University graduate degree. Candidates complete all requirements for state of Texas secondary teacher certification or principal certification, including professional education courses. Interested students should contact the Education Program.

Additional Information
For additional information, please see the Education program website: https://glasscock.rice.edu/departments/education-department
(https://glasscock.rice.edu/departments/education-department/)

Master of Arts in Teaching (MAT) Degree, for Experienced Teachers
Program Learning Outcomes for the MAT Degree
Upon completing the MAT degree, students will be able to:

1. Create environments where students discover and construct meaning from content (using classroom students' unique perceptions, thoughts, and feelings).
2. Facilitate teaching strategies for diverse learners.
3. Assess students’ progress and content mastery to guide instruction.
5. Demonstrate instructional leadership.

Requirements for the MAT Degree, for Experienced Teachers
The MAT degree is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MAT degree must complete:

• A minimum of 12 courses (36 credit hours) to satisfy degree requirements.
• A minimum of 36 credit hours of graduate-level study (coursework at the 500-level or above).
• A minimum of 24 credit hours must be taken at Rice University.
• A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University.
• A minimum overall GPA of 2.67 or higher in all Rice coursework.
• A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master's degree with a minimum grade of B- (2.67 grade points) in each course.

This MAT degree program is offered for experienced teachers that have a minimum of 2 years experience teaching. This degree program for experienced teachers also offers a route toward Texas Education Agency (TEA) principal certification (please see the separate program entry for the Master of Arts in Teaching (MAT) Degree, for Experienced Teachers with Principal Certification (p. 387)).

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
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<td>Total Credit Hours Required for the MAT Degree, for Experienced Teachers</td>
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Degree Requirements

Core Requirements

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<tr>
<td>EDUC 504</td>
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<td>3</td>
</tr>
</tbody>
</table>
or HIST 521  RACE, EDUCATION AND SOCIETY IN THE URBAN SOUTH
EDUC 516  ASSESSMENT 3
EDUC 519  TEACHING AND LEARNING WITH INQUIRY 3
EDUC 520  TEACHING DIVERSE LEARNERS 3
EDUC 522  LITERACY ACROSS THE CURRICULUM 3
EDUC 590  INSTRUCTIONAL LEADERSHIP 3
EDUC 595  CAPSTONE (2 semesters required, 1st semester) 3
EDUC 595  CAPSTONE (2 semesters required, 2nd semester) 3

Elective Requirements
Select 4 from the following Professional Education courses or Academic Content Specialization: 12
EDUC 501  PHILOSOPHICAL, HISTORICAL, AND SOCIAL FOUNDATIONS OF EDUCATION
EDUC 502  CONTEMPORARY ISSUES IN EDUCATION
EDUC 505  EDUCATIONAL PSYCHOLOGY
EDUC 510  INTRODUCTION TO SPECIAL EDUCATION
EDUC 515  ADOLESCENT DEVELOPMENT
EDUC 521  CURRICULUM DEVELOPMENT
EDUC 525  ADOLESCENT LITERATURE
EDUC 530  THE AMERICAN HIGH SCHOOL
EDUC 535  URBAN EDUCATION: ISSUES, POLICY, AND PRACTICE
EDUC 545  EDUCATIONAL TECHNOLOGIES & DIGITAL LEARNING
EDUC 550  EDUCATION POLICY: FROM LEGISLATURES TO CLASSROOMS
EDUC 560  THEORY AND METHODS: ART
EDUC 561  THEORY AND METHODS: ENGLISH LANGUAGE ARTS & READING (ELAR)
EDUC 562  THEORY AND METHODS: LOTE
EDUC 563  THEORY AND METHODS: MATHEMATICS
EDUC 564  THEORY AND METHODS: PHYSICAL EDUCATION
EDUC 565  THEORY AND METHODS: SCIENCE
EDUC 566  THEORY AND METHODS: SOCIAL STUDIES
EDUC 570  FIELD-BASED STUDIES IN TEACHING AND LEARNING
EDUC 591  INDEPENDENT STUDY AND RESEARCH

Admission
Applicants must have a bachelor’s degree, scholarly ability, and a commitment to teaching, and they must have taken the Graduate Record Examination (GRE) within 5 years. Specific requirements include:

- Completion of a bachelor’s degree before admission to the program.
- Completion of 24 credit hours in a specified content area is required.
- Grades of B- (2.67 grade points) or better in all semester hours attempted in the teaching field and a grade point average of 3.00 or better, both in courses for the teaching field and overall.
- Evidence of adequate physical vigor and speech to perform as a teacher in a classroom.

Education team members review each application. Limited tuition assistance is available. See Admission to Graduate Study (https://graduate.rice.edu/admissions/).

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

Additional Information
For additional information, please see the Education program website: https://glasscock.rice.edu/departments/education-department (https://glasscock.rice.edu/departments/education-department/)

Opportunities for the MAT Degree, for Experienced Teachers
Requirements for Visiting Post-Baccalaureate (VPB) Certification
A non-degree (Visiting Post-Baccalaureate) plan leading to secondary teacher certification or principal certification is available for those who have earned a BA and/or MA degree, but do not choose to pursue a Rice University graduate degree. Candidates complete all requirements for state of Texas secondary teacher certification or principal certification, including professional education courses. Interested students should contact the Education Program.

Additional Information
For additional information, please see the Education program website: https://glasscock.rice.edu/departments/education-department (https://glasscock.rice.edu/departments/education-department/)

Master of Arts in Teaching (MAT) Degree, for Experienced Teachers with Principal Certification
Program Learning Outcomes for the MAT Degree
Upon completing the MAT degree, students will be able to:

1. Create environments where students discover and construct meaning from content (using classroom students’ unique perceptions, thoughts, and feelings).
2. Facilitate teaching strategies for diverse learners.
3. Assess students’ progress and content mastery to guide instruction.
5. Demonstrate instructional leadership.

**Requirements for the MAT Degree, for Experienced Teachers with Principal Certification**

The MAT degree is a non-thesis master’s degree. For general university requirements, please see [Non-Thesis Master’s Degrees](p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see [All Graduate Students](p. 55). Students pursuing the MAT degree must complete:

- A minimum of 12 courses (36 credit hours) to satisfy degree requirements.
- A minimum of 36 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree with a minimum grade of B- (2.67 grade points) in each course.

This MAT degree program is offered for experienced teachers that have a minimum of 2 years experience teaching and desire a route toward Texas Education Agency (TEA) principal certification.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier. Additionally, these must be approved by the Office of Graduate and Postdoctoral Programs, please see [Degree Works by the department or program’s Official Certifier](https://glasscock.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

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<tr>
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<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MAT Degree, for Experienced Teachers with Principal Certification</td>
<td>36</td>
</tr>
</tbody>
</table>

**Degree Requirements**

**Core Requirements**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC 504</td>
<td>RACE, CLASS, GENDER IN EDUCATION</td>
<td>3</td>
</tr>
<tr>
<td>or HIST 521</td>
<td>RACE, EDUCATION AND SOCIETY IN THE URBAN SOUTH</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 516</td>
<td>ASSESSMENT</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 519</td>
<td>TEACHING AND LEARNING WITH INQUIRY</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 520</td>
<td>TEACHING DIVERSE LEARNERS</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 522</td>
<td>LITERACY ACROSS THE CURRICULUM</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 590</td>
<td>INSTRUCTIONAL LEADERS</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 596</td>
<td>ORGANIZATIONAL LEADERS</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 597</td>
<td>PRACTICUM FOR PRINCIPALS (2 semesters required, 1st semester)</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 597</td>
<td>PRACTICUM FOR PRINCIPALS (2 semesters required, 2nd semester)</td>
<td>3</td>
</tr>
</tbody>
</table>

**Elective Requirements**

Select 3 courses from the following Professional Education courses:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC 502</td>
<td>CONTEMPORARY ISSUES IN EDUCATION</td>
<td></td>
</tr>
<tr>
<td>EDUC 505</td>
<td>EDUCATIONAL PSYCHOLOGY</td>
<td></td>
</tr>
<tr>
<td>EDUC 521</td>
<td>CURRICULUM DEVELOPMENT</td>
<td></td>
</tr>
<tr>
<td>EDUC 530</td>
<td>THE AMERICAN HIGH SCHOOL</td>
<td></td>
</tr>
<tr>
<td>EDUC 535</td>
<td>URBAN EDUCATION: ISSUES, POLICY, AND PRACTICE</td>
<td></td>
</tr>
<tr>
<td>EDUC 550</td>
<td>EDUCATION POLICY: FROM LEGISLATURES TO CLASSROOMS</td>
<td></td>
</tr>
<tr>
<td>EDUC 591</td>
<td>INDEPENDENT STUDY AND RESEARCH</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credit Hours**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>36</td>
</tr>
</tbody>
</table>

**Policies for the MAT Degree, for Experienced Teachers with Principal Certification**

**Department of Education Graduate Program Handbook**

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, Education publishes a graduate program handbook, which can be found here: [https://gradhandbooks.rice.edu/2019_20/Education_Graduate_Handbook.pdf](https://gradhandbooks.rice.edu/2019_20/Education_Graduate_Handbook.pdf)

**Admission**

Applicants must have a bachelor’s degree, scholarly ability, and a commitment to teaching. They must have taken the Graduate Record Examination (GRE) within 5 years. Specific requirements include:

- Completion of a bachelor’s degree before admission to the program.
- Completion of 24 credit hours in a specified content area is required.
- Grades of B- (2.67 grade points) or better in all semester hours attempted in the teaching field and a grade point average of 3.00 or better, both in courses for the teaching field and overall.
- Evidence of adequate physical vigor and speech to perform as a teacher in a classroom.

Education team members review each application. Limited tuition assistance is available. See [Admission to Graduate Study](https://graduate.rice.edu/admissions/).

**Transfer Credit**

For Rice University’s policy regarding transfer credit, see [Transfer Credit](p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

**Additional Information**

For additional information, please see the Education program website: [https://glasscock.rice.edu/departments/education-department/](https://glasscock.rice.edu/departments/education-department/)
Opportunities for the MAT Degree, for Experienced Teachers with Principal Certification

Requirements for Visiting Post-Baccalaureate (VPB) Certification

A non-degree (Visiting Post-Baccalaureate) plan leading to secondary teacher certification or principal certification is available for those who have earned a BA and/or MA degree, but do not choose to pursue a Rice University graduate degree. Candidates complete all requirements for state of Texas secondary teacher certification or principal certification, including professional education courses. Interested students should contact the Education Program.

Additional Information

For additional information, please see the Education program website: https://glasscock.rice.edu/departments/education-department/

Master of Arts in Teaching (MAT) Degree, for New Teachers

Program Learning Outcomes for the MAT Degree

Upon completing the MAT degree, students will be able to:

1. Create environments where students discover and construct meaning from content (using classroom students’ unique perceptions, thoughts, and feelings).
2. Facilitate teaching strategies for diverse learners.
3. Assess students’ progress and content mastery to guide instruction.
5. Demonstrate instructional and organizational leadership.

Requirements for the MAT Degree, for New Teachers

The MAT degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MAT degree must complete:

- A minimum of 11 courses (36 credit hours) to satisfy degree requirements.
- A minimum of 36 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree with a minimum grade of B- (2.67 grade points) in each course.

The MAT is a non-thesis degree program for students who want to qualify for secondary school teaching following the completion of a bachelor’s degree. Most MAT degree candidates entering the program have had no professional education courses. MAT degree and Education program participants who wish to obtain Texas Teacher (TEA) Certification (for grades 7-12) must satisfy the following requirements:

- Students must begin two-semesters of work in assigned school with first semester curriculum development and theory and methods courses and a second semester full-day field-based study with a cooperating teacher (EDUC 521, EDUC 522, EDUC 560, EDUC 561, EDUC 562, EDUC 563, EDUC 564, EDUC 565, EDUC 566, and EDUC 570).
- Students must complete a two-semester supervised teaching internship by acquiring and fulfilling all professional responsibilities of a teaching position in a local accredited secondary school and completing a seminar course (EDUC 540).
- Students must complete 75 hours of field-based experience in local secondary schools, in conjunction with satisfactory results on background check with participating school districts.
- Students must earn grades of B- (2.67 grade points) or better in all teaching field and education courses.
- Students must pass the appropriate TExES exams.
- Students must apply with the appropriate (Texas) state agency for Texas Teacher (TEA) Certification when all requirements are completed.

The cooperating school districts pay a regular salary for internship teaching.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MAT Degree, for New Teachers</td>
<td>36</td>
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</tbody>
</table>

Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC 504 or HIST 521</td>
<td>RACE, CLASS, GENDER IN EDUCATION</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 505</td>
<td>EDUCATIONAL PSYCHOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 516</td>
<td>ASSESSMENT</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 519</td>
<td>TEACHING AND LEARNING WITH INQUIRY</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 520</td>
<td>TEACHING DIVERSE LEARNERS</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 521</td>
<td>CURRICULUM DEVELOPMENT</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 522</td>
<td>LITERACY ACROSS THE CURRICULUM</td>
<td>3</td>
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</table>
Theory and Methods

Select 1 course from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC 560</td>
<td>THEORY AND METHODS: ART</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 561</td>
<td>THEORY AND METHODS: ENGLISH LANGUAGE ARTS &amp; READING (ELAR)</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 562</td>
<td>THEORY AND METHODS: LOTE</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 563</td>
<td>THEORY AND METHODS: MATHEMATICS</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 564</td>
<td>THEORY AND METHODS: PHYSICAL EDUCATION</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 565</td>
<td>THEORY AND METHODS: SCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 566</td>
<td>THEORY AND METHODS: SOCIAL STUDIES</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 570</td>
<td>FIELD-BASED STUDIES IN TEACHING AND LEARNING</td>
<td>6</td>
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</table>

(Supervised Teaching) Internship

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC 540</td>
<td>SEMINAR FOR FIRST-YEAR TEACHERS (2 semesters required, 1st semester)</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 540</td>
<td>SEMINAR FOR FIRST-YEAR TEACHERS (2 semesters required, 2nd semester)</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credit Hours 36

Footnotes and Additional Information

1. At the discretion of the associate dean and academic advisor, some students may require additional courses to address deficiencies prior to seeking Texas Teacher Certification.

Policies for the MAT Degree, for New Teachers

Department of Education Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, Education publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Education_Graduate_Handbook.pdf

Admission

Applicants must have a bachelor’s degree, scholarly ability, and a commitment to teaching, and they must have taken the Graduate Record Examination (GRE) within 5 years. Specific requirements include:

- Completion of a bachelor’s degree before admission to the program.
- Completion of 24 credit hours in a specified content area is required.
- Grades of B- (2.67 grade points) or better in all semester hours attempted in the teaching field and a grade point average of 3.00 or better, both in courses for the teaching field and overall.
- Evidence of adequate physical vigor and speech to perform as a teacher in a classroom.

The Texas Education Agency (TEA) requires candidates to undergo a criminal background check prior to field-based experience, prior to clinical training, and prior to being hired as a first-year teacher. Candidates may go through the fingerprinting process before applying for admission. If the results are unsatisfactory, the candidate may petition the TEA for reconsideration of the results. More information on this important rule is on the Education program website at: https://glasscock.rice.edu/degrees-certificates/degrees/master-arts-teaching/master-arts-teaching-new-teachers

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

Additional Information

For additional information, please see the Education program website: https://glasscock.rice.edu/departments/education-department/opportunities-for-the-mat-degree-for-new-teachers

Opportunities for the MAT Degree, for New Teachers

Requirements for Visiting Post-Baccalaureate (VPB) Certification

A non-degree (Visiting Post-Baccalaureate) plan leading to secondary teacher certification or principal certification is available for those who have earned a BA and/or MA degree, but do not choose to pursue a Rice University graduate degree. Candidates complete all requirements for state of Texas secondary teacher certification or principal certification, including professional education courses. Interested students should contact the Education Program.

Additional Information

For additional information, please see the Education program website: https://glasscock.rice.edu/departments/education-department/opportunities-for-the-mat-degree-for-new-teachers

Electrical and Computer Engineering

Contact Information

Electrical and Computer Engineering
https://www.ece.rice.edu/
A204 Abercrombie Lab
713-348-4020
Ashutosh Sabharwal
Chair
aslu@rice.edu

The Electrical and Computer Engineering (ECE) department provides high-quality degree programs that emphasize fundamental principles, respond to the changing demands and opportunities of new technology, challenge the exceptional abilities of Rice students, and prepare students for roles of leadership in their chosen careers.

The department’s research areas include: Computer Engineering; Data Science; Neuroengineering; Photonics, Electronics, and Nano-devices; and Systems.

- Computer Engineering topics include: computer architecture, high performance application specific systems, mobile and embedded systems, integrated circuits and antennas for
medical imaging and bio-sensing, and parallel I/O for large-scale network storage systems.

- **Data Science** topics include: data acquisition, data analytics, data storage, and computing infrastructure.
- **Neuroengineering** topics include: neural signal processing, brain-computer interfaces at the device, circuit, and systems levels.
- **Photonics, Electronics, and Nano-devices** topics include: nanophotonics/nanospectroscopy, molecular electronics, biophotonics, ultrafast optics and optoelectronics, materials for energy, semiconductor optics and devices, multispectral imaging and terahertz imaging, and condensed matter physics/materials science.
- **Systems** topics include: communications systems, dynamical systems and computation, networks, signal and image processing, wireless networking, pattern recognition, scalable personal healthcare, and computational neuroscience and neuroengineering

The Electrical and Computer Engineering department offers two undergraduate degree programs. The Bachelor of Science in Electrical Engineering (BSEE) degree program is comprehensive and covers fundamental and emerging hardware and software topics. Courses, research, and design projects grouped in four areas of specialization prepare students for technical leadership in engineering, computing, and science careers. The ECE department also offers a Bachelor of Arts (BA) in Electrical Engineering degree program.

The Electrical and Computer Engineering department offers two graduate degree programs. The Master of Electrical Engineering (MEE) degree is a course-based program designed to increase a student's mastery of advanced subjects; no thesis is required. The MEE prepares a student to succeed and advance rapidly in today's competitive technical marketplace.

The Doctor of Philosophy (PhD) degree program prepares students for a research career in academia or industry. The PhD degree program consists of formal courses and original research conducted under the guidance of a faculty advisor, leading to a thesis. Students in the PhD program complete a Master of Science (MS) degree as part of their program; the Electrical and Computer Engineering department does not admit students for a terminal MS degree.

**Bachelor's Programs**
- Bachelor of Arts (BA) Degree with a Major in Electrical Engineering (p. 391)
- Bachelor of Science in Electrical Engineering (BSEE) Degree (p. 396)

**Master's Programs**
- Master of Electrical Engineering (MEE) Degree (p. 401)
- Master of Science (MS) Degree in the field of Electrical and Computer Engineering*

**Doctoral Program**
- Doctor of Philosophy (PhD) Degree in the field of Electrical and Computer Engineering (p. 400)

* Although students are not normally admitted to a Master of Science (MS) degree program, graduate students may earn the MS as they work towards the PhD.

**Chair**
Ashutosh Sabharwal

**Professors**
Behnaam Aazhang
Athanasios C. Antoulas
Richard G. Baraniuk
Joseph R. Cavallaro
Naomi J. Halas
Edward W. Knightly
Junichiro Kono
Michael T. Orchard
Peter J. Varman
Lin Zhong

**Associate Professors**
Kevin Kelly
Caleb Kemere
Jacob Robinson
Ashok Veeraraghavan

**Assistant Professors**
Genevera I. Allen
Palash Bharadwaj
Taiyun Chi
Yingyan Lin
Gururaj Naik
Ankit Patel
Xaq Pitkow
Akane Sano
Santiago Segarra
Kaiyuan Yang

**Texas Instruments Visiting Assistant Professor**
Alessandro Alabastri

**Professors Emeriti**
C. Sidney Burrus
Don Herrick Johnson
Frank K. Tittel
James Young

**Professors in the Practice**
Gene Frantz
Ray Simar, Jr.
Thanh Tran
Gary L. Woods

**Lecturers**
Fabrizio A. Gabbiani
Osama R. Mawlawi
Gary Tim Noe
Adjunct Faculty

Michael Beauchamp
Michael Brogioli
John H. Byrne
Anand Dabak
Clifford C. Dacso
Christopher H. Dick
Valentin Dragoi
Henry O. Everitt
Wayne Goodman
Omer Gurewitz
Markku Juntti
Daniel H. Kim
Matthew McGinley
Tarik Muharemovic
Bijan Najafi
Theodora Dorina Papageorgiou
Arvind Rao
David Ress
Stephan M. Schwanauer
Steve Sheafor
Christoph Studer
Nitin Tandon
Andreas S. Tolias
Venu Vasudevan

Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
- Course offerings/subject code: ELEC

Department Description and Code
- Electrical and Computer Engineering: ELEC

Undergraduate Degree Descriptions and Codes
- Bachelor of Arts degree: BA
- Bachelor of Science in Electrical Engineering degree: BSEE

Undergraduate Major Description and Code
- Major in Electrical Engineering (both BA and BSEE degrees): ELEG

Undergraduate Major Areas of Specialization Descriptions and Attribute Codes*
- Area of Specialization in Computer Engineering (both BA and BSEE degrees): EECE
- Area of Specialization in Data Science/Systems (both BA and BSEE degrees): EEDS
- Area of Specialization in Neuroengineering (both BA and BSEE degrees): EENE
- Area of Specialization in Photonics, Electronics, and Nano-devices (both BA and BSEE degrees): EEPH

Please Note: Areas of Specialization are department/program-specific and are not formally recognized academic credentials. Unlike Major

Concentrations, Areas of Specialization do not appear on the student's official academic transcript, etc.

Graduate Degree Descriptions and Codes
- Master of Electrical Engineering degree: MEE
- Master of Science degree: MS
- Doctor of Philosophy degree: PhD

Graduate Degree Program Descriptions and Codes
- Degree Program in Electrical Engineering (MEE degree): ELEG
- Degree Program in Electrical and Computer Engineering (both MS and PhD degrees): ELEC

CIP Code and Description

Classification of Instructional Programs (CIP) 2010 Codes

1 Systems Use Only: this information is used solely by internal offices at Rice University (such as OTR, GPS, etc.) and primarily within student information systems and support.

Bachelor of Arts (BA) Degree with a Major in Electrical Engineering

Program Learning Outcomes for the Bachelor of Arts Degree (BA) with a Major in Electrical Engineering

Upon completing the BA degree with a major in Electrical Engineering, students will be able to demonstrate:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.

2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

3. An ability to communicate effectively with a range of audiences.

4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

5. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.

6. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.
Requirements for the BA Degree with a Major in Electrical Engineering

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Electrical Engineering must complete:

- A minimum of 21-23 courses (63 credit hours) to satisfy major requirements.
- A minimum of 123 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 8 courses (24 credit hours) taken at the 300-level or above.
- The requirements for one area of specialization (see below for areas of specialization). When students declare the major (p. 11) in Electrical Engineering, students must additionally identify and declare one of four areas of specialization, either in:
  - Computer Engineering (p. 388): provides a broad background in computer systems engineering, including computer architecture, digital hardware engineering, software engineering, and computer systems performance analysis, or
  - Data Science (p. 51) / Systems: integrates the foundations, tools and techniques involving data acquisition, data analytics, data storage and computing infrastructure in order to enable meaningful extraction of actionable information from diverse and potentially massive data sources. Applications include wireless communication systems, digital signal processing, image processing, and networking, or
  - Neuroengineering (p. 394): exploits engineering techniques to understand, repair, manipulate, or treat the diseases of human neural systems and networks, or
  - Photonics, Electronics, and Nano-devices (p. 128): encompasses studies of electronic materials, including nanomaterials, semiconductor and optoelectronic devices, lasers and their applications.

Because of the common core requirements, it is possible for students to change their area of specialization at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (registrar@rice.edu).

The BA degree provides a basic technical foundation in electrical and computer engineering through a subset of the core and specialization courses offered by the department. The program leading to the BA degree is not accredited by the EAC of ABET and is often pursued by students as a component of a double major or dual degree program. A course can satisfy only one program requirement within the major. Students who place out of required courses without transcript credit must substitute other approved courses in the same area.

Planning sheets and degree plan forms may be found on the Electrical and Computer Engineering website (http://www.ece.rice.edu/).

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor, or where applicable, the department's Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/).) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Electrical Engineering</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Electrical Engineering</td>
<td>123</td>
</tr>
</tbody>
</table>

Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Core Requirements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mathematics and Science Courses</td>
<td></td>
</tr>
<tr>
<td>ELEC 261</td>
<td>ELECTRONIC MATERIALS AND DEVICES</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 303</td>
<td>RANDOM SIGNALS IN ELECTRICAL ENGINEERING SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I</td>
<td>3</td>
</tr>
<tr>
<td>or MATH 105</td>
<td>AP/OTH CREDIT IN CALCULUS I</td>
<td></td>
</tr>
<tr>
<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
<td>3</td>
</tr>
<tr>
<td>or MATH 106</td>
<td>AP/OTH CREDIT IN CALCULUS II</td>
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</tr>
<tr>
<td>MATH 212</td>
<td>MULTIVARIABLE CALCULUS</td>
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<td>or MATH 221</td>
<td>HONORS CALCULUS III</td>
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<tr>
<td>Select 1 course from the following:</td>
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<td></td>
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<tr>
<td>CAAM 334</td>
<td>MATRIX ANALYSIS FOR DATA SCIENCE</td>
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<tr>
<td>CAAM 335</td>
<td>MATRIX ANALYSIS</td>
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<tr>
<td>MATH 354</td>
<td>HONORS LINEAR ALGEBRA</td>
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<td>MATH 355</td>
<td>LINEAR ALGEBRA</td>
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<td>Select 1 course from the following:</td>
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<td>PHYS 101 &amp; PHYS 103</td>
<td>MECHANICS (WITH LAB) &amp; MECHANICS DISCUSSION</td>
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<tr>
<td>PHYS 111</td>
<td>HONORS MECHANICS (WITH LAB)</td>
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<td>Select 1 course from the following:</td>
<td></td>
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<tr>
<td>PHYS 102 &amp; PHYS 104</td>
<td>ELECTRICITY &amp; MAGNETISM (WITH LAB) &amp; ELECTRICITY AND MAGNETISM DISCUSSION</td>
<td>4</td>
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<tr>
<td>PHYS 112</td>
<td>HONORS ELECTRICITY &amp; MAGNETISM (WITH LAB)</td>
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</tr>
<tr>
<td>Select 1 course from the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ELEC 220</td>
<td>FUNDAMENTALS OF COMPUTER ENGINEERING</td>
<td>4</td>
</tr>
<tr>
<td>ELEC 241 &amp; ELEC 240</td>
<td>FUNDAMENTALS OF ELECTRICAL ENGINEERING I and FUNDAMENTALS OF ELECTRICAL ENGINEERING I LABORATORY</td>
<td>4</td>
</tr>
<tr>
<td>ELEC 242 &amp; ELEC 244</td>
<td>SIGNALS, SYSTEMS, AND TRANSFORMS and ANALOG CIRCUITS LABORATORY</td>
<td>4</td>
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<tr>
<td>ELEC 305</td>
<td>INTRODUCTION TO PHYSICAL ELECTRONICS</td>
<td>3</td>
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<tr>
<td>ELEC 326 / COMP 326</td>
<td>DIGITAL LOGIC DESIGN</td>
<td>3</td>
</tr>
<tr>
<td>COMP 140</td>
<td>COMPUTATIONAL THINKING</td>
<td>4</td>
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Electrical and Computer Engineering (ECE) Core Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Computation Course</td>
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</tbody>
</table>

2019-2020 General Announcements
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or COMP 130  ELEMENTS OF ALGORITHMS AND COMPUTATION
Design Laboratory 1
Select 1 course from the following: 3
ELEC 327  IMPLEMENTATION OF DIGITAL SYSTEMS
ELEC 332  ELECTRONIC SYSTEMS PRINCIPLES AND PRACTICE
ELEC 364  PHOTONICS MEASUREMENTS: PRINCIPLES AND PRACTICE

Area of Specialization
Select 1 from the following Areas of Specialization (see Areas of Specialization below): 12
Computer Engineering
Data Science/Systems
Neuroengineering
Photons, Electronics, and Nano-devices

Elective Requirements: BA Unrestricted Electives *
Students must complete additional courses to meet the BA degree's minimum requirement of at least 123 semester hours.

Total Credit Hours Required for the Major in Electrical Engineering 63
University Graduation Requirements (p. 26) * 60
Total Credit Hours 123

Footnotes and Additional Information
* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.
1 Design Laboratory is typically taken in the junior year. The required Design Laboratory does not count as a specialization course. It is important to consult a departmental advisor when choosing the Design Laboratory course or if interested in taking a second one. Any Design Laboratory course taken above the one required course will count as a General Elective, not as a specialization course.

Areas of Specialization
Students must complete the requirements as listed for one of the following areas of specialization as offered by the Electrical Engineering major. A total of 4 courses (minimum of 12 credit hours) must be taken from at least two areas of specialization, including a minimum of 2 courses from one area of specialization, 1 course from an area of specialization outside of the student’s chosen specialization, and 1 course from any area of specialization. In addition, ELEC graduate coursework at the 500-level may be used to satisfy specialization requirements with permission. Consult departmental advisors and the Electrical and Computer Engineering (http://www.ece.rice.edu/) website for the latest information.

Area of Specialization: Computer Engineering
To fulfill the remaining Electrical Engineering major requirements, students pursuing the Computer Engineering area of specialization must complete:

• a minimum of 2 courses (6 credit hours) from the Computer Engineering area of specialization

• 1 course (3 credit hours) from any area of specialization outside Computer Engineering (from Data Science/Systems, Neuroengineering, or Photonics, Electronics, or Nano-devices)

Code  Title  Credit Hours
Select a minimum of 2 from the following: 1
COMP 321  INTRODUCTION TO COMPUTER SYSTEMS 6
COMP 382  REASONING ABOUT ALGORITHMS
COMP 430  INTRODUCTION TO DATABASE SYSTEMS
ELEC 323 / COMP 322  PRINCIPLES OF PARALLEL PROGRAMMING
ELEC 342  ANALOG ELECTRONIC CIRCUITS
ELEC 421 / COMP 421  OPERATING SYSTEMS AND CONCURRENT PROGRAMMING
ELEC 422  VLSI SYSTEMS DESIGN
ELEC 423  DIGITAL INTEGRATED CIRCUITS
ELEC 424 / COMP 424  MOBILE AND EMBEDDED SYSTEM DESIGN AND APPLICATION
ELEC 425 / COMP 425  COMPUTER SYSTEMS ARCHITECTURE
ELEC 429 / COMP 429  INTRODUCTION TO COMPUTER NETWORKS

Select 1 course from any Area of Specialization outside Computer Engineering (from Data Science/Systems, Neuroengineering, or Photonics, Electronics, or Nano-devices) 3
Select 1 course from any Area of Specialization (including Computer Engineering) 3

Total Credit Hours 12

Footnotes and Additional Information
1 The sequence of COMP 140, COMP 182, and COMP 215 is recommended in addition for the Computer Engineering specialization as these courses are prerequisites for many of the Computer Science courses.

Area of Specialization: Data Science/Systems
To fulfill the remaining Electrical Engineering major requirements, students pursuing the Data Science/Systems area of specialization must complete:

• a minimum of 2 courses (6 credit hours) from the Data Science/Systems area of specialization

• 1 course (3 credit hours) from any area of specialization outside Data Science/Systems (from Computer Engineering, Neuroengineering, or Photonics, Electronics, and Nano-devices)

• 1 course (3 credit hours) from any area of specialization (including Data Science/Systems)

Code  Title  Credit Hours
Select a minimum of 2 from the following:
COMP 330  TOOLS AND MODELS FOR DATA SCIENCE
DSCI 302  INTRODUCTION TO DATA SCIENCE TOOLS AND MODELS
DSCI 303  MACHINE LEARNING FOR DATA SCIENCE
Bachelor of Arts (BA) Degree with a Major in Electrical Engineering

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>ELEC 301</td>
<td>SIGNALS, SYSTEMS, AND LEARNING</td>
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<td>ELEC 306</td>
<td>APPLIED ELECTROMAGNETICS</td>
</tr>
<tr>
<td>ELEC 430</td>
<td>MODERN COMMUNICATION THEORY AND PRACTICE</td>
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<tr>
<td>ELEC 431</td>
<td>DIGITAL SIGNAL PROCESSING</td>
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<td>ELEC 432</td>
<td>MOBILE BIO-BEHAVIORAL SENSING</td>
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<td>ELEC 433</td>
<td>ARCHITECTURE FOR WIRELESS COMMUNICATIONS</td>
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<td>ELEC 434</td>
<td>ADVANCED HIGH-SPEED SYSTEM DESIGN</td>
</tr>
<tr>
<td>ELEC 435 / MECH 435</td>
<td>INTRODUCTION TO ENERGY-EFFICIENT MECHATRONICS</td>
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<tr>
<td>ELEC 436 / MECH 420</td>
<td>FUNDAMENTALS OF CONTROL SYSTEMS</td>
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<td>ELEC 437</td>
<td>INTRODUCTION TO COMMUNICATION NETWORKS</td>
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<tr>
<td>ELEC 438</td>
<td>WIRELESS NETWORKING FOR UNDER-RESOURCED URBAN COMMUNITIES</td>
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<td>ELEC 439</td>
<td>DATA SCIENCE AND DYNAMICAL SYSTEMS</td>
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<tr>
<td>ELEC 447 / COMP 447</td>
<td>INTRODUCTION TO COMPUTER VISION</td>
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<tr>
<td>ELEC 475</td>
<td>LEARNING FROM SENSOR DATA</td>
</tr>
<tr>
<td>ELEC 498 / COMP 498 / MECH 498</td>
<td>INTRODUCTION TO ROBOTICS</td>
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<tr>
<td>MECH 488</td>
<td>DESIGN OF MECHATRONIC SYSTEMS</td>
</tr>
<tr>
<td>STAT 413</td>
<td>INTRODUCTION TO STATISTICAL MACHINE LEARNING</td>
</tr>
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</table>

Select 1 course from any Area of Specialization outside Data Science/Systems (from Computer Engineering, Neuroengineering, or Photonics, Electronics, and Nano-devices)

Select 1 course from any Area of Specialization (including Data Science/Systems)

Total Credit Hours 12

Area of Specialization: Neuroengineering

To fulfill the remaining Electrical Engineering major requirements, students pursuing the Neuroengineering area of specialization must complete:

- a minimum of 2 courses (6 credit hours) from the Neuroengineering area of specialization
- 1 course (3 credit hours) from any area of specialization outside Neuroengineering (from Computer Engineering, Data Science/Systems, or Photonics, Electronics, and Nano-devices)
- 1 course (3 credit hours) from any area of specialization (including Neuroengineering)

<table>
<thead>
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<th>Title</th>
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<tbody>
<tr>
<td>ELEC 380 / BIOE 380 / NEUR 383</td>
<td>INTRODUCTION TO NEUROENGINEERING: MEASURING AND MANIPULATING NEURAL ACTIVITY</td>
</tr>
<tr>
<td>ELEC 381 / BIOE 381</td>
<td>FUNDAMENTALS OF NERVE AND MUSCLE ELECTROPHYSIOLOGY</td>
</tr>
</tbody>
</table>

Area of Specialization: Photonics, Electronics, and Nano-devices

To fulfill the remaining Electrical Engineering major requirements, students pursuing the Photonics, Electronics, and Nano-devices area of specialization must complete:

- a minimum of 2 courses (6 credit hours) from the Photonics, Electronics, and Nano-devices area of specialization
- 1 course (3 credit hours) from any area of specialization outside Photonics, Electronics, and Nano-devices (from Computer Engineering, Data Science/Systems, or Neuroengineering)
- 1 course (3 credit hours) from any area of specialization (including Photonics, Electronics, and Nano-devices)

<table>
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<tr>
<td>ELEC 262</td>
<td>INTRODUCTION TO WAVES AND PHOTONICS</td>
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<tr>
<td>ELEC 306</td>
<td>APPLIED ELECTROMAGNETICS</td>
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<tr>
<td>ELEC 361</td>
<td>QUANTUM MECHANICS FOR ENGINEERS</td>
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<tr>
<td>ELEC 365 / MSNE 365</td>
<td>INTRODUCTION TO QUANTUM PHYSICS I</td>
</tr>
<tr>
<td>ELEC 380 / BIOE 380 / NEUR 383</td>
<td>INTRODUCTION TO NEUROENGINEERING: MEASURING AND MANIPULATING NEURAL ACTIVITY</td>
</tr>
<tr>
<td>ELEC 381 / BIOE 381</td>
<td>FUNDAMENTALS OF NERVE AND MUSCLE ELECTROPHYSIOLOGY</td>
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<tr>
<td>ELEC 382 / NEUR 382</td>
<td>INTRODUCTION TO COMPUTATIONAL NEUROSCIENCES</td>
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<tr>
<td>ELEC 460</td>
<td>PHYSICS OF SENSOR MATERIALS AND NANOSENSORS</td>
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<td>ELEC 461</td>
<td>SOLID STATE PHYSICS</td>
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<tr>
<td>ELEC 462</td>
<td>OPTOELECTRONIC DEVICES</td>
</tr>
<tr>
<td>PHYS 416</td>
<td>COMPUTATIONAL PHYSICS</td>
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</table>

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Select 1 course from any Area of Specialization outside Photonics, Electronics, and Nano-devices (from Computer Engineering, Data Science/System, or Neuroengineering) 3
Select 1 course from any Area of Specialization (including Photonics, Electronics, and Nano-devices) 3

Total Credit Hours 12

Policies for the BA Degree with a Major in Electrical Engineering

Advising

Rice University provides multiple avenues for undergraduate advising through the Office of Academic Advising, the Rice Residential College system, and academic departments. Although students may consult with their Divisional Advisors in their College during the freshman and sophomore years, they are welcome and encouraged to meet with a major advisor in the Electrical and Computer Engineering Department. In particular, ECE students are required to meet with a major advisor in ECE at least during their junior and senior years to discuss their ECE Specialization Area course selection and Design Courses. The ECE Undergraduate Committee currently has seven faculty members who serve as major advisors. More information on sample degree plans and on the process for declaring ECE as a major is available on the ECE Engineering website: https://www.ece.rice.edu/

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaad.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in Electrical Engineering should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director and/or the program’s official transfer credit advisor on an individual case-by-case basis.

Additional Information

For additional information, please see the Electrical and Computer Engineering website: https://www.ece.rice.edu/.

Opportunities for the BA Degree with a Major in Electrical Engineering

Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Fifth-Year Master’s Degree Option for Rice Undergraduate Students

Rice students have an option to pursue the Master of Electrical Engineering (MEE) degree by adding an additional fifth year to their four undergraduate years of science and engineering studies.

Advanced Rice undergraduate students in good academic standing may apply to the MEE degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master’s degree program. A plan of study will need to be approved by the student’s undergraduate advisor and the MEE program director.

As part of this option and opportunity, Rice undergraduate students:

- must complete the requirements for a bachelor’s degree and the master’s degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
- should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
- more information on this Undergraduate - Graduate Concurrent Enrollment opportunity, including specific information on the registration process can be found here (p. 17).

Independent Research

The ECE Department encourages our undergraduates to pursue research projects with the faculty. The ECE Department has several opportunities including the multi-year, team-oriented Vertically Integrated Projects (VIP) program through the ELEC 491 course and individual independent research with a faculty member through the ELEC 490 course. For information on taking an undergraduate summer research course tuition free, see: https://summer.rice.edu/academics/ugresearch (https://summer.rice.edu/academics/ugresearch/). Also, there are often summer research opportunities through the NSF funded Research Experience for Undergraduates (REU) program, through individual ECE faculty grants, or through the Smalley-Curl Institute REU Sites program. For more information, see the ECE Department web page at: https://www.ece.rice.edu/undergraduate-program/

Study Abroad

A semester of study abroad is a valuable experience to enhance an individual's perspective on engineering and technology. The ECE Department encourages students to explore this option particularly for the spring semester of the sophomore or junior year. The ECE Department and the University Study Abroad office coordinate to review programs and courses appropriate for Rice engineering students. Additional information is on the ECE Department website at: https://www.ece.rice.edu/undergraduate-study/resources/study-abroad (https://www.ece.rice.edu/undergraduate-study/resources/study-abroad/)

Additional Information

For additional information, please see the Electrical and Computer Engineering website: https://www.ece.rice.edu/.
Bachelor of Science in Electrical Engineering (BSEE) Degree

The program leading to the BSEE degree is accredited by the Engineering Accreditation Commission (EAC) of ABET, [https://www.abet.org](https://www.abet.org).

Program Learning Outcomes (Student Outcomes) for the BSEE Degree

Upon completing the BSEE degree, students will be able to demonstrate:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences.
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Program Educational Objectives for the BSEE Degree

The Bachelor of Science in Electrical Engineering’s (BSEE) degree program strives to provide a high quality degree that emphasizes fundamental principles, responds to the changing demands and opportunities of technology, challenges the exceptional abilities of Rice students, and prepares these students for roles of leadership in their chosen careers. In support of this goal, the Bachelor of Science in Electrical Engineering’s (BSEE) degree Program Educational Objectives (PEOs) are to produce graduates who:

1. Practice electrical and computer engineering, and related fields, and/or obtain an advanced degree in electrical and computer engineering, and related fields.
2. Use mathematical modeling and problem solving skills in electrical and computer engineering and other technical applications.
3. Analyze, incorporate, and adapt to new technical and scientific developments.
4. Assume increasing professional responsibility and enhance communication and teamwork abilities.

Requirements for the BSEE Degree

For general university requirements, see [Graduation Requirements](p. 26). Students pursuing the BSEE degree must complete:

- A minimum of 29-31 courses (85-86 credit hours), depending on course selection, to satisfy major requirements.
- A minimum of 134 credit hours to satisfy degree requirements.
- A minimum of 13 courses (39 credit hours) taken at the 300-level or above.
- The requirements for one area of specialization (see below for areas of specialization). When students declare the major (p. 11) in Electrical Engineering (associated with the BSEE degree), students must additionally identify and declare one of four areas of specialization, either in:
  - **Computer Engineering** (p. 399): provides a broad background in computer systems engineering, including computer architecture, digital hardware engineering, software engineering, and computer systems performance analysis, or
  - **Data Science/Systems** (p. 399): integrates the foundations, tools and techniques involving data acquisition, data analytics, data storage and computing infrastructure in order to enable meaningful extraction of actionable information from diverse and potentially massive data sources. Applications include wireless communication systems, digital signal processing, image processing, and networking, or
  - **Neuroengineering** (p. 399): exploits engineering techniques to understand, repair, manipulate, or treat the diseases of human neural systems and networks, or
  - **Photonics, Electronics, and Nano-devices** (p. 399): encompasses studies of electronic materials, including nanomaterials, semiconductor and optoelectronic devices, lasers and their applications.

Because of the common core requirements, it is possible for students to change their area of specialization at any time, even after initially declaring the major. To do so, please contact the [Office of the Registrar](registrar@rice.edu).

The specialization electives provide the flexibility to create a focus that crosses traditional areas. Ultimately each student’s program must contain a course sequence that provides depth in one area and courses from at least two areas to provide breadth. Because of the number of options, students should consult early with departmental advisors to plan a program that meets their needs. Planning sheets and degree plan forms can be found on the [Electrical and Computer Engineering](http://www.ece.rice.edu) website.

The BSEE degree is the usual degree taken by those students planning a career in engineering practice. The BSEE requires more hours and greater depth than the BA degree; however, it still provides considerable flexibility and can reduce the time required to become a licensed professional engineer. In the final year, BSEE students undertake a capstone design project.

Students considering a major offered by the Electrical and Computer Engineering department should take physics (PHYS 101, PHYS 102) and calculus (MATH 101 or MATH 105, MATH 102 or MATH 106) in their freshman year, along with CHEM 121 (or CHEM 111) and COMP 140. The first core courses in the department, ELEC 220, ELEC 241 (lecture) with ELEC 240 (lab), and ELEC 261 are usually taken during the sophomore year, along with more math and science. A course can satisfy only one program requirement. Students entering with advanced placement may have more scheduling options and may take some of these core courses in freshman year. Students who place out of required courses
without transcript credit must substitute other approved courses in the same area. Students should consult with one of the department’s undergraduate advisors in these situations.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BSEE Degree</td>
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**Degree Requirements**

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<td></td>
<td><strong>Core Requirements</strong></td>
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<tr>
<td></td>
<td>Mathematics and Science Courses</td>
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<td>CHEM 121</td>
<td>GENERAL CHEMISTRY I</td>
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<tr>
<td>or CHEM 111</td>
<td>AP/OTH CREDIT IN GENERAL CHEMISTRY I</td>
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<td>CHEM 123</td>
<td>GENERAL CHEMISTRY LABORATORY I</td>
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<td>or CHEM 113</td>
<td>AP/OTH CREDIT IN GENERAL CHEMISTRY LAB I</td>
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<td>ELEC 261</td>
<td>ELECTRONIC MATERIALS AND DEVICES</td>
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<td>ELEC 303</td>
<td>RANDOM SIGNALS IN ELECTRICAL ENGINEERING SYSTEMS</td>
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<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I</td>
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<td>or MATH 105</td>
<td>AP/OTH CREDIT IN CALCULUS I</td>
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<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
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<td>MATH 212</td>
<td>MULTIVARIABLE CALCULUS</td>
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<td>or MATH 221</td>
<td>HONORS CALCULUS III</td>
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Select 1 course from the following:

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<tr>
<td>CAAM 334</td>
<td>MATRIX ANALYSIS FOR DATA SCIENCE</td>
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<td>CAAM 335</td>
<td>MATRIX ANALYSIS</td>
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<td>MATH 354</td>
<td>HONORS LINEAR ALGEBRA</td>
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<td>MATH 355</td>
<td>LINEAR ALGEBRA</td>
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<tr>
<td>PHYS 101</td>
<td>MECHANICS (WITH LAB) and MECHANICS DISCUSSION</td>
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</tr>
<tr>
<td>PHYS 111</td>
<td>HONORS MECHANICS (WITH LAB)</td>
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Select 1 from the following:

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<td>PHYS 102</td>
<td>ELECTRICITY &amp; MAGNETISM (WITH LAB) and ELECTRICITY AND MAGNETISM DISCUSSION</td>
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</tr>
<tr>
<td>PHYS 112</td>
<td>HONORS ELECTRICITY &amp; MAGNETISM (WITH LAB)</td>
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Approved Electives in Mathematics and Science

Select 3-4 credit hours from the following typically approved courses:

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<td>INTRODUCTORY BIOLOGY I</td>
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</tr>
<tr>
<td>CAAM 336</td>
<td>DIFFERENTIAL EQUATIONS I</td>
<td>3</td>
</tr>
<tr>
<td>CAAM 378</td>
<td>DIFFERENTIAL EQUATIONS II</td>
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<td>CHEM 122</td>
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<td>AP/OTH CREDIT IN GENERAL CHEMISTRY II</td>
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<td>CHEM 124</td>
<td>GENERAL CHEMISTRY LABORATORY II</td>
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<td>or CHEM 114</td>
<td>AP/OTH CREDIT IN GENERAL CHEMISTRY LAB II</td>
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<tr>
<td>MATH 211</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA</td>
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<td>MATH 222</td>
<td>HONORS CALCULUS IV</td>
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<td>ELEC 241 &amp; ELEC 240</td>
<td>FUNDAMENTALS OF ELECTRICAL ENGINEERING I and FUNDAMENTALS OF ELECTRICAL ENGINEERING I LABORATORY</td>
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<td>ELEC 242 &amp; ELEC 244</td>
<td>SIGNALS, SYSTEMS, AND TRANSFORMS and ANALOG CIRCUITS LABORATORY</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 301</td>
<td>SIGNALS, SYSTEMS, AND LEARNING</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 305</td>
<td>INTRODUCTION TO PHYSICAL ELECTRONICS</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 326 / COMP 326</td>
<td>DIGITAL LOGIC DESIGN</td>
<td>3</td>
</tr>
<tr>
<td>COMP 140</td>
<td>COMPUTATIONAL THINKING</td>
<td>3</td>
</tr>
<tr>
<td>or COMP 130</td>
<td>ELEMENTS OF ALGORITHMS AND COMPUTATION</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 327</td>
<td>IMPLEMENTATION OF DIGITAL SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 332</td>
<td>ELECTRONIC SYSTEMS PRINCIPLES AND PRACTICE</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 364</td>
<td>PHOTONICS MEASUREMENTS: PRINCIPLES AND PRACTICE</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 494</td>
<td>SENIOR DESIGN (2 semesters required, 1st semester)</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 494</td>
<td>SENIOR DESIGN (2 semesters required, 2nd semester)</td>
<td>3</td>
</tr>
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</table>

**Design Requirements**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td>ELEC 327</td>
<td>IMPLEMENTATION OF DIGITAL SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 332</td>
<td>ELECTRONIC SYSTEMS PRINCIPLES AND PRACTICE</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 364</td>
<td>PHOTONICS MEASUREMENTS: PRINCIPLES AND PRACTICE</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 494</td>
<td>SENIOR DESIGN (2 semesters required, 1st semester)</td>
<td>3</td>
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<tr>
<td>ELEC 494</td>
<td>SENIOR DESIGN (2 semesters required, 2nd semester)</td>
<td>3</td>
</tr>
</tbody>
</table>

**Area of Specialization**

Select 1 from the following Areas of Specialization (see Areas of Specialization below):

- Computer Engineering
- Data Science / Systems
- Neuroengineering
- Photonics, Electronics, and Nano-devices

**Total Credit Hours Required for the Major in Electrical Engineering** 85-86

**University Graduation Requirements** (p. 26) 49

**Total Credit Hours** 134
Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAR, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 The design requirements (Design Laboratory and Senior Design) are typically taken during the junior and senior years.

2 Design Laboratory is typically taken in the junior year. The required Design Laboratory does not count as a specialization course. It is important to consult a departmental advisor when choosing the Design Laboratory course or if interested in taking a second one. Any Design Laboratory course taken above the one required course will count as a General Elective, not as a specialization course.

3 Students must complete the ELEC 494 during both the fall and spring semesters of their senior year. Within the senior design sequence, professional issues and project management for electrical engineers provide instruction in professional engineering topics and the nontechnical aspects of the design process, including ethics, design methodology, project planning, technical presentations, and documentation. Both semesters of the senior year are devoted to the team design project using the resources of the Oshman Engineering Design Kitchen (OEDK) through the ELEC 494 course. In the fall semester of the senior year, students finalize their project topics in coordination with the faculty and begin the design project. In the spring semester, students continue in the laboratory to complete their design project. Several presentations and design contests within the ECE department and the School of Engineering occur in the spring in which to showcase the projects.

Areas of Specialization

Students must complete the requirements as listed for one of the following areas of specialization as offered by the BSEE degree program.

A total of 6 courses (minimum of 18 credit hours) must be taken from at least two areas of specialization, including a minimum of 3 courses from one area of specialization, 1 course from an area of specialization outside of the student’s chosen specialization, and 2 courses from any area of specialization. In addition, ELEC graduate coursework at the 500-level may be used to satisfy specialization area requirements with permission. Consult departmental advisors and the Electrical and Computer Engineering (https://www.ece.rice.edu/) website for the latest information.

Area of Specialization: Computer Engineering

To fulfill the remaining BSEE degree requirements, students pursuing the Computer Engineering area of specialization must complete:

- a minimum of 3 courses (9 credit hours) from the Computer Engineering area of specialization
- 1 course (3 credit hours) from any area of specialization outside Computer Engineering (from Data Science/Systems, Neuroengineering, or Photonics, Electronics, and Nano-devices)
- 2 courses (6 credit hours) from any area of specialization (including Computer Engineering)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 321</td>
<td>INTRODUCTION TO COMPUTER SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>COMP 382</td>
<td>REASONING ABOUT ALGORITHMS</td>
<td>3</td>
</tr>
</tbody>
</table>

Select a minimum of 3 courses from the following: 3

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 330</td>
<td>TOOLS AND MODELS FOR DATA SCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>DSCI 302</td>
<td>INTRODUCTION TO DATA SCIENCE TOOLS AND MODELS</td>
<td>3</td>
</tr>
<tr>
<td>DSCI 303</td>
<td>MACHINE LEARNING FOR DATA SCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 306</td>
<td>APPLIED ELECTROMAGNETICS</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 430</td>
<td>MODERN COMMUNICATION THEORY AND PRACTICE</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 431</td>
<td>DIGITAL SIGNAL PROCESSING</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 432</td>
<td>MOBILE BIO-BEHAVIORAL SENSING</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 433</td>
<td>ARCHITECTURE FOR WIRELESS COMMUNICATIONS</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 434</td>
<td>ADVANCED HIGH-SPEED SYSTEM DESIGN</td>
<td>3</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

The sequence of COMP 140, COMP 182, and COMP 215 is recommended in addition for the Computer Engineering area of specialization as these courses are prerequisites for many of the Computer Science courses.

Area of Specialization: Data Science/Systems

To fulfill the remaining BSEE degree requirements, students pursuing the Data Science/Systems area of specialization must complete:

- a minimum of 3 courses (9 credit hours) from the Data Science/Systems area of specialization
- 1 course (3 credit hours) from any area of specialization outside Data Science/Systems (from Computer Engineering, Neuroengineering, or Photonics, Electronics, and Nano-devices)
- 2 courses (6 credit hours) from any area of specialization (including Data Science/Systems)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 330</td>
<td>TOOLS AND MODELS FOR DATA SCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>DSCI 302</td>
<td>INTRODUCTION TO DATA SCIENCE TOOLS AND MODELS</td>
<td>3</td>
</tr>
<tr>
<td>DSCI 303</td>
<td>MACHINE LEARNING FOR DATA SCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 306</td>
<td>APPLIED ELECTROMAGNETICS</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 430</td>
<td>MODERN COMMUNICATION THEORY AND PRACTICE</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 431</td>
<td>DIGITAL SIGNAL PROCESSING</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 432</td>
<td>MOBILE BIO-BEHAVIORAL SENSING</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 433</td>
<td>ARCHITECTURE FOR WIRELESS COMMUNICATIONS</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 434</td>
<td>ADVANCED HIGH-SPEED SYSTEM DESIGN</td>
<td>3</td>
</tr>
</tbody>
</table>
### Area of Specialization: Neuroengineering

To fulfill the remaining BSEE degree requirements, students pursuing the Neuroengineering area of specialization must complete:

- a minimum of 3 courses (9 credit hours) from the Neuroengineering area of specialization
- 1 course (3 credit hours) from any area of specialization outside Neuroengineering (from Computer Engineering, Data Science/Systems, or Photonics, Electronics, and Nano-devices)
- 2 courses (6 credit hours) from any area of specialization (including Neuroengineering)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELEC 380 / BIOE 380 / NEUR 383</td>
<td>INTRODUCTION TO NEUROENGINEERING: MEASURING AND MANIPULATING NEURAL ACTIVITY</td>
<td>9</td>
</tr>
<tr>
<td>ELEC 381 / BIOE 381</td>
<td>FUNDAMENTALS OF NERVE AND MUSCLE ELECTROPHYSIOLOGY</td>
<td></td>
</tr>
<tr>
<td>ELEC 382 / NEUR 382</td>
<td>INTRODUCTION TO COMPUTATIONAL NEUROSCIENCE</td>
<td></td>
</tr>
<tr>
<td>ELEC 481 / BIOE 481 / NEUR 481</td>
<td>COMPUTATIONAL NEUROSCIENCE AND NEURAL ENGINEERING</td>
<td></td>
</tr>
<tr>
<td>ELEC 482 / BIOE 482</td>
<td>PHYSIOLOGICAL CONTROL SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>ELEC 483</td>
<td>MACHINE LEARNING AND SIGNAL PROCESSING FOR NEURO ENGINEERING</td>
<td></td>
</tr>
<tr>
<td>ELEC 485 / BIOE 485 / COMP 485</td>
<td>FUNDAMENTALS OF MEDICAL IMAGING I</td>
<td></td>
</tr>
</tbody>
</table>

### Area of Specialization: Photonics, Electronics, and Nano-devices

To fulfill the remaining BSEE degree requirements, students pursuing the Photonics, Electronics, and Nano-devices area of specialization must complete:

- a minimum of 3 courses (9 credit hours) from the Photonics, Electronics, and Nano-devices area of specialization
- 1 course (3 credit hours) from any area of specialization outside Photonics, Electronics, and Nano-devices (from Computer Engineering, Data Science/Systems, or Neuroengineering)
- 2 courses (6 credit hours) from any area of specialization (including Photonics, Electronics, and Nano-devices)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELEC 262</td>
<td>INTRODUCTION TO WAVES AND PHOTONICS</td>
<td></td>
</tr>
<tr>
<td>ELEC 306</td>
<td>APPLIED ELECTROMAGNETICS or PHYS 302 INTERMEDIATE ELECTRODYNAMICS</td>
<td></td>
</tr>
<tr>
<td>ELEC 361</td>
<td>QUANTUM MECHANICS FOR ENGINEERS or PHYS 311 INTRODUCTION TO QUANTUM PHYSICS I</td>
<td></td>
</tr>
<tr>
<td>ELEC 365 / MSNE 365</td>
<td>NANOMATERIALS FOR ENERGY</td>
<td></td>
</tr>
<tr>
<td>ELEC 460</td>
<td>PHYSICS OF SENSOR MATERIALS AND NANOSENSORS TECHNOLOGY</td>
<td></td>
</tr>
<tr>
<td>ELEC 461</td>
<td>SOLID STATE PHYSICS or PHYS 412 SOLID STATE PHYSICS</td>
<td></td>
</tr>
<tr>
<td>ELEC 462</td>
<td>OPTOELECTRONIC DEVICES</td>
<td></td>
</tr>
<tr>
<td>PHYS 416</td>
<td>COMPUTATIONAL PHYSICS</td>
<td></td>
</tr>
</tbody>
</table>

### Policies for the BSEE Degree

**Advising**

Rice University provides multiple avenues for undergraduate advising through the Office of Academic Advising, the Rice Residential College
system, and academic departments. Although students may consult with their Divisional Advisors in their College during the freshman and sophomore years, they are welcome and encouraged to meet with a major advisor in the Electrical and Computer Engineering Department. In particular, ECE students are required to meet with a major advisor in ECE at least during their junior and senior years to discuss their ECE Specialization Area course selection and Design Courses. The ECE Undergraduate Committee currently has seven faculty members who serve as major advisors. More information on sample degree plans and on the process for declaring ECE as a major is available on the ECE web site at: https://www.ece.rice.edu/undergraduate-study/academics/bsee-degree-requirements (https://www.ece.rice.edu/undergraduate-study/academics/bsee-degree-requirements/).

Transfer Credit
For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the BSEE degree should be aware of the following departmental transfer credit guidelines:

• Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

Additional Information
For additional information, please see the Electrical and Computer Engineering website: https://www.ece.rice.edu/.

Opportunities for the BSEE Degree

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Fifth-Year Master's Degree Option for Rice Undergraduate Students
Rice students have an option to pursue the Master of Electrical Engineering (MEE) degree by adding an additional fifth year to their four undergraduate years of science and engineering studies.

Advanced Rice undergraduate students in good academic standing may apply to the MEE degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master's degree program. A plan of study will need to be approved by the student's undergraduate advisor and the MEE program director.

As part of this option and opportunity, Rice undergraduate students:

• must complete the requirements for a bachelor's degree and the master's degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).

• should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).

• more information on this Undergraduate - Graduate Concurrent Enrollment opportunity, including specific information on the registration process can be found here (p. 17).

Independent Research
The ECE Department encourages our undergraduates to pursue research projects with the faculty. The ECE Department has several opportunities including the multi-year, team-oriented Vertically Integrated Projects (VIP) program through the ELEC 491 course and individual independent research with a faculty member through the ELEC 490 course. For information on taking an undergraduate summer research course tuition free, see: https://summer.rice.edu/academics/ugresearch (https://summer.rice.edu/academics/ugresearch/). Also, there are often summer research opportunities through the NSF funded Research Experience for Undergraduates (REU) program, through individual ECE faculty grants, or through the Smalley-Curl Institute REU Sites program. For more information, see the ECE Department web page at: https://www.ece.rice.edu/undergraduate-program (https://www.ece.rice.edu/undergraduate-program/)

Study Abroad
A semester of study abroad is a valuable experience to enhance an individual's perspective on engineering and technology. The ECE Department encourages students to explore this option particularly for the spring semester of the sophomore or junior year. The ECE Department and the University Study Abroad office coordinate to review programs and courses appropriate for Rice engineering students. Additional information is on the ECE Department website at: https://www.ece.rice.edu/undergraduate-study/resources/study-abroad (https://www.ece.rice.edu/undergraduate-study/resources/study-abroad/)

Additional Information
For additional information, please see the Electrical and Computer Engineering website: https://www.ece.rice.edu/.

Doctor of Philosophy (PhD) Degree in the field of Electrical and Computer Engineering

Program Learning Outcomes for the MS and PhD Degrees in the field of Electrical and Computer Engineering

Upon completing the MS and PhD degrees in the field of Electrical and Computer Engineering, students will be able to:

1. Identify and define relevant research topics in Electrical and Computer Engineering and conduct independent research with results that advance the state of the art in the field.

2. Lead research and design groups by communicating innovative ideas effectively.

3. Solve real-world problems by integrating knowledge gained in courses and through independent study.
Requirements for the MS and PhD Degrees in the field of Electrical and Computer Engineering

PhD Degree Program
For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55).

Students are admitted to the PhD program only in the fall semester. Electrical and Computer Engineering PhD students move through the program in stages, starting as a first-year student, advancing to MS candidate, PhD-qualified student, and PhD candidate; each advancement requires the approval of the Electrical and Computer Engineering Graduate Committee. The MS degree is a thesis master's degree. For general university requirements, please see Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55).

Students entering with previous graduate work may follow a hybrid program developed in consultation with the faculty and the Graduate Committee. The first academic year concentrates on foundation coursework and developing a research area. Each student must successfully complete a project, ELEC 599, in his or her chosen area of research in lieu of an oral or written qualifying exam. In addition to enabling the faculty to evaluate the student's research potential, the project encourages timely completion of the MS degree. The student must complete a master's thesis and successfully defend it in an oral examination. Students who have already acquired a master's degree elsewhere must also complete the ELEC 599 project, after which acceptance of their previous master's degree will be determined by the Graduate Committee. No course in which the student earned a grade lower than a B- (2.67 grade points) may count toward an MS or PhD.

A candidate for the PhD degree must demonstrate independent, original research in Electrical and Computer Engineering. After successful completion of all coursework, a student is eligible for PhD candidacy. The student then engages in full-time research, culminating in presentation of the PhD research proposal and then the completion and public defense of the PhD thesis. Details of the PhD program requirements, the phases of study, and a timetable may be found on the Electrical and Computer Engineering website (http://www.ece.rice.edu/).

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the PhD Degree in the field of Electrical and Computer Engineering</td>
<td>90</td>
</tr>
</tbody>
</table>

Policies for the PhD Degree in the field of Electrical and Computer Engineering

Department of Electrical and Computer Engineering Graduate Program Handbook
The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Electrical and Computer Engineering publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Electrical_Computer_Engineering_Graduate_Handbook.pdf

Additional Information
For additional information, please see the Electrical and Computer Engineering website: https://www.ece.rice.edu/. Opportunities for the PhD Degree in the field of Electrical and Computer Engineering Additional Information
For additional information, please see the Electrical and Computer Engineering website: https://www.ece.rice.edu/

Master of Electrical Engineering (MEE) Degree

Program Learning Outcomes for the MEE Degree
Upon completing the MEE degree, students will be able to:
1. Apply the principles of mathematics and science necessary to solve advanced electrical engineering problems.
2. Practice at an advanced level in at least one of the major sub-fields of electrical engineering.

Requirements for the MEE Degree
The MEE degree is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MEE degree must complete:

- A minimum of 10 courses (30 credit hours) to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 27 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University.
- A minimum of 3 courses (9 credit hours) from the core requirements.
- The requirements for one area of specialization (see below for areas of specialization). The MEE degree program offers five areas of specialization, or focus areas:
  - Computer Engineering (p. ), or
  - Data Science (p. ), or
  - Neuroengineering (p. 403), or
  - Photonics, Electronics, and Nano-devices (p. ), or
  - Systems (p. 403).
- A minimum of 4 courses (12 credit hours) from the elective requirements:
  - 2 courses (6 credit hours) from the General MEE requirement
  - 2 courses (6 credit hours) from the Free Elective requirement.
- ELEC 698 each semester in residence at Rice University.
- A maximum of 1 course (3 credit hours) of graduate-level coursework as transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.

Additional Information
For additional information, please see the Electrical and Computer Engineering website: https://www.ece.rice.edu/.
Master of Electrical Engineering (MEE) Degree

- A minimum GPA of 3.00 or higher in all Rice coursework that satisfies requirements for the non-thesis master's degree with a minimum grade of C (2.00 grade points) in each course.

Students are admitted to the MEE degree program in the fall semester. MEE students are to consult with an academic advisor on the MEE Committee each semester in order to identify and clearly document their individual curricular requirements or degree plan to be followed. An MEE degree planning form and current requirements may be found on the ECE website (http://www.ece.rice.edu/).

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MEE Degree</td>
<td>30</td>
</tr>
</tbody>
</table>

### Degree Requirements

#### Core Requirements

**Select 3 courses from the following:**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELEC 526 / COMP 526</td>
<td>HIGH PERFORMANCE COMPUTER ARCHITECTURE</td>
<td></td>
</tr>
<tr>
<td>ELEC 533 / CAAM 583 / STAT 583</td>
<td>INTRODUCTION TO RANDOM PROCESSES AND APPLICATIONS</td>
<td></td>
</tr>
<tr>
<td>ELEC 537 / MECH 537</td>
<td>COMMUNICATION NETWORKS</td>
<td></td>
</tr>
<tr>
<td>ELEC 546 / COMP 546</td>
<td>INTRODUCTION TO COMPUTER VISION</td>
<td></td>
</tr>
<tr>
<td>ELEC 548 / BIOE 548</td>
<td>MACHINE LEARNING AND SIGNAL PROCESSING FOR NEURO ENGINEERING</td>
<td></td>
</tr>
<tr>
<td>ELEC 551</td>
<td>MODERN COMMUNICATION THEORY AND PRACTICE</td>
<td></td>
</tr>
<tr>
<td>ELEC 553</td>
<td>MOBILE AND EMBEDDED SYSTEM DESIGN AND APPLICATION</td>
<td></td>
</tr>
<tr>
<td>ELEC 558</td>
<td>DIGITAL SIGNAL PROCESSING</td>
<td></td>
</tr>
<tr>
<td>ELEC 563 / PHYS 563</td>
<td>INTRODUCTION TO SOLID STATE PHYSICS</td>
<td></td>
</tr>
<tr>
<td>ELEC 568</td>
<td>LASER SPECTROSCOPY</td>
<td></td>
</tr>
<tr>
<td>ELEC 575</td>
<td>LEARNING FROM SENSOR DATA</td>
<td></td>
</tr>
<tr>
<td>ELEC 584</td>
<td>FUNDAMENTALS OF HUMAN NEUROIMAGING</td>
<td></td>
</tr>
</tbody>
</table>

#### Area of Specialization

**Select 1 of the following Areas of Specialization (see Areas of Specialization below):**

- Computer Engineering

### Elective Requirements

**General MEE Requirement:** select 2 additional courses from any of the courses that qualify as Core Requirement courses or that fulfill any of the Areas of Specialization

**Free Elective Requirement:** select 2 additional courses as free electives

### Professional Master's Seminar

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELEC 698</td>
<td>ECE PROFESSIONAL MASTERS SEMINAR SERIES (required each semester in-residence at Rice University, credit hours earned do not apply towards degree requirements)</td>
<td>1</td>
</tr>
</tbody>
</table>

### Footnotes and Additional Information

1. Free electives may be fulfilled by any 2 courses (6 credit hours) selected from the following:
   - Departmental (ELEC) course offerings taught by ECE faculty.
   - Research coursework, such as ELEC 590 or ELEC 591, when either are taken for at least 3 credit hours.
   - Any of the following courses: COMP 532, ELEC 512, ELEC 520, ELEC 552, ELEC 556, ENGI 510, ENGI 528, ENGI 529, ENGI 610, ENGI 615, or NSCI 511.
   - Any other course approved by the student’s MEE academic advisor.

2. ELEC 698 is taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade. As a S/U course it does not apply to the requirement of a minimum grade of C (2.00 grade points) in each required course.

### Areas of Specialization

Students must complete a minimum of 3 courses (9 credit hours) from one Area of Specialization and may select up to 2 additional courses (6 credit hours) from any Area of Specialization (or from the Core Requirements) to fulfill Elective Requirements.

#### Area of Specialization: Computer Engineering

**Select 3 courses from the following:**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELEC 513 / COMP 513</td>
<td>COMPLEXITY IN MODERN SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>ELEC 515</td>
<td>MACHINE LEARNING FOR RESOURCE-CONSTRAINED PLATFORMS</td>
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</tr>
<tr>
<td>ELEC 517</td>
<td>MICROWAVE ENGINEERING</td>
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</tr>
<tr>
<td>ELEC 521</td>
<td>ADVANCED DIGITAL INTEGRATED CIRCUITS DESIGN</td>
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<tr>
<td>ELEC 522</td>
<td>ADVANCED VLSI DESIGN</td>
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<tr>
<td>ELEC 526 / COMP 526</td>
<td>HIGH PERFORMANCE COMPUTER ARCHITECTURE</td>
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<tr>
<td>ELEC 527</td>
<td>VLSI SYSTEMS DESIGN</td>
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</tr>
<tr>
<td>ELEC 553</td>
<td>MOBILE AND EMBEDDED SYSTEM DESIGN AND APPLICATION</td>
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2019-2020 General Announcements
PDF Generated 1/29/2020
### Area of Specialization: Data Science

<table>
<thead>
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<tr>
<td>ELEC 502 / COMP 502 / STAT 502</td>
<td>NEURAL MACHINE LEARNING I</td>
<td>9-10</td>
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<tr>
<td>ELEC 519</td>
<td>DATA SCIENCE AND DYNAMICAL SYSTEMS</td>
<td>9-10</td>
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<tr>
<td>ELEC 531</td>
<td>STATISTICAL SIGNAL PROCESSING</td>
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<tr>
<td>ELEC 535</td>
<td>INFORMATION THEORY</td>
<td>9-10</td>
</tr>
<tr>
<td>ELEC 546 / COMP 546</td>
<td>INTRODUCTION TO COMPUTER VISION</td>
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<td>DIGITAL SIGNAL PROCESSING</td>
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<tr>
<td>ELEC 560</td>
<td>PHYSICS OF SENSOR MATERIALS AND NANOSENSOR TECHNOLOGY</td>
<td>9-10</td>
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<tr>
<td>ELEC 562</td>
<td>OPTOELECTRONIC DEVICES</td>
<td>9-10</td>
</tr>
<tr>
<td>ELEC 563 / PHYS 563</td>
<td>INTRODUCTION TO SOLID STATE PHYSICS I</td>
<td>9-10</td>
</tr>
<tr>
<td>ELEC 567</td>
<td>NANO-OPTICS</td>
<td>9-10</td>
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<tr>
<td>ELEC 568</td>
<td>LASER SPECTROSCOPY</td>
<td>9-10</td>
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<tr>
<td>ELEC 569 / PHYS 569</td>
<td>ULTRAFAST OPTICAL PHENOMENA</td>
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<tr>
<td>ELEC 571</td>
<td>IMAGING AT THE NANOSCALE</td>
<td>9-10</td>
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<td>ELEC 584</td>
<td>ARCHITECTURE FOR WIRELESS COMMUNICATIONS</td>
<td>9-10</td>
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<tr>
<td>ELEC 585</td>
<td>FUNDAMENTALS OF MEDICAL IMAGING I</td>
<td>9-10</td>
</tr>
<tr>
<td>ELEC 587</td>
<td>INTRODUCTION TO NEUROENGINEERING: MEASURING AND MANIPULATING NEURAL ACTIVITY</td>
<td>9-10</td>
</tr>
<tr>
<td>ELEC 588 / CAAM 615 / NEUR 615</td>
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<td>9-10</td>
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<tr>
<td>ELEC 589</td>
<td>NEURAL COMPUTATION</td>
<td>9-10</td>
</tr>
<tr>
<td>ELEC 680 / BIOE 680</td>
<td>NANO-NEUROTECHNOLOGY</td>
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### Area of Specialization: Neuroengineering

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<tr>
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<td>INTRODUCTION TO RANDOM PROCESSES AND APPLICATIONS</td>
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<tr>
<td>ELEC 546 / BIOE 548</td>
<td>MACHINE LEARNING AND SIGNAL PROCESSING FOR NEURO ENGINEERING</td>
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<td>ELEC 558</td>
<td>FUNDAMENTALS OF HUMAN NEUROIMAGING</td>
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<td>NEURAL COMPUTATION</td>
<td>9-10</td>
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<tr>
<td>ELEC 680 / BIOE 680</td>
<td>NANO-NEUROTECHNOLOGY</td>
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<tr>
<td>ELEC 560</td>
<td>PHYSICS OF SENSOR MATERIALS AND NANOSENSOR TECHNOLOGY</td>
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<td>ELEC 563 / PHYS 563</td>
<td>INTRODUCTION TO SOLID STATE PHYSICS I</td>
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<td>NANO-OPTICS</td>
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<td>ELEC 568</td>
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<td>ELEC 569 / PHYS 569</td>
<td>ULTRAFAST OPTICAL PHENOMENA</td>
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<td>ARCHITECTURE FOR WIRELESS COMMUNICATIONS</td>
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### Area of Specialization: Photonics, Electronics, and Nano-devices

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<td>ELEC 680 / BIOE 680</td>
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### Area of Specialization: Systems

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<tr>
<td>ELEC 531</td>
<td>STATISTICAL SIGNAL PROCESSING</td>
<td>9-10</td>
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<tr>
<td>ELEC 533 / CAAM 583 / STAT 583</td>
<td>INTRODUCTION TO RANDOM PROCESSES AND APPLICATIONS</td>
<td>9-10</td>
</tr>
<tr>
<td>ELEC 535</td>
<td>INFORMATION THEORY</td>
<td>9-10</td>
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<td>ELEC 536</td>
<td>ARCHITECTURE FOR WIRELESS COMMUNICATIONS</td>
<td>9-10</td>
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<tr>
<td>ELEC 537 / MECH 537</td>
<td>COMMUNICATION NETWORKS</td>
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<td>ELEC 539</td>
<td>INTRODUCTION TO COMMUNICATION NETWORKS</td>
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<tr>
<td>ELEC 542</td>
<td>THE APPLICATION OF VECTOR SPACE METHODS AND OTHER ADVANCED TECHNIQUES TO DSP</td>
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<td>ELEC 546 / COMP 546</td>
<td>INTRODUCTION TO COMPUTER VISION</td>
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<td>COMPUTATIONAL PHOTOGRAPHY</td>
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<td>ELEC 551</td>
<td>MODERN COMMUNICATION THEORY AND PRACTICE</td>
<td>9-10</td>
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<td>ELEC 558</td>
<td>DIGITAL SIGNAL PROCESSING</td>
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<tr>
<td>ELEC 573</td>
<td>NETWORK SCIENCE AND ANALYTICS</td>
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<tr>
<td>ELEC 680 / BIOE 680</td>
<td>NANO-NEUROTECHNOLOGY</td>
<td>9-10</td>
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</tbody>
</table>
Policies for the MEE Degree

Department of Electrical and Computer Engineering Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Electrical and Computer Engineering publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Electrical_Computer_Engineering_Graduate_Handbook.pdf

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the MEE degree in the field of Electrical and Computer Engineering should be aware of the following departmental transfer credit guidelines:

- No more than 1 course (3 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the degree.
- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information

For additional information, please see the Electrical and Computer Engineering website: https://www.ece.rice.edu/

Opportunities for the MEE Degree

Fifth-Year Master's Degree Option for Rice Undergraduate Students

Rice students have an option to pursue the Master of Electrical Engineering (MEE) degree by adding an additional fifth year to their four undergraduate years of science and engineering studies. Advanced Rice undergraduate students in good academic standing may apply to the MEE degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master’s degree program. A plan of study will need to be approved by the student’s undergraduate advisor and the MEE program director.

As part of this option and opportunity, Rice undergraduate students:

- must complete the requirements for a bachelor’s degree and the master’s degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
- should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
- more information on this Undergraduate - Graduate Concurrent Enrollment opportunity, including specific information on the registration process can be found here (p. 17).

Additional Information

For additional information, please see the Electrical and Computer Engineering website: https://www.ece.rice.edu/

Energy and Water Sustainability

Contact Information

Energy and Water Sustainability
https://ceve.rice.edu/
713-348-4949

James B. Blackburn
Program Director
blackbur@rice.edu

The interdisciplinary program in Energy and Water Sustainability is offered by the Civil and Environmental Engineering Department in collaboration with several other Rice University departments.

Sustainable development is a societal goal that challenges traditional ways of thinking and requires alternative approaches and solutions to balance environmental, economic, and social interests. Carbon management strategies and renewable resources will be key elements of energy policy for the coming decades. Similarly, the long-term viability of existing water use and human settlement patterns must be reconsidered given the effect of climate change in freshwater availability, as well as increasing competing demands for this limited resource. More generally, the dedication of materials, energy, and ecological resources will become more important in economic decision-making, while more and more members of society will demand equity in decision-making processes.

Students studying Energy and Water Sustainability will gain knowledge of both the science and policy issues associated with the evaluation of sustainable energy and water strategies that will form a cornerstone of 21st century social systems. Students completing this program will be better prepared for a global society that is attempting to understand and address the challenge of meeting basic human needs today and in the future while maintaining a functional natural system and social order.

Minor

- Minor in Energy and Water Sustainability (p. 405)

Energy and Water Sustainability does not currently offer an academic program at the graduate level.

Director

James B. Blackburn, Civil and Environmental Engineering

Undergraduate Advisors

Pedro J.J. Alvarez, Civil and Environmental Engineering
James B. Blackburn, Civil and Environmental Engineering

Steering Committee

Philip B. Bedient, Civil and Environmental Engineering
Walter G. Chapman, Chemical and Biomolecular Engineering
Daniel S. Cohan, Civil and Environmental Engineering
Kenneth R. Cox, Chemical and Biomolecular Engineering
Leonardo A. Dueñas-Osorio, Civil and Environmental Engineering
Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject codes: Courses from various subjects may apply towards this program

Program Description and Code
• Energy and Water Sustainability: EWSU

Undergraduate Minor Description and Code
• Minor in Energy and Water Sustainability: EWSU

CIP Code and Description ¹
• EWSU Minor: CIP Code/Title: 40.0605 - Hydrology and Water Resources Science

¹ Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Minor in Energy and Water Sustainability

Program Learning Outcomes for the Minor in Energy and Water Sustainability

Upon completing the minor in Energy and Water Sustainability, students will be able to:

1. Apply basic economic concepts of energy and water sustainability including aspects of environmental economics and project-scale economic issues.
2. Understand basic environmental issues applicable to energy and water sustainability.
3. Conduct evaluations of social aspects from a sustainability perspective.
4. Evaluate projects and political systems from the standpoint of energy and water issues as well as more general sustainability issues.
5. Apply sustainability concepts at varying scales and viewpoints, including project level, corporate level, and municipal, state, national, and international levels.
6. Understand the role of climate change on future projects and societies.

Requirements for the Minor in Energy and Water Sustainability

Students pursuing the minor in Energy and Water Sustainability must complete:

• A minimum of 7 courses (19 credit hours) to satisfy minor requirements.
• A minimum of 6 courses (16 credit hours) taken at the 300-level or above.
• A Design Practicum.¹
• A maximum of 2 courses (6 credit hours) applied towards the minor’s Elective Requirements can be used to fulfill a student’s major requirements.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the minor’s Official Certifier (https://registrar.rice.edu/facstaff/degrowrks/officialcertifier/)). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
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<td>Total Credit Hours Required for the Minor in Energy and Water Sustainability</td>
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Minor Requirements

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<td>Core Requirements</td>
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<tr>
<td>CEVE 301</td>
<td>ENGINEERING ECONOMICS AND PROJECT MANAGEMENT</td>
<td>3</td>
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<tr>
<td>or ECON 480 / ENST 480</td>
<td>ENVIRONMENTAL ECONOMICS</td>
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<tr>
<td>CEVE 302 / ENGI 302</td>
<td>SUSTAINABLE DESIGN</td>
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<td>CEVE 307 / ENST 307 / ESCI 307</td>
<td>ENERGY AND THE ENVIRONMENT</td>
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<td></td>
<td>Design Practicum ¹</td>
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<td>CEVE 499</td>
<td>SPECIAL PROBLEMS (at least 1 credit hour)</td>
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<tr>
<td></td>
<td>Elective Requirements ²</td>
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<td>Select a total of 3 elective courses (minimum of 9 credit hours) from at least 2 of the following 3 categories:</td>
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<td>Energy</td>
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<tr>
<td></td>
<td>Select up to 2 courses from the following:</td>
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<tr>
<td>ECON 437 / ENST 437</td>
<td>ENERGY ECONOMICS</td>
<td></td>
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<tr>
<td>ESCI 415</td>
<td>DECISION MAKING AND ECONOMICS IN THE ENERGY INDUSTRY</td>
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<td>ESCI 417</td>
<td>PETROLEUM INDUSTRY ECONOMICS AND MANAGEMENT</td>
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<tr>
<td>ESCI 550</td>
<td>MODERN EXPLORATION TECHNOLOGY</td>
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</table>
SOCI 367 / ENST 367  ENVIRONMENTAL SOCIOLOGY

Water
Select up to 2 courses from the following:
CEVE 314 / BIOE 365 / GLHT 314  SUSTAINABLE WATER PURIFICATION FOR THE DEVELOPING WORLD
CEVE 412  HYDROLOGY AND WATER RESOURCES ENGINEERING
CEVE 418 / ESCI 418  QUANTITATIVE HYDROGEOLOGY
CEVE 444  ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLGY

Sustainability
Select up to 2 courses from the following:
ARCH 313 / ENST 313  CASE STUDIES IN SUSTAINABLE DESIGN
CEVE 406 / ENST 406  INTRODUCTION TO ENVIRONMENTAL LAW
CEVE 492  MODELING AND ANALYSIS OF NETWORKED SYSTEMS
CHBE 281 / ENST 281  ENGINEERING SUSTAINABLE COMMUNITIES
ENST 302 / SOCI 304  ENVIRONMENTAL ISSUES: RICE INTO THE FUTURE
POLI 432  URBAN POLITICS
POLI 441 / ENST 441  GOVERNING THE ENVIRONMENTAL COMMONS
STAT 485  ENVIRONMENTAL STATISTICS AND DECISION MAKING

Total Credit Hours 19

Footnotes and Additional Information
1 Students are required to complete 1 special topics course (CEVE 499), typically during the fall semester of their senior year. Students in engineering and architecture will fulfill this requirement by preparing a report that describes the incorporation of sustainability concepts into their design effort in consultation with their senior (capstone) design course instructor. Students not engaged in a suitable design project will either consult with an extant design group or pursue a project related to their own area of study in consultation with the EWSU advisors.

2 No more than 2 electives courses can be drawn from any 1 of the 3 electives categories. At least 1 elective course must be taken from a different school than the school hosting the student’s major. No more than 2 of the 3 electives can be used to also fulfill a student’s major requirements. Additional courses can be approved as electives with the agreement of the program director.

Policies for the Minor in Energy and Water Sustainability
Program Restrictions and Exclusions
Students pursuing the minor in Energy and Water Sustainability should be aware of the following program restriction:

• As noted in Majors, Minors, and Certificates (p. 11), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oauth.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines
Students pursuing the minor in Energy and Water Sustainability should be aware of the following program-specific transfer credit guidelines:

• Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information
For additional information, please see the Energy and Water Sustainability website:

Opportunities for the Minor in Energy and Water Sustainability
Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Additional Information
For additional information, please see the Energy and Water Sustainability website:

Energy Economics
Contact Information
Economics
https://economics.rice.edu/
266 Baker Building
713-348-3563

George Zodrow
Department Chair
zodrow@rice.edu

Kenneth Medlock
Director of MEEcon Program
medlock@rice.edu

Peter Reginald Hartley
Co-Director of MEEcon Program
The Master of Energy Economics (MEEcon) is a professional master’s program emphasizing applying economic theory, economic and financial modeling and analysis, and quantitative and statistical methods to provide insightful analysis of issues and policies affecting the energy industry. The program provides rigorous training in various areas including microeconomics, econometrics, economic and financial modeling, risk management, economic forecasting, geopolitics, and political economy. Students will enhance their analytical and quantitative skills and acquire the necessary energy industry knowledge to understand challenges related to technology, business, investment and regulation, and economic forecasting.

The MEEcon degree is designed to educate future leaders and strategic thinkers in the energy sector. Students develop skills to provide insightful analysis of energy markets in order to inform future market orientation, capital asset decisions and firm strategic direction. Built upon programs in the Economics Department and the Baker Institute’s Center for Energy Studies (CES), the MEEcon degree provides a new avenue for energy professionals to develop human capital relevant for business development and/or strategic planning roles.

Energy Economics does not currently offer an academic program at the undergraduate level.

**Master's Program**
- Master of Energy Economics (MEEcon) Degree (p. 407)

**Chair, Department of Economics**
George Zodrow

**Director**
Kenneth Medlock

**Co-Director**
Peter Reginald Hartley

**Description and Code Legend**
*Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:*

**Course Catalog/Schedule**
- Course offerings/subject code: ECON

**Department Description and Code**
- Economics: ECON

**Graduate Degree Description and Code**
- Master of Energy Economics degree: MEEcon

**Graduate Degree Program Description and Code**
- Degree Program in Energy Economics: ENEC

**CIP Code and Description**
- ENEC Major/Program: CIP Code/Title: 45.0603 - Econometrics and Quantitative Economics

1 Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

**Master of Energy Economics (MEEcon) Degree**

**Program Learning Outcomes for the MEEcon Degree**
Upon completing the MEEcon degree, students will be able to:

1. Understand and apply basic economic, scientific, political, and statistical principles useful for analyzing and understanding energy markets.
2. Apply quantitative skills, including econometric models and statistical software, to better utilize data to critique, analyze, and report results of industry-related issues and inform strategic decisions.
3. Be better able to communicate insights arising from the economics perspective on issues affecting the energy sector.

**Requirements for the MEEcon Degree**
The MEEcon degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MEEcon degree must complete:

- A minimum of 40 credit hours to satisfy degree requirements.
- A minimum of 40 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of 2 semesters of full-time graduate study at Rice University.
- A practicum or internship.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum overall GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degneworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

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<th>Code</th>
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## Degree Requirements

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<td>ECON 601</td>
<td>ENERGY ECONOMICS I</td>
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<td>ECON 602</td>
<td>MICROECONOMICS OF THE ENERGY SECTOR</td>
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<td>ECON 603</td>
<td>APPLIED ECONOMETRICS FOR ENERGY MARKETS</td>
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<td>ECON 606</td>
<td>CORPORATE FINANCE FOR THE ENERGY SECTOR</td>
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<tr>
<td>ECON 610</td>
<td>ENERGY AND THE MACROECONOMY</td>
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### Elective Requirements

Select 3 courses as electives from departmental (ECON) course offerings selected from any course between ECON 605 and ECON 622 (except ECON 606 and ECON 610, which are required)

Total Credit Hours 40

### Footnotes and Additional Information

1. A practicum or internship is required for completion of the MEEcon professional master's degree. It can be taken in either Session II (Spring Semester) or Session IV (Summer II). The practicum will provide students with practical experience relative to the degree. Students will work on projects developed by an industry advisory group. The research will be presented to participating industry advisors at the completion of the degree program. The projects will provide prospective employers with an opportunity to evaluate new talent effectively. As an alternative to the practicum, students may complete an internship with an approved special project with an employer. The internship is meant to last a minimum of 7 weeks and should be directly related to the student's core area of study in the MEEcon degree program. Spring internships start on the first day of Spring classes.

2. Students may select ECON 699 during one session - either Session II (Spring Semester) or Session IV (Summer II). Because the course is worth 4 credit hours and is only taken once, the total credit hours needed to complete the MEEcon degree is 40 hours.

3. Students must complete a total of 3 courses as electives from departmental (ECON) course offerings selected from any course between ECON 605 and ECON 622 (except ECON 606 and ECON 610, which are required). Students may complete either 2 electives in Session II, or complete 1 elective each in both Sessions II and III.

### Proposed Plan-of-Study

The MEEcon degree program is completed in 12 months and is organized in four sessions. Sessions I and II correspond to the Fall and Spring semesters, respectively, and follow the standard Rice Academic Calendar (https://registrar.rice.edu/calendars/). Sessions III and IV are two consecutive 7-week long sessions that take place during the subsequent summer semester. All courses (including required courses and electives) are graduate-level courses, numbered 500-level and above.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
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<tr>
<td>ECON 602</td>
<td>MICROECONOMICS OF THE ENERGY SECTOR</td>
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<tr>
<td>ECON 603</td>
<td>APPLIED ECONOMETRICS FOR ENERGY MARKETS</td>
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<tr>
<td>ECON 606</td>
<td>CORPORATE FINANCE FOR THE ENERGY SECTOR</td>
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Total Credit Hours 16

### Session II (Spring Semester)

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<tr>
<td>ECON 603</td>
<td>APPLIED ECONOMETRICS FOR ENERGY MARKETS</td>
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<td>ECON 606</td>
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### Session III (Summer I)

Elective one Elective one 3 4

Total Credit Hours 16

### Session IV (Summer II)

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<td>ECON 606</td>
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</table>

Total Credit Hours 40

### Footnotes and Additional Information

1. A practicum or internship is required for completion of the MEEcon professional master's degree. It can be taken in either Session II (Spring Semester) or Session IV (Summer II). The practicum will provide students with practical experience relative to the degree. Students will work on projects developed by an industry advisory group. The research will be presented to participating industry advisors at the completion of the degree program. The projects will provide prospective employers with an opportunity to evaluate new talent effectively. As an alternative to the practicum, students may complete an internship with an approved special project with an employer. The internship is meant to last a minimum of 7 weeks and should be directly related to the student's core area of study in the MEEcon degree program. Spring internships start on the first day of Spring classes.

2. Students may select ECON 699 during one session - either Session II (Spring Semester) or Session IV (Summer II). Because the course is worth 4 credit hours and is only taken once, the total credit hours needed to complete the MEEcon degree is 40 hours.

3. Students must complete a total of 3 courses as electives from departmental (ECON) course offerings selected from any course between ECON 605 and ECON 622 (except ECON 606 and ECON 610, which are required). Students may complete either 2 electives in Session II, or complete 1 elective each in both Sessions II and III.

### Policies for the MEEcon Degree

#### Department of Economics Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Department of Economics publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Economics_MEECON_Graduate_Handbook.pdf

#### Admission

Information on admission to the MEEcon program is available on the Economics website (https://economics.rice.edu/graduate-program/MEECON/applicants/). For general university requirements, see Graduate Degrees (p. 49) and Admission to Graduate Study (p. 55).

#### Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions...
on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

**Additional Information**
For additional information, please see the Economics website: https://economics.rice.edu/

**Opportunities for the MEEcon Degree**

**Byron Pope Award**
The Byron Pope Award is given to the student who best exemplifies the benefits provided by participation in the Masters in Energy Economics Program.

**MEEcon Award for Scholarly Excellence**
This award is for superior demonstrated academic excellence in the Master of Energy Economics program courses. This award is supported by a gift from BP.

**Additional Information**
For additional information, please see the Economics website: https://economics.rice.edu/

**Engineering Design**

**Contact Information**

Engineering Design  
http://oedk.rice.edu/minor (http://oedk.rice.edu/minor/)  
Oshman Engineering Design Kitchen  
713-348-OEDK

Z. Maria Oden  
Program Co-Chair  
moden@rice.edu

Joseph R. Cavallaro  
Program Co-Chair  
cavallar@rice.edu

Defined simply, Engineering Design is the process of creating a new product or process to meet a defined need while taking into account constraints such as cost, practicality, and safety. The design process begins with creating an open-ended problem statement to address an unmet need. Through careful consideration of existing solutions and other research, students establish goals that the design should meet. Following a period of brainstorming, students select ideas that best meet the design goals. Building and testing technologies is challenging and forces students to apply their “book knowledge” (e.g., equations) to develop a physical or computational solution. A proof-of-concept prototype usually needs extensive revision and testing before it can be manufactured at scale. Throughout the design process, project planning and communication are essential. Because solving engineering challenges is often open-ended, it is very important to give students many opportunities to experience the steps in the process.

The minor in Engineering Design capitalizes on strengths in engineering design at Rice—both innovative and successful engineering design courses and unsurpassed facilities that are available for undergraduate engineering students starting in their freshman year. Students may begin the minor in their freshman year and take courses throughout their duration of undergraduate studies. The skills they gain will complement their academic major and provide a deep understanding and skill set to embark successfully in engineering design careers.

**Minor**
- Minor in Engineering Design (p. 410)

Engineering Design does not currently offer an academic program at the graduate level.

**Co-Chairs**
Z. Maria Oden, Bioengineering  
Joseph R. Cavallaro, Electrical and Computer Engineering

**Executive Committee**
Joseph R. Cavallaro, Electrical and Computer Engineering  
Deirdre Hunter, Oshman Engineering Design Kitchen  
Z. Maria Oden, Bioengineering  
Matthew Wettergreen, Oshman Engineering Design Kitchen  
Gary L. Woods, Electrical and Computer Engineering

**Minor Advisors**
Joseph R. Cavallaro, Electrical and Computer Engineering  
Deirdre Hunter, Oshman Engineering Design Kitchen  
Z. Maria Oden, Bioengineering  
Matthew Wettergreen, Oshman Engineering Design Kitchen  
Gary L. Woods, Electrical and Computer Engineering

**Faculty Advisory Board**
Joseph R. Cavallaro, Electrical and Computer Engineering  
Robert J. Griffin, Civil and Environmental Engineering  
Deirdre Hunter, Oshman Engineering Design Kitchen  
Jordan Miller, Bioengineering  
Z. Maria Oden, Bioengineering  
Marcia K. O’Malley, Mechanical Engineering  
Rafael Verduzco, Chemical and Biomolecular Engineering  
Matthew Wettergreen, Oshman Engineering Design Kitchen  
Gary L. Woods, Electrical and Computer Engineering

**Description and Code Legend**
*Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:*

**Course Catalog/Schedule**
- Course offerings/subject codes: Courses from various subjects may apply towards this program.

**Program Description and Code**
- Engineering Design: EDES

**Undergraduate Minor Description and Code**
- Minor in Engineering Design: EDES

**CIP Code and Description**
- EDES Minor: CIP Code/Title: 15.1502 - Engineering Design
Minor in Engineering Design

Program Learning Outcomes for the Minor in Engineering Design

Upon completing the minor in Engineering Design, students will be able to:

1. Execute steps of the engineering design process including problem identification, needs assessment, context review, defining design criteria, idea generation, solution selection, iterative prototyping, and testing.
2. Become familiar with other steps of the engineering design process including market assessment, design for manufacturing, field testing, and implementation.
3. Apply technical knowledge from their major within the School of Engineering to solve a design challenge.
4. Develop breadth in design by working on at least two different design projects.
5. Work in multiple teams, filling the role of a team member and a team leader.
6. Apply project planning tools to guide design projects.
7. Communicate effectively their design problems and solutions through written, oral, and visual communication tools to a wide variety of audiences.
8. Become proficient in low and high fidelity physical and digital-based prototyping.

Requirements for the Minor in Engineering Design

Students pursuing the minor in Engineering Design must complete:

- A minimum of 6 courses (18 credit hours) to satisfy minor requirements.

Students are encouraged to begin taking courses in the minor during their freshman year, and are encouraged to declare the minor no later than the beginning of their fifth semester.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the minor’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/)). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<th>Code</th>
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<td>INTRODUCTION TO ENGINEERING DESIGN II</td>
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<tr>
<td>FWIS 188</td>
<td>INTRODUCTION TO ENGINEERING DESIGN AND COMMUNICATION</td>
<td>3</td>
</tr>
<tr>
<td>ENGI 200</td>
<td>ENGINEERING DESIGN STUDIO</td>
<td>3</td>
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<td>ENGI 210</td>
<td>PROTOTYPING AND FABRICATION</td>
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<tr>
<td>ENGI 350</td>
<td>NEEDS IDENTIFICATION AND DESIGN IMPLEMENTATION</td>
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<tr>
<td>ENGI 300</td>
<td>ENGINEERING DESIGN WORKSHOP</td>
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<td>ENGI 315</td>
<td>LEADING TEAMS AND INNOVATION</td>
<td>3</td>
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<tr>
<td>ENGI 355</td>
<td>DIGITAL DESIGN AND VISUALIZATION</td>
<td>3</td>
</tr>
<tr>
<td>MECH 203</td>
<td>MECHANICAL ENGINEERING DESIGN TOOLS</td>
<td>3</td>
</tr>
<tr>
<td>MECH 488</td>
<td>DESIGN OF MECHATRONIC SYSTEMS</td>
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<tr>
<td>PSYC 370</td>
<td>INTRODUCTION TO HUMAN FACTORS AND ERGONOMICS</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credit Hours Required for the Minor in Engineering Design

18

Footnotes and Additional Information

1 With minor advisor approval, students may also complete departmental design courses or project-based courses, excluding capstone or final-year design coursework, to satisfy the Electives Requirement.
The design projects requirement is in place to ensure that students have some breadth in their practice of design. This can be satisfied by a project completed while taking the courses listed in the Electives Requirement and/or a capstone design course. Note that while a capstone design course may be required by the student’s major (e.g., BIOE 451 and BIOE 452, MECH 407 and MECH 408, ELEC 494, etc.) that capstone design course may NOT count as an elective in the Engineering Design minor. However, a project completed in these major-required courses may count as a second design project for this minor. For example, a student may work on one project in ENGI 120 and ENGI 200 and then a second project in the major-required capstone course, such as CHBE 404. ENGI 120 and ENGI 200 may be used to count toward minor requirements, whereas CHBE 404 would not count toward the minor requirements. However, the projects completed in ENGI 120, ENGI 200, and CHBE 404 could be used to fulfill the design projects requirement. Please see the minor advisor regarding the design projects requirement.

Opportunities for the Minor in Engineering Design

Admission

Rice students who are pursuing a B.A. or B.S. degree in the School of Engineering are best prepared to pursue the minor in Engineering Design. Many courses that can be applied towards the minor requirements are open to all Rice students, including those not pursuing the minor in Engineering Design. For ENGI 200 and ENGI 300, students must explain their interest and reasons for taking the course in order to gain instructor permission. Preferential admission will be given to students who indicate they are seeking to complete the minor in Engineering Design.

Program Restrictions and Exclusions

Students pursuing the minor in Engineering Design should be aware of the following program restriction:

• As noted in Majors, Minors, and Certificates (p. 11), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines

Students pursuing the minor in Engineering Design should be aware of the following program-specific transfer credit guidelines:

• Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information

For additional information, please see the Engineering Design website: http://oedk.rice.edu/minor (http://oedk.rice.edu/minor/)

Contact Information

Engineering Leadership

https://www.rcelconnect.org/

Abercrombie Lab

713-348-3181

C. Fred Higgs, III

Faculty Director

higgs@rice.edu

Kazimir I. Karwowski

Executive Director

kazimir.karwowski@rice.edu

The mission of the Rice Center for Engineering Leadership (RCEL) is to educate and develop and inspire Rice Engineers to become ethical leaders in technology who will excel in research, industry, enabling (non-engineering) career paths, or bold entrepreneurship. RCEL programming enhances traditional undergraduate education by developing skills that are not expressly covered by the traditional curricula from the School of Engineering. Ultimately, the goal of the Certificate in Engineering Leadership is to equip engineering students with the critical technical, communication, and leadership skills necessary to succeed and excel professionally.

The Certificate in Engineering Leadership is designed to familiarize undergraduate students with key leadership concepts and allow them to practice the skills necessary to function effectively in a variety of leadership roles in a global and national economy within a workplace, which is often increasingly diverse and multi-cultural. Through coursework, extracurricular activities, internship support, and community events, the Certificate in Engineering Leadership lays a foundation for leadership advancement within 3-5 years of graduation while also teaching students to envision their career impact beyond the 10-year horizon. RCEL programming covers a range of important competency domains, including such topics as creative problem solving, conflict resolution, developing self-awareness, setting goals, project management, oral/written communication, and teamwork.

Certificate

• Certificate in Engineering Leadership (p. 412)
Engineering Leadership does not currently offer an academic program at the graduate level.

**Faculty Director**
C. Fred Higgs, III, *John and Ann Doerr Professor of Mechanical Engineering*

**Executive Director**
Kazimir I. Karwowski

**Professors in the Practice**
- James P. Hennessy
- Sergio D. Kapusta
- Tom Phalen
- David A. Van Kleeck

**Lecturers**
- Janice Hewitt
- Kazimir I. Karwowski
- Gayle M. Moran
- Elizabeth O’Sullivan
- Tina Peterson
- Germaine Porche
- Cesare Wright

**Description and Code Legend**

*Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:*

**Course Catalog/Schedule**
- Course offerings/subject code: RCEL

**Center Description and Code**
- Rice Center for Engineering Leadership: RCEL

**Undergraduate Certificate Description and Code**
- Certificate in Engineering Leadership: CEL

**CIP Code and Description**
- CEL Certificate: CIP Code/Title: 52.0213 - Organizational Leadership

Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

**Certificate in Engineering Leadership**

**Program Learning Outcomes for the Certificate in Engineering Leadership**

Upon completing the certificate in Engineering Leadership, students will be able to:

1. Communicate Effectively: Apply effective oral, written, and interpersonal communication strategies.
2. Make Timely Decisions: Apply analytical and creative problem solving to deliver timely solutions based on the information at hand.
3. Work on Teams: Understand and analyze team dynamics to empower those around them to be successful in accomplishing team goals.
4. Manage Projects: Demonstrate knowledge of the basic tools and techniques to deliver projects on-time, on budget and within scope.
6. Create a Vision: Develop a clear vision that sets future personal and team direction.
7. Apply Ethics and Analyze Values: Analyze personal and organizational values and apply ethics concepts to his/her decision-making.

**Requirements for the Certificate in Engineering Leadership**

Students pursuing the certificate in Engineering Leadership must complete:

- A minimum of 7 courses (11-12 credit hours, depending on course selection) to satisfy certificate requirements.
- A Leadership Development Plan.
- An Engineering Internship.
- An Engineering Launch Pad Requirement.
- A Senior Leadership Portfolio and Presentation.
- A minimum overall GPA of 2.00 in required coursework with a minimum grade of C (2.00 grade points) in each course.

No credit hours counted toward the student's major or minor degree requirements can be applied toward the certificate. Only declared Engineering majors are eligible for the certificate and are required to formally declare their intention to pursue the certificate within their first two years at Rice.

This certificate is not a freestanding degree program; in addition to fulfilling the certificate requirements outlined below, candidates will be required to complete successfully the degree program to which they have been admitted in order to receive this certificate. Upon completion, the certificate is awarded at the same time as the conferral of the student's Rice degree, along with a formal notation on their academic transcript.

The courses listed below satisfy the requirements for this certificate. In certain instances, courses not on this official list may be substituted upon approval of the certificate's academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the certificate's *Official Certifier* ([https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/](https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/)). Students and their academic advisors should identify and clearly document the courses to be taken.

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<td>RCEL 100</td>
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No credit hours counted toward the student's major or minor degree requirements can be applied toward the certificate. Only declared Engineering majors are eligible for the certificate and are required to formally declare their intention to pursue the certificate within their first two years at Rice.

This certificate is not a freestanding degree program; in addition to fulfilling the certificate requirements outlined below, candidates will be required to complete successfully the degree program to which they have been admitted in order to receive this certificate. Upon completion, the certificate is awarded at the same time as the conferral of the student's Rice degree, along with a formal notation on their academic transcript.

The courses listed below satisfy the requirements for this certificate. In certain instances, courses not on this official list may be substituted upon approval of the certificate's academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the certificate's *Official Certifier* ([https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/](https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/)). Students and their academic advisors should identify and clearly document the courses to be taken.

**Certificate Requirements**

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>RCEL 100</td>
<td>SELF-AWARENESS AND THE ENGINEERING LEADER</td>
<td>2</td>
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</table>
RCEL 200 PERSONAL DEVELOPMENT FOR THE ENGINEERING LEADER 2
RCEL 300 DEVELOPMENT OF HIGH PERFORMING ENGINEERING TEAMS 2
RCEL 400 LEADING HIGH PERFORMING ENGINEERING TEAMS 2

Leadership Development Plan 1

Engineering Internship 2
RCEL 241 INTERNSHIP PRACTICUM FOR ENGINEERING LEADERSHIP 0

Engineering Launch Pad Requirement
Select 1 course from the following: 1-2
RCEL 410 ENGINEERING LAUNCH PAD-RESEARCH
RCEL 420 ENGINEERING LAUNCH PAD-INDUSTRY
RCEL 430 ENGINEERING LAUNCH PAD-NON-ENGINEERING PATHWAYS
RCEL 440 ENGINEERING LAUNCH PAD-ENTREPRENEURSHIP

Leadership Action Learning
RCEL 450 ENGINEERING PROJECT MANAGEMENT AND LEADERSHIP ACTION LEARNING 2

Senior Leadership Portfolio and Presentation 3

Total Credit Hours 11-12

Footnotes and Additional Information
1 The purpose of the Development Plan is to understand one’s personal leadership capabilities, synthesize the “lessons learned” from experiences, and use experience to manage the development of the capabilities needed to become an engineering leader.
2 The certificate in Engineering Leadership requires all students to participate in a qualifying summer internship, ideally after the sophomore year. To receive credit for the internship experience, students enroll in RCEL 241 Professional Excellence for Engineers.
3 The certificate program culminates in the creation of a comprehensive Leadership Portfolio, which documents the personal, academic, and professional growth of the student over the course of his or her time in the program. Each student must also deliver a final Senior Leadership Presentation that synthesizes and expands upon the information included in the Leadership Portfolio.

Additional Recommended Courses
The following courses are not required to complete the certificate in Engineering Leadership, but are highly recommended:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUSI 310</td>
<td>LEADING PEOPLE IN ORGANIZATIONS</td>
<td>3</td>
</tr>
<tr>
<td>ENGI 120</td>
<td>INTRODUCTION TO ENGINEERING DESIGN</td>
<td>3</td>
</tr>
<tr>
<td>ENGI 128</td>
<td>INTRODUCTION TO ENGINEERING SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>ENGI 242</td>
<td>PROFESSIONAL COMMUNICATION FOR ENGINEERING LEADERS</td>
<td>3</td>
</tr>
<tr>
<td>ENGI 303 / CEVE 322</td>
<td>ENGINEERING ECONOMICS</td>
<td>3</td>
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<tr>
<td>ENGI 320 / CEVE 320</td>
<td>ETHICS AND ENGINEERING LEADERSHIP</td>
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<tr>
<td>ENGI 428</td>
<td>ENTREPRENEURSHIP INDEPENDENT STUDY</td>
<td>1</td>
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</table>

Policies for the Certificate in Engineering Leadership

Program Restrictions and Exclusions
Students pursuing the certificate in Engineering Leadership should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 11), students may declare their intent to pursue a university certificate only after they have first declared a major.
- No credit hours counted toward a student’s major or minor degree requirements can be applied toward the certificate in Engineering Leadership.
- Only declared Engineering majors are eligible for the certificate and are required to declare formally their intention to pursue the certificate within their first two years at Rice.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines
Students pursuing the certificate in Engineering Leadership should be aware of the following program-specific transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information
For additional information, please see the Engineering Leadership website: https://www.rcelconnect.org/

Opportunities for the Certificate in Engineering Leadership

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Additional Information
For additional information, please see the Engineering Leadership website: https://www.rcelconnect.org/

English

Contact Information

English
Rice English integrates creative and critical practice through training in close reading, analytical writing, cultural history and theory, and craft/form. Our faculty research and pedagogy cover the breadth of the study of British and American literatures and cultures ranging from the medieval era to the present. The curriculum emphasizes literature and literary history, race and ethnicity studies, feminist and gender studies, queer theory and the history of sexuality, visual culture and comparative media studies, and the Anglophone literature of the postcolonial world. Faculty have particular strengths in the newer interdisciplinary areas of medical humanities, ecocriticism, post-humanism, and environmental humanities. Rice English is also home to a vibrant creative writing concentration offering a range of courses in fiction, poetry, and creative non-fiction.

**Bachelor's Programs**
- Bachelor of Arts (BA) Degree with a Major in English (p. 415)
- and a Major Concentration in Creative Writing (p. 420)

**Master's Program**
- Master of Arts (MA) Degree in the field of English*

**Doctoral Program**
- Doctor of Philosophy (PhD) Degree in the field of English (p. 423)
  * Although students are not normally admitted to a Master of Arts (MA) degree program, graduate students may earn the MA as they work towards the PhD.

**Chair**
Rosemary Hennessy

**Director of Undergraduate Studies**
Sarah Ellenzweig

**Director of Graduate Studies**
Betty Joseph

**Professors**
Joseph A. Campana, Jr.
Krista Comer
Rosemary Hennessy
Caroline F. Levander
Helena Michie
Timothy Morton
Kirsten Ostherr
 Alexander T. Regier
Judith Roof
Edward A. Snow
Cary E. Wolfe

**Associate Professors**
José F. Aranda, Jr.
Amber Dermont
Scott S. Derrick
Sarah Ellenzweig
Betty Joseph
Colleen R. Lamos
Susan Lurie
Nicole Waligora-Davis

**Assistant Professors**
Emily Houlik-Ritchey
Lacy Johnson
Alden Marte-Wood

**Professor in the Practice**
Logan D. Browning

**Writer in Residence**
Justin C. Cronin

**Senior Lecturer**
Iain Schimmel

**Lecturer**
Amanda L. Johnson

**Description and Code Legend**
*Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:*

**Course Catalog/Schedule**
- Course offerings/subject code: ENGL

**Department Description and Code**
- English: ENGL

**Undergraduate Degree Description and Code**
- Bachelor of Arts degree: BA

**Undergraduate Major Description and Code**
- Major in English: ENGL

**Undergraduate Major Concentration Description and Code**
- Major Concentration in Creative Writing: ECRW

**Undergraduate Major Areas of Specialization Descriptions and Attribute Codes**
- Area of Specialization in Culture and Social Change: ECSC
- Area of Specialization in Literature and Literary History: ELLH
- Area of Specialization in Science, Medicine, and the Environment: ESME
- Area of Specialization in Visual and Comparative Media: EVCM

*Please Note: Areas of Specialization are department/program-specific and are not formally recognized academic credentials. Unlike Major Pride 2019-2020 General Announcements PDF Generated 1/29/2020
Concentrations, Areas of Specialization do not appear on the student’s official academic transcript, etc.

Graduate Degree Descriptions and Codes
- Master of Arts degree: MA
- Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code
- Degree Program in English: ENGL

CIP Code and Description
- ENGL Major/Program: CIP Code/Title: 23.0101 - English Language and Literature, General
- ECRW Major Concentration: CIP Code/Title: 23.1302 - Creative Writing

* Systems Use Only: this information is used solely by internal offices at Rice University (such as OTR, GPS, etc.) and primarily within student information systems and support.

Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Bachelor of Arts (BA) Degree with a Major in English

Program Learning Outcomes for the BA Degree with a Major in English
Upon completing the BA degree with a major in English, students will be able to demonstrate:

1. Competence in literary analysis.
2. Understanding of literature in relation to its historical and socio-cultural contexts.
3. Disciplinary-specific methodological, critical, and theoretical training.
4. Critical writing skills in papers of varying length.
5. Disciplinary-specific research knowledge.

Requirements for the BA Degree with a Major in English
For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in English must complete:

- A minimum of 11 courses (33-36 credit hours, depending on course selection) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 7 courses (21 credit hours) taken at the 300-level or above.
- The requirements for one area of specialization (see below for areas of specialization). When students declare the major (p. 11) in English, students must additionally identify and declare one of four areas of specialization, either in:
  - Culture and Social Change (p. ), or
  - Literature and Literary History (p. ), or
  - Science, Medicine, and the Environment (p. ), or
  - Visual and Comparative Media (p. ).

Because of the common core requirements, it is possible for students to change their area of specialization at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (registrar@rice.edu).

AP course credit is not permitted to count towards the major. The department recommends that all English majors take courses in British and American history and, if they plan to do graduate work, at least 6 credit hours of upper-level coursework in a foreign language.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor, or where applicable, the department's Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
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<th>Code</th>
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<th>Credit Hours</th>
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<tbody>
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<td>Total Credit Hours Required for the Major in English</td>
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<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in English</td>
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Degree Requirements

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<td>Core Requirements 1</td>
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<tr>
<td>ENGL 200</td>
<td>GATEWAYS TO LITERARY STUDY</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 300</td>
<td>PRACTICES OF LITERARY STUDY: READING METHODS</td>
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</tr>
<tr>
<td>Pre-1900 and Pre-1800</td>
<td>Select 3 courses from Pre-1900 and Pre-1800 courses (see course list below). At least 2 of the 3 selected courses must be in fields designated as Pre-1800.</td>
<td>9</td>
</tr>
<tr>
<td>Critical Race, Postcolonial, and Gender Studies Requirement</td>
<td>Select 1 course from Critical Race, Postcolonial, and Gender Studies courses (see course list below).</td>
<td>3</td>
</tr>
<tr>
<td>Area of Specialization</td>
<td>Select 1 from the following Areas of Specialization (see Areas of Specialization below):</td>
<td>9-12</td>
</tr>
<tr>
<td>Culture and Social Change</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Literature and Literary History</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science, Medicine, and the Environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visual and Comparative Media</td>
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</tr>
<tr>
<td>Senior Seminar and Research Workshop Requirement 2</td>
<td>ENGL 410</td>
<td>SENIOR SEMINAR</td>
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<tr>
<td>ENGL 411</td>
<td>RESEARCH WORKSHOP</td>
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<tr>
<td>Total Credit Hours Required for the Major in English</td>
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<tr>
<td>Additional Credit Hours to Complete BA Degree Requirements</td>
<td>24-27</td>
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<tr>
<td>University Graduation Requirements (p. 26) 3</td>
<td></td>
<td>60</td>
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<tr>
<td>Total Credit Hours</td>
<td>120</td>
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</tbody>
</table>
Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 Specific course offerings will vary from semester to semester.

2 The Senior Seminar and Research Workshop requirement consists of the year-long, 6 credit hour senior seminar (ENGL 410) and research workshop (ENGL 411).

Course Lists to Satisfy Requirements

The following lists of courses can be used to satisfy the requirements of the major when available. Specific course offerings will vary from semester to semester. Courses not on the list may be taken upon approval of the department's Director of Undergraduate Studies. Requirements fulfilled by special topics field courses can vary.

Pre-1900 and Pre-1800 Requirement

Students must complete a total of 3 courses (9 credit hours) at the 200-level or above in periods before 1900. Of the 3 courses, 2 courses (6 credit hours) must be from the approved Pre-1800 coursework, but only one may be a Shakespeare course. The third required course may be an additional course from the Pre-1800 coursework or an approved Pre-1900 course.

Critical Race, Postcolonial, and Gender Studies Requirement

Students must complete 1 course (3 credit hours) at the 200-level or above that focuses on African American, Chicano/a, Asian American, ethnic, global, postcolonial, diasporic or gender and sexuality studies.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>ENGL 210</td>
<td>BEGINNINGS: BRITISH LITERATURE TO 1800</td>
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<tr>
<td>ENGL 255</td>
<td>THE IDEA OF SHAKESPEARE</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 311</td>
<td>TOPICS IN MEDIEVAL LITERATURE AND/ OR CULTURE</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 312 /</td>
<td>OLD ENGLISH LITERATURE AND</td>
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<tr>
<td>MDEM 312</td>
<td>LANGUAGE</td>
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<td>ENGL 314 /</td>
<td>MEDIEVAL ROMANCE</td>
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<tr>
<td>MDEM 319</td>
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<td>ENGL 316 /</td>
<td>CHAUCER</td>
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<td>MDEM 316 /</td>
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<tr>
<td>SWGS 305</td>
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<td>ENGL 317 /</td>
<td>ARTHURIAN LITERATURE</td>
<td>3</td>
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<tr>
<td>MDEM 317 /</td>
<td></td>
<td></td>
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<tr>
<td>SWGS 301</td>
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</tr>
<tr>
<td>ENGL 320</td>
<td>SHAKESPEARE ON FILM</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 321</td>
<td>EARLY SHAKESPEARE</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 322</td>
<td>LATE SHAKESPEARE</td>
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<tr>
<td>ENGL 323</td>
<td>RENAISSANCE DRAMA</td>
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<tr>
<td>ENGL 326</td>
<td>TOPICS IN RENAISSANCE LITERATURE AND CULTURE</td>
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<tr>
<td>ENGL 328</td>
<td>JOHN MILTON: RADICAL THOUGHT THEN AND NOW</td>
<td>3</td>
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<tr>
<td>ENGL 330</td>
<td>ORIGINS OF THE ENGLISH NOVEL</td>
<td>3</td>
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<tr>
<td>ENGL 332</td>
<td>LITERATURE OF THE BRITISH ENLIGHTENMENT</td>
<td>3</td>
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<tr>
<td>ENGL 333</td>
<td>18TH CENTURY BRITISH FICTION</td>
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<tr>
<td>ENGL 360</td>
<td>AMERICAN LITERATURE BEFORE THE CIVIL WAR</td>
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<tr>
<td>ENGL 418</td>
<td>STUDIES IN RENAISSANCE DRAMA</td>
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<tr>
<td>ENGL 419</td>
<td>STUDIES IN SHAKESPEARE</td>
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<tr>
<td>Pre-1900</td>
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<tr>
<td>ENGL 211</td>
<td>BRITISH LITERATURE FROM ROMANTICISM TO THE PRESENT</td>
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<td>ENGL 338</td>
<td>BRITISH ROMANTICISM</td>
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<td>ENGL 339</td>
<td>ROMANTICISM IN RUINS</td>
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<td>ENGL 341</td>
<td>VICTORIAN LITERATURE AND CULTURE</td>
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<tr>
<td>ENGL 342 /</td>
<td>SURVEY OF VICTORIAN FICTION</td>
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<tr>
<td>SWGS 372</td>
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<tr>
<td>ENGL 343 /</td>
<td>JANE AUSTEN’S WORLDS</td>
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<tr>
<td>SWGS 343</td>
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<tr>
<td>ENGL 361</td>
<td>US LITERATURE FROM THE CIVIL WAR TO WWI</td>
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<tr>
<td>ENGL 441</td>
<td>VICTORIAN STUDIES</td>
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<tr>
<td>ENGL 461</td>
<td>19TH-CENTURY AMERICAN STUDIES</td>
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</table>
Areas of Specialization

Students must complete the requirements as listed for one of the following areas of specialization as offered by the English major. A total of 3 courses (9-12 credit hours, depending on course selection) must be taken in the area of specialization.

Please note: When applicable, students may count one course from Core Requirements (the Pre-1900 and Pre-1800 Requirement or the Critical Race, Postcolonial, and Gender Studies Requirement) toward their chosen area of specialization. Additional coursework would then be required in order to complete a minimum of 11 courses (33-36 credit hours, depending on course selection) to satisfy major requirements. Please see an advisor for more information.

Area of Specialization: Culture and Social Change

To fulfill the remaining English major requirements, students pursuing the Culture and Social Change area of specialization must complete:

• a minimum of 3 courses (9 credit hours) from the Culture and Social Change area of specialization

<table>
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<tr>
<th>Code</th>
<th>Title</th>
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</thead>
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<tr>
<td>Select 3 from the following:</td>
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<tr>
<td>ENGL 222 / ASIA 222</td>
<td>THE WORLD AND SOUTH ASIA</td>
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<td>ENGL 265</td>
<td>JEWISH-AMERICAN LITERATURE AND CULTURE</td>
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<td>ENGL 267</td>
<td>INTRODUCTION TO AFRICAN AMERICAN LITERATURE</td>
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<tr>
<td>ENGL 268</td>
<td>INTRODUCTION TO NATIVE AMERICAN LITERATURE</td>
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<tr>
<td>ENGL 269 / ENST 265</td>
<td>SCIENCE FICTION AND THE ENVIRONMENT</td>
<td></td>
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<tr>
<td>ENGL 270</td>
<td>LITERATURE AND FORENSICS</td>
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<tr>
<td>ENGL 290</td>
<td>TOPICS IN LITERARY AND CULTURAL ANALYSIS</td>
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<td>ENGL 341</td>
<td>VICTORIAN LITERATURE AND CULTURE</td>
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<td>ENGL 342 / SWGS 372</td>
<td>SURVEY OF VICTORIAN FICTION</td>
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<td>JANE AUSTEN'S WORLDS</td>
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<tr>
<td>ENGL 346</td>
<td>THE MODERN NOVEL IN BRITAIN</td>
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<td>ENGL 354 / SWGS 364</td>
<td>QUEER LITERARY CULTURES</td>
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<td>ENGL 357</td>
<td>ORIGINS OF THE POSTMODERN</td>
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<td>ENGL 358</td>
<td>CONSUMPTION AND CONSUMERISM</td>
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<tr>
<td>ENGL 359</td>
<td>WRITING ON/WRITING OFF NEW ORLEANS</td>
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<td>ENGL 360</td>
<td>AMERICAN LITERATURE BEFORE THE CIVIL WAR</td>
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<tr>
<td>ENGL 361</td>
<td>US LITERATURE FROM THE CIVIL WAR TO WWI</td>
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<tr>
<td>ENGL 363</td>
<td>THE US NOVEL POST-WORLD WAR II</td>
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<tr>
<td>ENGL 364</td>
<td>MODERN AMERICAN POETRY</td>
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</tr>
</tbody>
</table>

Area of Specialization: Literature and Literary History

To fulfill the remaining English major requirements, students pursuing the Literature and Literary History area of specialization must complete:

• a minimum of 3 courses (9 credit hours) from the Literature and Literary History area of specialization

<table>
<thead>
<tr>
<th>Code</th>
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<tr>
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<tr>
<td>ENGL 204</td>
<td>FORMS OF POETRY</td>
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<td>ENGL 210</td>
<td>BEGINNINGS: BRITISH LITERATURE TO 1800</td>
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<tr>
<td>ENGL 211</td>
<td>BRITISH LITERATURE FROM ROMANTICISM TO THE PRESENT</td>
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</tr>
<tr>
<td>ENGL 250</td>
<td>HISTORY OF THE NOVEL</td>
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<tr>
<td>ENGL 251</td>
<td>READING POETRY</td>
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<tr>
<td>ENGL 255</td>
<td>THE IDEA OF SHAKESPEARE</td>
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</tr>
<tr>
<td>ENGL 260</td>
<td>WHAT IS AMERICAN LITERATURE</td>
<td></td>
</tr>
<tr>
<td>ENGL 267</td>
<td>INTRODUCTION TO AFRICAN AMERICAN LITERATURE</td>
<td></td>
</tr>
<tr>
<td>ENGL 270</td>
<td>ASPECTS OF MODERN LITERATURE</td>
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<tr>
<td>ENGL 274</td>
<td>LITERATURE AND RELIGION</td>
<td></td>
</tr>
<tr>
<td>ENGL 311</td>
<td>TOPICS IN MEDIEVAL LITERATURE AND/OR CULTURE</td>
<td></td>
</tr>
</tbody>
</table>
Area of Specialization: Science, Medicine, and the Environment
To fulfill the remaining English major requirements, students pursuing the Science, Medicine, and the Environment area of specialization must complete:

- a minimum of 3 courses (9-10 credit hours, depending on course selection) from the Science, Medicine, and the Environment area of specialization

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 272</td>
<td>LITERATURE AND MEDICINE</td>
<td>9-10</td>
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<tr>
<td>ENGL 273 / SWGS 273</td>
<td>MEDICINE AND MEDIA</td>
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</tr>
<tr>
<td>ENGL 310</td>
<td>NONFICTION NATURE WRITING</td>
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</tr>
<tr>
<td>ENGL 319</td>
<td>FANTASY AND SCIENCE FICTION</td>
<td></td>
</tr>
<tr>
<td>ENGL 358</td>
<td>CONSUMPTION AND CONSUMERISM</td>
<td></td>
</tr>
<tr>
<td>ENGL 359</td>
<td>WRITING ON/Writing OFF NEW ORLEANS</td>
<td></td>
</tr>
<tr>
<td>ENGL 368 / ENST 368</td>
<td>LITERATURE AND THE ENVIRONMENT</td>
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</tr>
<tr>
<td>ENGL 369 / SWGS 329</td>
<td>THE AMERICAN WEST AND ITS OTHERS</td>
<td></td>
</tr>
<tr>
<td>ENGL 386 / FILM 381</td>
<td>MEDICAL MEDIA ARTS LAB</td>
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</tr>
<tr>
<td>ENGL 459</td>
<td>STUDIES IN LITERATURE AND ECOLOGY</td>
<td></td>
</tr>
</tbody>
</table>

Area of Specialization: Visual and Comparative Media
To fulfill the remaining English major requirements, students pursuing the Visual and Comparative Media area of specialization must complete:

- a minimum of 3 courses (9-12 credit hours, depending on course selection) from the Visual and Comparative Media area of specialization

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tbody>
<tr>
<td>ENGL 272</td>
<td>LITERATURE AND MEDICINE</td>
<td>9-12</td>
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<td>ENGL 273 / SWGS 273</td>
<td>MEDICINE AND MEDIA</td>
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<tr>
<td>ENGL 381 / SWGS 327</td>
<td>TOPICS IN WOMEN WRITERS</td>
<td></td>
</tr>
<tr>
<td>ENGL 385 / FILM 385</td>
<td>FILM STUDIES</td>
<td></td>
</tr>
</tbody>
</table>
Policies for the BA Degree with a Major in English

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oa. Rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in English should be aware of the following departmental transfer credit guidelines:

• Requests for transfer credit will be considered by the departmental Director of Undergraduate Studies (and/or the program's official transfer credit advisor) on an individual case-by-case basis.
• The English department does not award Rice equivalent transfer credit for coursework taken at community colleges, online universities, 'for-profit' universities, or two-year colleges.

Distribution Credit Information

The determination of distribution eligibility is done as part of the new course creation process (https://registrar.rice.edu/facstaff/coursecourse). As part of an annual roll call (https://registrar.rice.edu/facstaff/distribution_credit/) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean's Offices of each of the academic schools.

Faculty and leadership in the academic schools are responsible for ensuring that the courses identified as distribution-eligible meet the criteria as set in the General Announcements (p. 26). Students are responsible for ensuring that they meet graduation requirements (p. 26) by completing coursework designated as distribution at the time of course registration.

Distribution courses from English (ENGL) aim to develop students' critical and aesthetic understanding of texts and the arts, lead students to examine ideas and values, and introduce students to the craft of writing as it poses conceptual and intellectual problems. They engage students with works of culture that have intellectual importance by virtue of the ideas that they express, their historical influence, mode of expression, and critical engagement with established cultural assumptions and traditions.

Additional Information

For additional information, please see the English website: https://english.rice.edu/.

Opportunities for the BA Degree with a Major in English

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Study Abroad Program for English Majors at the University of Exeter

English majors may opt to spend the spring semester of their junior year at the University of Exeter in the U.K. Students planning to do so should complete ENGL 200 and ENGL 300 by the fall semester of their junior year (the semester preceding study abroad). At Exeter, students will take 2 courses or modules (each worth 30 Exeter credits) from Rice's approved list of Exeter Courses.

The approved courses taken abroad will be articulated on the Rice transcript as ENGL 325 (two instances of 3 credit hours each) with the remaining credit hours articulated as general TRAN credit. Final Exeter grades will also appear on the Rice transcript and be counted in the student’s overall Rice GPA. With pre-approval from the Department, ENGL 325 may additionally count toward major field requirements (Pre-1800, Pre-1900, or Critical Race, Postcolonial, and Gender Studies).

For more information, please consult the Director of Undergraduate Studies in English and the Rice Study Abroad office.

<table>
<thead>
<tr>
<th>ENGL 278</th>
<th>MEDICINE IN THE AGE OF NETWORKED INTELLIGENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 286 / HART 286</td>
<td>CLASSICAL AND CONTEMPORARY FILM AND THEORY</td>
</tr>
<tr>
<td>ENGL 302</td>
<td>SCREENWRITING</td>
</tr>
<tr>
<td>ENGL 303</td>
<td>PLAYWRITING</td>
</tr>
<tr>
<td>ENGL 308</td>
<td>INTRODUCTION TO PODCASTING</td>
</tr>
<tr>
<td>ENGL 320</td>
<td>SHAKESPEARE ON FILM</td>
</tr>
<tr>
<td>ENGL 327</td>
<td>GRAPHIC NOVEL</td>
</tr>
<tr>
<td>ENGL 353</td>
<td>MODERN DRAMA</td>
</tr>
<tr>
<td>ENGL 358</td>
<td>CONSUMPTION AND CONSUMERISM</td>
</tr>
<tr>
<td>ENGL 373 / FILM 373 / HART 380</td>
<td>SURVEY OF AMERICAN FILM AND CULTURE</td>
</tr>
<tr>
<td>ENGL 374</td>
<td>CINEMA STUDIES</td>
</tr>
<tr>
<td>ENGL 375</td>
<td>FILM AND LITERATURE</td>
</tr>
<tr>
<td>ENGL 377</td>
<td>ART AND LITERATURE</td>
</tr>
<tr>
<td>ENGL 384 / FILM 384</td>
<td>AMERICAN INDEPENDENT CINEMA</td>
</tr>
<tr>
<td>ENGL 385 / FILM 385</td>
<td>FILM STUDIES</td>
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<td>ENGL 386 / FILM 381</td>
<td>MEDICAL MEDIA ARTS LAB</td>
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<td>ENGL 388 / FILM 386</td>
<td>MEDIA STUDIES</td>
</tr>
<tr>
<td>ENGL 390 / THEA 303</td>
<td>INTRODUCTION TO THEATRE</td>
</tr>
<tr>
<td>ENGL 398</td>
<td>SLAVERY IN 20TH CENTURY FILM AND FICTION</td>
</tr>
<tr>
<td>ENGL 418</td>
<td>STUDIES IN RENAISSANCE DRAMA</td>
</tr>
<tr>
<td>ENGL 438 / HART 430</td>
<td>THE GROTESQUE</td>
</tr>
</tbody>
</table>
Additional Information
For additional information, please see the English website: https://english.rice.edu/

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this major.

Bachelor of Arts (BA) Degree with a Major in English and a Major Concentration in Creative Writing

Program Learning Outcomes for the BA Degree with a Major in English and a Major Concentration in Creative Writing

Upon completing the BA degree with a major in English, students will be able to demonstrate:

1. Competence in literary analysis.
2. Understanding of literature in relation to its historical and sociocultural contexts.
3. Disciplinary-specific methodological, critical, and theoretical training.
4. Critical writing skills in papers of varying length.
5. Disciplinary-specific research knowledge.

Additionally, upon completing the BA degree with a major in English and a major concentration in Creative Writing, students will be able to:

1. Demonstrate skills in producing original works of fictional prose, literary essays, poetry, plays, and/or screenplays in English.

Requirements for the BA Degree with a Major in English and a Major Concentration in Creative Writing

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in English, and a major concentration in Creative Writing, must complete:

- A minimum of 11 courses (33-34 credit hours, depending on course selection) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 7 courses (21 credit hours) taken at the 300-level or above.
- The requirements for the major concentration in Creative Writing.

AP course credit is not permitted to count towards the major. The department recommends that all English majors take courses in British and American history and, if they plan to do graduate work, at least 6 hours of upper-level courses in a foreign language.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier.) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
<td>ENGL 200</td>
<td>GATEWAYS TO LITERARY STUDY</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 300</td>
<td>PRACTICES OF LITERARY STUDY: READING METHODS</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Select 2 courses from Pre-1900 and Pre-1800 courses (see course list below). At least 1 of the 2 selected courses must be in fields designated as Pre-1800.</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Critical Race, Postcolonial, and Gender Studies</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Select 1 course from Critical Race, Postcolonial, and Gender Studies courses (see course list below).</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Major Concentration in Creative Writing</td>
<td>12-13</td>
</tr>
<tr>
<td>ENGL 410</td>
<td>SENIOR SEMINAR</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 411</td>
<td>RESEARCH WORKSHOP</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credit Hours Required for the BA Degree with a Major in English and a Major Concentration in Creative Writing

26-27

University Graduation Requirements (p. 26)

Total Credit Hours

120

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

1 Specific course offerings will vary from semester to semester.

2 The Senior Seminar and Research Workshop requirement consists of the year-long, 6 credit hour senior seminar (ENGL 410) and research workshop (ENGL 411).

Course Lists to Satisfy Requirements

The following lists of courses can be used to satisfy the requirements of the major when available. Specific course offerings will vary from semester to semester. Courses not on the list may be taken upon approval of the department’s Director of Undergraduate Studies. Requirements fulfilled by special topics field courses can vary.
Pre-1900 and Pre-1800 Requirement
Students must complete a total of 2 courses (6 credit hours) at the 200-level or above in periods before 1900. Of the 2 courses, 1 course (3 credit hours) must be from the approved Pre-1800 coursework, but only one may be a Shakespeare course. The second required course may be an additional course from the Pre-1800 coursework or an approved Pre-1900 course.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>ENGL 210</td>
<td>BEGINNINGS: BRITISH LITERATURE TO 1800</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 255</td>
<td>THE IDEA OF SHAKESPEARE</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 311</td>
<td>TOPICS IN MEDIEVAL LITERATURE AND/OR CULTURE</td>
<td>3</td>
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<tr>
<td>ENGL 312 / MDEM 312</td>
<td>OLD ENGLISH LITERATURE AND LANGUAGE</td>
<td>3</td>
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<td>ENGL 314 / MDEM 319</td>
<td>MEDIEVAL ROMANCE</td>
<td>3</td>
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<tr>
<td>ENGL 316 / MDEM 316 / SWGS 305</td>
<td>CHAUCER</td>
<td>3</td>
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<tr>
<td>ENGL 317 / MDEM 317 / SWGS 301</td>
<td>ARTHURIAN LITERATURE</td>
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<td>ENGL 320</td>
<td>SHAKESPEARE ON FILM</td>
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<tr>
<td>ENGL 321</td>
<td>EARLY SHAKESPEARE</td>
<td>3</td>
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<tr>
<td>ENGL 322</td>
<td>LATE SHAKESPEARE</td>
<td>3</td>
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<tr>
<td>ENGL 323</td>
<td>RENAISSANCE DRAMA</td>
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<tr>
<td>ENGL 326</td>
<td>TOPICS IN RENAISSANCE LITERATURE AND CULTURE</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 328</td>
<td>JOHN MILTON: RADICAL THOUGHT THEN AND NOW</td>
<td>3</td>
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<tr>
<td>ENGL 330</td>
<td>ORIGINS OF THE ENGLISH NOVEL</td>
<td>3</td>
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<tr>
<td>ENGL 332</td>
<td>LITERATURE OF THE BRITISH ENLIGHTENMENT</td>
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<td>ENGL 333</td>
<td>18TH CENTURY BRITISH FICTION</td>
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<tr>
<td>ENGL 360</td>
<td>AMERICAN LITERATURE BEFORE THE CIVIL WAR</td>
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<tr>
<td>ENGL 418</td>
<td>STUDIES IN RENAISSANCE DRAMA</td>
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</tr>
<tr>
<td>ENGL 419</td>
<td>STUDIES IN SHAKESPEARE</td>
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Pre-1900

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<tr>
<td>ENGL 211</td>
<td>BRITISH LITERATURE FROM ROMANTICISM TO THE PRESENT</td>
<td>3</td>
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<tr>
<td>ENGL 338</td>
<td>BRITISH ROMANTICISM</td>
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<tr>
<td>ENGL 339</td>
<td>ROMANTICISM IN RUINS</td>
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<tr>
<td>ENGL 341</td>
<td>VICTORIAN LITERATURE AND CULTURE</td>
<td>3</td>
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<tr>
<td>ENGL 342 / SWGS 372</td>
<td>SURVEY OF VICTORIAN FICTION</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 343 / SWGS 343</td>
<td>JANE AUSTEN'S WORLDS</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 361</td>
<td>US LITERATURE FROM THE CIVIL WAR TO WWI</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 441</td>
<td>VICTORIAN STUDIES</td>
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</tr>
<tr>
<td>ENGL 461</td>
<td>19TH-CENTURY AMERICAN STUDIES</td>
<td>3</td>
</tr>
</tbody>
</table>

Critical Race, Postcolonial, and Gender Studies Requirement
Students must complete 1 course (3 credit hours) at the 200-level or above that focuses on African American, Chicano/a, Asian American, ethnic, global, postcolonial, diasporic or gender and sexuality studies.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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</thead>
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<tr>
<td>ENGL 222 / ASIA 222</td>
<td>THE WORLD AND SOUTH ASIA</td>
<td>3</td>
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<tr>
<td>ENGL 265</td>
<td>JEWISH-AMERICAN LITERATURE AND CULTURE</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 267</td>
<td>INTRODUCTION TO AFRICAN AMERICAN LITERATURE</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 268</td>
<td>INTRODUCTION TO NATIVE AMERICAN LITERATURE</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 354 / SWGS 364</td>
<td>QUEER LITERARY CULTURES</td>
<td>3</td>
</tr>
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<td>ENGL 369 / SWGS 329</td>
<td>THE AMERICAN WEST AND ITS OTHERS</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 370 / SWGS 370</td>
<td>AFRICAN AMERICAN LITERATURE</td>
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</tr>
<tr>
<td>ENGL 371 / SPO 354 / SWGS 354</td>
<td>CHICANO/A LITERATURE</td>
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<td>ENGL 379</td>
<td>THIRD WORLD LITERATURE</td>
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<td>ENGL 380</td>
<td>CONTEMPORARY ANGLOPHONE LITERATURE</td>
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<tr>
<td>ENGL 381 / SWGS 327</td>
<td>TOPICS IN WOMEN WRITERS</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 382 / SWGS 380</td>
<td>FEMINIST THEORY</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 383</td>
<td>GLOBAL FICTIONS</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 393</td>
<td>BLACK MANHATTAN: 1915-1940</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 398</td>
<td>SLAVERY IN 20TH CENTURY FILM AND FICTION</td>
<td>3</td>
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<tr>
<td>ENGL 399</td>
<td>THE BLACK IMAGINARY: 1775-PRESENT</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 430</td>
<td>EMPIRE AND BRITISH LITERATURE</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 470 / SWGS 453</td>
<td>STUDIES IN AFRICAN AMERICAN LITERATURE</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 481 / SWGS 407</td>
<td>FEMINIST STUDIES</td>
<td>3</td>
</tr>
</tbody>
</table>

Major Concentration: Creative Writing
Students must complete a minimum of 4 courses (12-13 credit hours, depending on course selection) from departmental (ENGL) course offerings with the creative writing designation. Of these 4 courses, students must complete at least 2 courses (6-7 credit hours, depending on course selection) at the 300-level or above, and at least 1 course (3-4 credit hours, depending on course selection) at the 400-level or above. The remaining required course can be selected from any of the approved Creative Writing coursework.
TOPICS IN CREATIVE WRITING
ADVANCED POETRY WRITING
NONFICTION NATURE WRITING
FANTASY AND SCIENCE FICTION

TOPICS IN FICTION WRITING
ADVANCED FICTION WRITING
SCREENWRITING
INTRODUCTION TO POETRY WRITING
INTRODUCTION TO PODCASTING
INTRODUCTION TO CREATIVE NONFICTION

ENGL 201 INTRODUCTION TO CREATIVE WRITING
ENGL 203 TOPICS IN CREATIVE WRITING
ENGL 204 FORMS OF POETRY
ENGL 213 THE RICE REVIEW: INTRODUCTION TO LITERARY EDITING & PUBLISHING

300-level (or above) Electives
Select a minimum of 2 courses from the following: 6-7
ENGL 301 INTRODUCTION TO FICTION WRITING
ENGL 302 SCREENWRITING
ENGL 303 PLAYWRITING
ENGL 304 INTRODUCTION TO POETRY WRITING
ENGL 305 INTRODUCTION TO CREATIVE NONFICTION WRITING
ENGL 306 TOPICS IN FICTION WRITING
ENGL 307 TOPICS IN POETRY WRITING
ENGL 308 INTRODUCTION TO PODCASTING
ENGL 309 TOPICS IN CREATIVE NONFICTION WRITING
ENGL 310 NONFICTION NATURE WRITING
ENGL 318 FAIRYTALES AND FEAR TALES
ENGL 319 FANTASY AND SCIENCE FICTION
ENGL 327 GRAPHIC NOVEL
ENGL 401 ADVANCED FICTION WRITING
ENGL 402 WRITING LONGER FICTION: NARRATIVE DESIGN
ENGL 404 ADVANCED POETRY WRITING
ENGL 405 ADVANCED CREATIVE NONFICTION WRITING

400-level Elective
Select a minimum of 1 course from the following: 3-4
ENGL 401 ADVANCED FICTION WRITING
ENGL 402 WRITING LONGER FICTION: NARRATIVE DESIGN
ENGL 404 ADVANCED POETRY WRITING
ENGL 405 ADVANCED CREATIVE NONFICTION WRITING

Footnotes and Additional Information
1 In order to fulfill the 200-level Elective category for the major concentration in Creative Writing, ENGL 213 must be taken twice (for a total of 3 credit hours).

Additional Information
For additional information, please see the English website: https://english.rice.edu/.

Opportunities for the BA Degree with a Major in English and a Major Concentration in Creative Writing

Academic Honors
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(the semester preceding study abroad). At Exeter, students will take 2 courses or modules (each worth 30 Exeter credits) from Rice's approved list of Exeter Courses.

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For more information, please consult the Director of Undergraduate Studies in English and the Rice Study Abroad office.

Additional Information
For additional information, please see the English website: https://english.rice.edu/.

See https://humanities.rice.edu/student-life (https://humanities.rice.edu/student-life/) for tables of fellowships, prizes, and internships/practica that may be relevant to this major.

Doctor of Philosophy (PhD) Degree in the field of English

Program Learning Outcomes for the MA and PhD Degrees in the field of English

Upon completing the MA and PhD degrees in the field of English, students will be able to:

1. Apply advanced knowledge of literary, cultural, and critical studies, including: critical reading, thinking, and writing; professional methodologies; literary and cultural histories, and theoretical and interdisciplinary perspectives.
2. Demonstrate breadth and depth of knowledge in fields of specialization for research and teaching.
3. Demonstrate the ability to teach literature and culture at the university level.
4. Demonstrate professional level skills in public and oral presentation through participation in symposia, work-in-progress groups, conferences, and in-course presentations.
5. Demonstrate the capacity to create professional-level and ultimately publishable research that makes original contributions to scholarly debates.

Requirements for the MA and PhD Degrees in the field of English

MA Degree Program

The MA degree is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). The English department does not have an MA program, but offers the MA degree to those PhD students who have achieved candidacy and are in the process of completing the doctorate, and to qualified PhD students who leave the program before completing the doctorate. To receive an MA students must:

- Satisfactorily complete at least 33 hours of graduate work in English at Rice University. Courses must be those that count towards the PhD in English. Students must satisfactorily complete ENGL 600 and ENGL 610 as well as distribution requirements for the PhD (see above).
- Satisfactorily complete two teaching assistantships (ENGL 601/ENGL 602) and two research assistantships. These do not count toward the 33-hour requirement.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MA Degree in the field of English</td>
<td>33</td>
</tr>
</tbody>
</table>

Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 510</td>
<td>PEDAGOGY SEMINAR</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 600</td>
<td>TOPICS IN LITERARY STUDIES</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 605</td>
<td>THIRD-YEAR WRITING WORKSHOP</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 610</td>
<td>TOPICS IN LITERARY STUDIES PART 2</td>
<td>3</td>
</tr>
</tbody>
</table>

Distribution Requirements

Select 7 additional courses as Electives at the 500-level or above 21

Total Credit Hours Minimum of 33

Footnotes and Additional Information

1 The distribution requirements consist of two courses before 1800 and two courses after 1800. These four courses count toward the 13-course requirement.

Requirements for the PhD Degree in the field of English

For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). As part of their training, graduate students participate in both the teaching and research activities of the department. Upon entering, students will be assigned to a Program Advisory Committee (PAC), consisting of two faculty members. In consultation with their PAC, students will design their own individualized program structured by the requirements listed below. For more detailed information, please see the department's Graduate Handbook found under the Policies tab.

PhD Degree Program

To gain admission to PhD candidacy, students must satisfy the first six of the following requirements. To earn a PhD in English, candidates also must complete the last two requirements. Students must:

1. Satisfactorily complete a minimum of 13 graduate courses, of which at least 10 must be graduate seminars. With the approval of the PAC, students may enroll in ENGL 621, either as a traditional directed reading course or in conjunction with a 400-level English course to which a graduate component has been added. ENGL 621 counts toward the 13 required graduate courses but does not count as a
graduated seminar. Students also are encouraged to take graduate courses in other departments related to their areas of interest. These will count toward the 13-course requirement but not usually for distribution.

2. Satisfactorily complete the following three required courses: ENGL 600, ENGL 610, and ENGL 605. These count toward the 13-course requirement.

3. Satisfactorily complete the distribution requirement, which consists of two courses before 1800 and two after 1800. These count toward the 13-course requirement.

4. Satisfactorily complete the teaching requirement by serving twice as a teaching assistant, completing ENGL 510, and teaching at least one lower-level course designed in conjunction with the instructor of ENGL 510. ENGL 510 counts toward the 13-course requirement.

5. Pass a qualifying exam that consists of two qualifying papers, and an oral exam. Refer to the department’s Graduate Handbook found under the Policies tab.

6. Complete a thesis prospectus that defines the topic of the thesis, the particular argument that the doctoral document hopes to develop about the topic, and the relevance and importance of the thesis’ argument to debate in the student’s chosen field(s). The thesis prospectus and a satisfactory draft of a chapter must be approved for the student to advance to candidacy. Refer to the department’s Graduate Handbook found under the Policies tab.

7. Complete a thesis that demonstrates independent and original academic work of high quality.


### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>Credit Hours Required for the PhD Degree in the field of English</td>
<td>90</td>
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</table>

### Degree Requirements

<table>
<thead>
<tr>
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<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>Required Courses</td>
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<tr>
<td>ENGL 510</td>
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<tr>
<td>ENGL 600</td>
<td>TOPICS IN LITERARY STUDIES</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 605</td>
<td>THIRD-YEAR WRITING WORKSHOP</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 610</td>
<td>TOPICS IN LITERARY STUDIES PART 2</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 800</td>
<td>PHD RESEARCH AND THESIS</td>
<td>1-9</td>
</tr>
<tr>
<td>Distribution Requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select 5 additional courses as Electives at the 500-level or above</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Total Credit Hours</td>
<td></td>
<td>Minimum of 90</td>
</tr>
</tbody>
</table>

### Footnotes and Additional Information

1 The distribution requirements consist of two courses before 1800 and two courses after 1800. These four courses count toward the 13-course requirement.

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### Policies for the PhD Degree in the field of English

#### Department of English Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Department of English publishes a graduate program handbook, which can be found here: [https://gradhandbooks.rice.edu/2019_20/English_Graduate_Handbook.pdf](https://gradhandbooks.rice.edu/2019_20/English_Graduate_Handbook.pdf)

#### Additional Information

For additional information, please see the English website: [https://english.rice.edu](https://english.rice.edu)

### Opportunities for the PhD Degree in the field of English

Information regarding resources and opportunities for Department of English graduate students, including the graduate symposium, funding and award opportunists, certificate and special seminar information, as well as job market resources, is available on the Graduate section of the department website, and can be accessed here: [https://english.rice.edu/graduate/resources-opportunities](https://english.rice.edu/graduate/resources-opportunities).

#### Additional Information

For additional information, please see the English website: [https://english.rice.edu](https://english.rice.edu)

See [https://humanities.rice.edu/student-life](https://humanities.rice.edu/student-life/) for tables of fellowships, prizes, and internships/practica that may be relevant to this degree.

### Environmental Analysis

#### Contact Information

Environmental Analysis
[https://profms.rice.edu/](https://profms.rice.edu/)

203 Keck Hall
713-348-3188

Dagmar Beck
Program Director
dbeck@rice.edu

Evan Siemann
Faculty Director
siemann@rice.edu

The professional master’s degree in Environmental Analysis teaches students rigorous methods that are needed by business and governmental organizations to deal with environmental issues. As an interdisciplinary program, the MS in Environmental Analysis degree aims to give students the ability to not only remediate and solve environmental problems, but also to predict possible environmental impacts to enable avoidance and mitigation of consequences. The Environmental Analysis curriculum not only emphasizes core quantitative topics such as statistics, remote sensing, data analysis, and modeling, but also expands students’ knowledge in environmental engineering and science, and broadens their understanding of management and business including
communication and leadership training and the flexibility to tailor their interest area by taking electives in relevant fields.

The MS in Environmental Analysis (MSEA) degree is part of the professional science master's (PSM) program at Rice housed in the Wiess School of Natural Sciences. These master's degrees are designed for students seeking to gain further scientific core expertise coupled with enhanced management and communications skills. They instill a level of scholastic proficiency that exceeds that of the bachelor's level, and create the cross-functional aptitudes needed in modern industry. Skills acquired in this program will allow students to move more easily into management careers in consulting or research and development, design, and marketing of new science-based products.

A coordinated MBA/MSEA degrees program is also offered in conjunction with the Jesse H. Jones Graduate School of Business.

Environmental Analysis does not currently offer an academic program at the undergraduate level.

Master's Program
- Master of Science in Environmental Analysis (MSEA) Degree
  (p. 425)

Coordinated Program
- Master of Science in Environmental Analysis (MSEA) Degree / Master of Business Administration (MBA) Degree (p. 427)

Director
Evan Siemann

Advising Committee
Daniel Cohan
Scott Egan
Loren Hopkins Raun

Professors
Pedro J.J. Alvarez
Andrew R. Barron
Philip B. Bedient
Janet Braam
Evan Siemann

Associate Professor
Daniel Cohan

Assistant Professors
Scott Egan

Professors in the Practice
James B. Blackburn
Loren Hopkins Raun

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
- Course offerings/subject codes: Courses from various subjects may apply toward the graduate program.

Department Description and Code
- Biosciences: BIOS

Graduate Degree Description and Code
- Master of Science in Environmental Analysis: MSEA

Graduate Degree Program Description and Code
- Degree Program in Environmental Analysis: ENVA

CIP Code and Description
- ENVA Major/Program: CIP Code/Title: 03.0103 - Environmental Studies

Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Master of Science in Environmental Analysis (MSEA) Degree
Program Learning Outcomes for the MSEA Degree

Upon completing the MSEA Degree, students will be able to:

1. Apply technical and analytical skills and scientific evaluation methods to help solve problems affecting the environment.
2. Demonstrate written, oral, and visual communication strategies required to work effectively across science, business, and government.
3. Possess business and management skills and professional ethics to be effective in a business environment.

Requirements for the MSEA Degree

The MSEA degree is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MSEA degree must complete:

- A minimum of 14 courses (minimum of 39 credit hours) to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University.
- A 3-6 month internship. Instead of a thesis, at the conclusion of their internship, students must present their internship project in both oral and written form as part of the Professional Master's Project (NSCI 512). Part-time students who already work in their area of study may request approval to fulfill the internship requirement by working on a specific, pre-approved project with their current employer.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
Master of Science in Environmental Analysis (MSEA) Degree

- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master's degree.

**Note:** Some of the listed courses are not offered every year, and some may also have prerequisites or require instructor permission.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier ([https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/](https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/)). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MSEA Degree</td>
<td>39</td>
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### Degree Requirements

#### Core Requirements

**Core Science Courses**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEVE 501</td>
<td>CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>or CEVE 510</td>
<td>PRINCIPLES OF ENVIRONMENTAL ENGINEERING</td>
<td></td>
</tr>
<tr>
<td>EBIO 570</td>
<td>ECOSYSTEM MANAGEMENT</td>
<td>3</td>
</tr>
<tr>
<td>STAT 685</td>
<td>ENVIRONMENTAL STATISTICS AND DECISION MAKING</td>
<td>3</td>
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</tbody>
</table>

**Cohort Courses**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSCI 501</td>
<td>PROFESSIONAL MASTER’S SEMINAR (2 semesters required, 1st semester)</td>
<td>1</td>
</tr>
<tr>
<td>NSCI 501</td>
<td>PROFESSIONAL MASTER’S SEMINAR (2 semesters required, 2nd semester)</td>
<td>1</td>
</tr>
<tr>
<td>NSCI 511</td>
<td>SCIENCE POLICY, AND ETHICS</td>
<td>3</td>
</tr>
<tr>
<td>NSCI 512</td>
<td>PROFESSIONAL MASTER’S PROJECT</td>
<td>1</td>
</tr>
<tr>
<td>NSCI 610 / ENGI 610</td>
<td>MANAGEMENT FOR SCIENCE AND ENGINEERING</td>
<td>3</td>
</tr>
</tbody>
</table>

**Three to Six Month Internship**

A three to six month internship is required.

#### Elective Requirements

Select a minimum of 7 courses (minimum of 21 credit hours) as electives from courses listed below:

**Environmental Sustainability**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>CEVE 501</td>
<td>CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE</td>
<td></td>
</tr>
<tr>
<td>CEVE 502</td>
<td>SUSTAINABLE DESIGN</td>
<td></td>
</tr>
<tr>
<td>CEVE 507</td>
<td>ENERGY AND THE ENVIRONMENT</td>
<td></td>
</tr>
<tr>
<td>CEVE 508</td>
<td>INTRODUCTION TO AIR POLLUTION CONTROL</td>
<td></td>
</tr>
<tr>
<td>CEVE 509</td>
<td>HYDROLOGY AND WATER RESOURCES ENGINEERING</td>
<td></td>
</tr>
<tr>
<td>CEVE 511</td>
<td>ATMOSPHERIC PROCESSES</td>
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**Quantitative Decision-Making**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEVE 512</td>
<td>ADVANCED HYDROLOGY AND HYDRAULICS</td>
<td></td>
</tr>
<tr>
<td>CEVE 520</td>
<td>ENVIRONMENTAL REMEDIATION RESTORATION</td>
<td></td>
</tr>
<tr>
<td>CEVE 534</td>
<td>FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT</td>
<td></td>
</tr>
<tr>
<td>CEVE 536</td>
<td>ENVIRONMENTAL BIOTECHNOLOGY AND BIOREMEDIATION</td>
<td></td>
</tr>
<tr>
<td>CEVE 550</td>
<td>ENVIRONMENTAL ORGANIC CHEMISTRY</td>
<td></td>
</tr>
<tr>
<td>EBIO 523</td>
<td>CONSERVATION BIOLOGY</td>
<td></td>
</tr>
<tr>
<td>EBIO 524</td>
<td>CONSERVATION BIOLOGY LAB</td>
<td></td>
</tr>
<tr>
<td>EBIO 525</td>
<td>ECOLOGY</td>
<td></td>
</tr>
<tr>
<td>EBIO 529</td>
<td>ANIMAL BIOLOGY AND PHYSIOLOGY</td>
<td></td>
</tr>
<tr>
<td>EBIO 540</td>
<td>GLOBAL BIOGEOCHEMICAL CYCLES</td>
<td></td>
</tr>
<tr>
<td>EBIO 560</td>
<td>SUSTAINABILITY IMPACT ASSESSMENTS</td>
<td></td>
</tr>
<tr>
<td>EBIO 563</td>
<td>TOPICS IN ECOLOGY</td>
<td></td>
</tr>
<tr>
<td>EBIO 566</td>
<td>APPLIED PHYCOLOGY</td>
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<tr>
<td>EBIO 568</td>
<td>TOPICS IN BIOLOGICAL DIVERSITY</td>
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<tr>
<td>EBIO 569</td>
<td>CORE COURSE IN ECOLOGY AND EVOLUTIONARY BIOLOGY</td>
<td></td>
</tr>
<tr>
<td>EBIO 572</td>
<td>CORAL REEF ECOSYSTEMS</td>
<td></td>
</tr>
<tr>
<td>EBIO 580</td>
<td>SUSTAINABLE DEVELOPMENT AND REPORTING</td>
<td></td>
</tr>
<tr>
<td>ESCI 618</td>
<td>QUANTITATIVE HYDROGEOLOGY</td>
<td></td>
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<tr>
<td>ESCI 650</td>
<td>REMOTE SENSING</td>
<td></td>
</tr>
<tr>
<td>ESCI 654</td>
<td>GEOGRAPHIC INFORMATION SCIENCE</td>
<td></td>
</tr>
<tr>
<td>STAT 684 / CEVE 684</td>
<td>ENVIRONMENTAL RISK ASSESSMENT &amp; HUMAN HEALTH</td>
<td></td>
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<tr>
<td>GLBL 543</td>
<td>ENERGY POLICY</td>
<td></td>
</tr>
<tr>
<td>MGMT 609</td>
<td>MANAGING ENERGY TRANSITIONS</td>
<td></td>
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<tr>
<td>MGMT 610</td>
<td>FUNDAMENTALS OF THE ENERGY INDUSTRY</td>
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<tr>
<td>MGMT 661</td>
<td>INTERNATIONAL BUSINESS LAW</td>
<td></td>
</tr>
<tr>
<td>MGMT 670</td>
<td>OPERATIONS STRATEGY</td>
<td></td>
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<tr>
<td>MGMT 676</td>
<td>SOCIAL ENTERPRISE</td>
<td></td>
</tr>
<tr>
<td>MGMT 721</td>
<td>BUSINESS LAW</td>
<td></td>
</tr>
</tbody>
</table>

2019-2020 General Announcements
PDF Generated 1/29/2020
Footnotes and Additional Information

1 Practical experience is offered via a three to six month immersion. The internship will be under the guidance of a host company, government agency, or non-profit organization. At the conclusion of the internship, students must present a summary of their internship project in both oral and written form as part of the cohort course Professional Master’s Project (NSCI 512). Part-time students who already work in their area of study may fulfill the internship requirements by working on an approved project with their current employer.

2 The 21 credit hours of electives must include at least 3 credit hours from Management and Policy, 9 credit hours from one focus area, and one course each from the following subject codes: Civil and Environmental Engineering (CEVE), Ecology and Evolutionary Biology (EBIO), and Statistics (STAT).

3 Note: Some of the listed courses are not offered every year, and other coursework may be offered that satisfies the stated requirements upon approval. Depending on the student’s background or interest, course substitutions for any required or elective course may be approved by the program’s academic advisor. Students should consult with their academic advisors before enrolling.

Policies for the MSEA Degree

Professional Science Master’s Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Professional Science Master’s Program publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Professional_Science_Masters_Handbook.pdf

Admission

Admission to graduate study in Environmental Analysis is open to qualified students holding a bachelor’s degree in a related field that includes general biology, chemistry, calculus, differential equations, and linear algebra. Department faculty evaluate the previous academic record and credentials of each applicant individually.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

Additional Information

For additional information, please see the Environmental Analysis website: https://profms.rice.edu/

Opportunities for the MSEA Degree

Fifth-Year Master’s Degree Option for Rice Undergraduate Students

Rice students have an option to pursue the Master of Science in Environmental Analysis (MSEA) degree by adding an additional fifth year to their four undergraduate years of science studies.

Advanced Rice undergraduate students in good academic standing may apply to the MSEA degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master’s degree program. A plan of study will need to be approved by the student’s undergraduate advisor, the Professional Science Master’s (PSM) program director, and the MSEA program director.

As part of this option and opportunity, Rice undergraduate students:

- must complete the requirements for a bachelor’s degree and the master’s degree independently of each other (i.e., no course may be counted toward the fulfillment of both degrees).
- should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
- more information on this Undergraduate - Graduate Concurrent Enrollment opportunity, including specific information on the registration process can be found here (p. 17).

Additional Information

For additional information, please see the Environmental Analysis website: https://profms.rice.edu/

Master of Science in Environmental Analysis (MSEA) Degree / Master of Business Administration (MBA) Degree

Program Learning Outcomes for the MSEA Degree

Upon completing the MSEA Degree, students will be able to:

1. Apply technical and analytical skills and scientific evaluation methods to help solve problems affecting the environment.
2. Demonstrate written, oral, and visual communication strategies required to work effectively across science, business, and government.
3. Possess business and management skills and professional ethics to be effective in a business environment.

Program Learning Outcomes for the MBA Degree

Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.
Requirements for the MSEA/MBA Coordinated Degrees Program

Students may earn a coordinated MBA degree and a Master of Science degree from the Wiess School of Natural Sciences Professional Science Master’s (PSM) program in the following fields:

- Bioscience and Health Policy (MSBHP)
- Environmental Analysis (MSEA)
- Space Studies (MSSPS)
- Subsurface Geoscience (MSSG)

For the coordinated MBA/Master of Science degree from the Professional Science Master’s (PSM) program, students must complete:

- A minimum of 75 credit hours in approved coursework, including:
  - A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the Professional Science Master’s (PSM) degree requirements
  - A minimum of 30 credit hours in the corresponding science discipline
  - All PSM degree-specific requirements
  - A three to six month internship
  - A minimum of 45 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the MBA degree requirements
  - A minimum of 45 credit hours of business coursework
  - All MBA core requirements, the global field experience, custom core requirements, and coordinated elective requirements

Students plan their course schedules in consultation with the Wiess School of Natural Sciences PSM program director and with the Jones Graduate School of Business Registrar Department. Coordinated degrees candidates can fulfill requirements for both degrees within 3 academic years.

For general university requirements, see Graduate Degrees (p. 49). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Candidates in the MBA/Master of Science degree from the Professional Science Master’s (PSM) program must complete all requirements as listed for both degrees, and must apply and be accepted in both degree programs.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Minimum of 45</td>
</tr>
</tbody>
</table>

### Coordinated MSEA Degree Requirements

Students in the coordinated MSEA/MBA degrees program must complete the Core Requirements and Three to Six Month Internship of the MSEA degree program (p. 425) and the Coordinated MSEA Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>18</td>
</tr>
</tbody>
</table>

Select a minimum of 15 credit hours from approved departmental course offerings at the 500-level or above

Select a maximum of 6 credit hours from approved course offerings (MGMP, MGMT, or MICO) from the Jones Graduate School of Business at the 500-level or above

### Coordinated MBA Degree Requirements

Students in the coordinated MBA/Master of Engineering degrees program or in the coordinated MBA/Master of Science degree from the Professional Science Master’s (PSM) program must complete the Core Requirements, Global Field Experience, and Custom Core Requirements of the full-time MBA degree program (p. 214) and the Coordinated MBA Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>25.5</td>
</tr>
</tbody>
</table>

Select additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours.

### Footnotes and Additional Information

1 To fulfill the remaining requirements for the coordinated MBA degree program, students must complete an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours. (MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.) The second year of the program is dedicated entirely to MBA elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. MBA electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.
Policies for the MSEA/MBA Coordinated Degrees Program

Additional Information
For additional information on these two degrees:
1. Please see the Environmental Analysis website: https://profms.rice.edu/
2. Please see the Jones Graduate School of Business website: https://business.rice.edu/

Opportunities for the MSEA/MBA Coordinated Degrees Program

Additional Information
For additional information on these two degrees:
1. Please see the Environmental Analysis website: https://profms.rice.edu/
2. Please see the Jones Graduate School of Business website: https://business.rice.edu/

Environmental Science

Environmental Science

Contact Information

Environmental Science

Caroline A. Masiello
Undergraduate Advisor, major concentration in Earth Science
masiello@rice.edu

Julia K. Morgan
Undergraduate Advisor, major concentration in Earth Science
morganj@rice.edu

Amy Dunham
Undergraduate Advisor, major concentration in Ecology and Evolutionary Biology
aed4@rice.edu

Evan Siemann
Undergraduate Advisor, major concentration in Ecology and Evolutionary Biology
siemann@rice.edu

Environmental Science is an interdisciplinary field that explores the interconnection between humans and the natural environment. Modern environmental issues reflect the complex interactions of natural and social systems at global and local scales, and the resulting impacts on the Earth have led many to ask whether humankind has entered into a new epoch in the planet’s history, one in which humans are now a key driver in the change of Earth systems. The Environmental Science program fosters the critical, integrative thinking required to better understand the complexities of this human-nature relationship and the resultant scales of impact, and to assess and develop solutions that meet intergenerational human needs without compromising the natural systems upon which humans depend.

The Environmental Science program offers a major in Environmental Science for both the BA and BS degrees, along with two paths, a major concentration in Earth Science, or a major concentration in Ecology and Evolutionary Biology. The program includes a number of interdisciplinary courses for students interested in broadening their understanding of environmental issues. These courses often are team-taught by faculty from various areas of study.

Students desiring a major with an environmental emphasis have multiple options:

- environmental science (the aforementioned major, earned through the pursuit of the BA or BS degree)
- environmental engineering (an area of specialization within the Bachelor of Science in Chemical Engineering degree)
- environmental engineering (a major concentration within the BA degree with a major in Civil and Environmental Engineering)
- environmental earth science (an area of specialization within the BS degree with a major in Earth Science)

Students seeking information or advice on the Environmental Science major should contact:

- Dr. Caroline A. Masiello (masiello@rice.edu) for the major concentration in Earth Science, or
- Dr. Evan Siemann (siemann@rice.edu) for the major concentration in Ecology and Evolutionary Biology.

Bachelor’s Programs

- Bachelor of Arts (BA) Degree with a Major in Environmental Science
  - and a Major Concentration in Earth Science (p. 430)
  - and a Major Concentration in Ecology and Evolutionary Biology (p. 433)
- Bachelor of Science (BS) Degree with a Major in Environmental Science
  - and a Major Concentration in Earth Science (p. 436)
  - and a Major Concentration in Ecology and Evolutionary Biology (p. 439)

Environmental Science does not currently offer an academic program at the graduate level.

Environmental Science Major Advisors

Caroline A. Masiello, Earth, Environmental and Planetary Sciences
Julia K. Morgan, Earth, Environmental and Planetary Sciences
Amy E. Dunham, Ecology and Evolutionary Biology
Evan Siemann, Ecology and Evolutionary Biology

Descriptions and Codes Legend

Note: Internally the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule

- Course offerings/subject code: Courses from various subjects may apply toward the degree

Department Description and Code

- Environmental Studies: ENST
Undergraduate Degree Descriptions and Codes
- Bachelor of Arts degree: BA
- Bachelor of Science degree: BS

Undergraduate Major Description and Code
- Major in Environmental Science (both the BA and BS Degrees): ENVS

Undergraduate Major Concentration Descriptions and Codes
- Major concentration in Earth Science (both the BA and BS Degrees): ESEA
- Major concentration in Ecology and Evolutionary Biology (both the BA and BS Degrees): ESEC

CIP Code and Description
- ENVS Major/Program: CIP Code/Title: 03.0104 - Environmental Science
- ESEA Major Concentration: CIP Code/Title: 40.0601 - Geology/Earth Science, General
- ESEC Major Concentration: CIP Code/Title: 26.1310 - Ecology and Evolutionary Biology

Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Bachelor of Arts (BA) Degree with a Major in Environmental Science and a Major Concentration in Earth Science

Program Learning Outcomes for the BA Degree with a Major in Environmental Science

Upon completing the BA degree with a major in Environmental Science, students will be able to:

1. Demonstrate foundational knowledge in the natural sciences that is fundamental to the environmental sciences or application of the environmental sciences to other fields.
2. Integrate knowledge of natural and applied sciences to understand complex natural systems and cycles.
3. Synthesize knowledge from natural sciences and engineering and understand how it applies to the study of the environment.
4. Understand environmental issues from a scientific perspective and be able to solve issues using a variety of interdisciplinary perspectives (e.g., social sciences, economics, humanities, and/or architecture).

Requirements for the BA Degree with a Major in Environmental Science

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Environmental Science must complete:

- A minimum of 22-24 courses (61-67 credit hours), depending on course selection, to satisfy major requirements.
- A minimum of 121-127 credit hours to satisfy degree requirements.

- A minimum of 60 credit hours outside of major requirements.
- A minimum of 4-6 courses (12-21 credit hours), depending on declared major concentration, taken at the 300-level or above.
- A capstone senior seminar requirement.
- The requirements of a major concentration. When students declare the major (p. 11) in Environmental Science, students must additionally identify and declare one of two major concentrations, either in:
  - Earth Science (p. 432), or
  - Ecology and Evolutionary Biology (p. 435).

Because of the common core requirements, it is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (%20registrar@rice.edu).

Environmental science is an interdisciplinary major that addresses environmental issues in the context of what we know about earth, ecology, and society. In addition to its science core, the major also seeks to provide students with some appreciation of social, cultural, and policy dimensions of environmental issues.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degroworks/officialcertifier/). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<thead>
<tr>
<th>Code</th>
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<td>Total Credit Hours Required for the BA Degree with a Major in Environmental Science</td>
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Degree Requirements

<table>
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<th>Code</th>
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<td>STAT 280</td>
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<td>or STAT 305</td>
<td>INTRODUCTION TO STATISTICS FOR BIOSCIENCES</td>
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<td>ESCI 115</td>
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<td>or ESCI 110</td>
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<td>ESCI 109</td>
<td>OCEANOGRAPHY</td>
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<td>THE SCIENCE OF CLIMATE CHANGE</td>
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<td>ENST 201</td>
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<td>EBIO 213</td>
<td>INTRO EXPERIMENTAL ECOLOGY AND EVOLUTIONARY BIOLOGY</td>
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<td>EBIO 325</td>
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<td>INDEPENDENT RESEARCH FOR ECOLOGY &amp; EVOLUTIONARY BIOLOGY UNDERGRADUATES</td>
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<td>EBIO 316</td>
<td>LAB MODULE IN ECOLOGY</td>
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<td>EBIO 317</td>
<td>LAB MODULE IN BEHAVIOR</td>
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<td>TROPICAL FIELD BIOLOGY</td>
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<td>EBIO 320</td>
<td>ECOLOGY AND CONSERVATION OF BRAZILIAN WETLANDS LABORATORY</td>
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<td>EBIO 324</td>
<td>CONSERVATION BIOLOGY LAB</td>
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<td>EBIO 327</td>
<td>BIOLOGICAL DIVERSITY</td>
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<td>EBIO 330</td>
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<td>EBIO 337</td>
<td>FIELD BIRD BIOLOGY LAB</td>
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<td>ENST 379 /</td>
<td>LAB MODULE IN AQUATIC ECOLOGY WITH SCUBA</td>
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<td>EBIO 379</td>
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<td>ESCI 103</td>
<td>FIELD TRIPS FOR THE ENVIRONMENT</td>
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<td>ESCI 334</td>
<td>GEOLOGICAL TECHNIQUES</td>
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<td>ESCI 380 /</td>
<td>VISUALIZING NATURE</td>
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<td>FOTO 390</td>
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<td>ESCI 390</td>
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<td>ESCI 391</td>
<td>EARTH SCIENCE FIELD EXPERIENCE</td>
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<td>FWIS 187</td>
<td>EXPLORING THE SCIENCE AND HISTORY OF HOUSTON'S BAYOUS</td>
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<td>Earth Science</td>
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<td>Ecology and Evolutionary Biology</td>
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<td>Advanced Electives 3</td>
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<td>Social Sciences</td>
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<td>Select 1 course from the following:</td>
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<td>ANTH 348</td>
<td>ANTHROPOLOGIES OF NATURE</td>
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<td>ANTH 381</td>
<td>MEDICAL ANTHROPOLOGY</td>
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<td>ENST 302 /</td>
<td>ENVIRONMENTAL ISSUES: RICE INTO THE</td>
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<td>SOCi 304</td>
<td>FUTURE</td>
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<td>ENST 332 /</td>
<td>THE SOCIAL LIFE OF CLEAN ENERGY</td>
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<td>ANTH 332</td>
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<td>ENST 367 /</td>
<td>ENVIRONMENTAL SOCIOLOGY</td>
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<td>SOCI 367</td>
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<td>ENST 437 /</td>
<td>ENERGY ECONOMICS</td>
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<td>ECON 437</td>
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<td>ENST 480 /</td>
<td>ENVIRONMENTAL AND ENERGY</td>
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<td>ECON 480</td>
<td>ECONOMICS</td>
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<td>POLI 332</td>
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<td>COMPARATIVE URBAN POLITICS AND POLICY</td>
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<td>SOCI 313</td>
<td>DEMOGRAPHY</td>
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<td>SOCI 423</td>
<td>SOCIOLOGY OF FOOD</td>
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<td>Humanities and Architecture</td>
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<td>ENGL 358</td>
<td>CONSUMPTION AND CONSUMERISM</td>
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<td>CULTURE, ENERGY, AND THE</td>
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<td>HUMA 202</td>
<td>ENVIRONMENT: AN INTRODUCTION TO ENERGY HUMANITIES</td>
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<td>ENST 313 /</td>
<td>SUSTAINABLE DESIGN</td>
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<tr>
<td>ARCH 313</td>
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<td>ENST 322 /</td>
<td>CASE STUDIES IN SUSTAINABILITY: THE</td>
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<td>ARCH 322</td>
<td>REGENERATIVE REPOSITIONING OF NEW OR EXISTING RICE CAMP BLDGS</td>
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<td>LITERATURE AND THE ENVIRONMENT</td>
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<td>ENGL 368</td>
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<td>ENGL 459</td>
<td>STUDIES IN LITERATURE AND ECOLOGY</td>
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<td>HIST 425</td>
<td>20TH CENTURY AMERICAN CONSERVATION MOVEMENT</td>
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<td>Natural Sciences and Engineering 4</td>
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<td>CEVE 302 /</td>
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<td>ENGI 302</td>
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<td>CEVE 308</td>
<td>INTRODUCTION TO AIR POLLUTION CONTROL</td>
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<td>CEVE 310</td>
<td>PRINCIPLES OF ENVIRONMENTAL ENGINEERING</td>
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<td>CEVE 401</td>
<td>CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE LAB</td>
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<td>CEVE 404</td>
<td>ATMOSPHERIC PARTICULATE MATTER</td>
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<td>CEVE 411</td>
<td>ATMOSPHERIC PROCESSES</td>
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<td>CEVE 412</td>
<td>HYDROLOGY AND WATER RESOURCES ENGINEERING</td>
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<td>CEVE 420</td>
<td>ENVIRONMENTAL REMEDIATION RESTORATION</td>
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<td>CEVE 434</td>
<td>FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT</td>
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<tr>
<td>CEVE 484 /</td>
<td>ENVIRONMENTAL RISK ASSESSMENT &amp; HUMAN HEALTH</td>
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<td>CHEM 211</td>
<td>ORGANIC CHEMISTRY I</td>
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<td>&amp; CHEM 213</td>
<td>and ORGANIC CHEMISTRY DISCUSSION</td>
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<td>ENST 307 /</td>
<td>ENERGY AND THE ENVIRONMENT</td>
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<td>CEVE 307</td>
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<td>ESCI 307</td>
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<tr>
<td>ENST 406 /</td>
<td>INTRODUCTION TO ENVIRONMENTAL LAW</td>
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<td>CEVE 406</td>
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<tr>
<td>PHYS 101</td>
<td>MECHANICS (WITH LAB)</td>
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<tr>
<td>&amp; PHYS 103</td>
<td>and MECHANICS DISCUSSION</td>
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PHYS 102 & PHYS 104 - ELECTRICITY & MAGNETISM (WITH LAB) and ELECTRICITY AND MAGNETISM DISCUSSION

Capstone Senior Seminar Requirement
ESCI 495 / EBIO 495 - SEMINAR: TOPICS IN ENVIRONMENTAL SCIENCE 3

Total Credit Hours Required for the Major in Environmental Science 61-67

University Graduation Requirements (p. 26) 60

Total Credit Hours 121-127

Footnotes and Additional Information
* Includes coursework completed as distribution credit, FWIS, LPAR upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.
1 CHEM 151 may be substituted for CHEM 121 or CHEM 111; CHEM 153 may be substituted for CHEM 123 or CHEM 113; CHEM 152 may be substituted for CHEM 122 or CHEM 112, and CHEM 154 may be substituted for CHEM 124 or CHEM 114.
2 The Core Courses acquaint students with a range of environmental topics encountered by scientists, engineers, managers, and policy makers. Core Courses stress the components of the global environment and their interactions, culminating with a tropical seminar that integrates across the field.
3 Students may also petition to complete alternative courses to be applied toward the Advanced Electives requirement.
4 In addition to the courses in the Natural Sciences and Engineering Advanced Electives list, students may complete 1 course listed in the major concentration requirements outside of the student's declared major concentration.

Major Concentration: Earth Science
Students must complete a total of 3 courses (minimum of 10-12 credit hours, depending on course selection) as listed below to satisfy the requirements for the major concentration in Earth Science.

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<td>7-8</td>
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<tr>
<td>ESCI 323</td>
<td>EARTH STRUCTURE AND DEFORMATION</td>
<td>3-4</td>
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<tr>
<td>ESCI 340 / 40</td>
<td>GLOBAL BIOGEOCHEMICAL CYCLES</td>
<td>3-4</td>
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<td>EBIO 340 / 40</td>
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Elective Requirement
Select at least 1 course from the following: 1

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<tr>
<td>ESCI 322</td>
<td>EARTH CHEMISTRY AND MATERIALS</td>
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<td>3-4</td>
</tr>
<tr>
<td>ESCI 380 / 40</td>
<td>VISUALIZING NATURE</td>
<td>3-4</td>
</tr>
<tr>
<td>FOTO 390</td>
<td></td>
<td>3-4</td>
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</tbody>
</table>

ESCI 418 / CEVE 418 - QUANTITATIVE HYDROGEOLOGY
ESCI 421 - PALEOCEANOGRAPHY
ESCI 425 / CHEM 425 / ENST 425 - ORGANIC GEOCHEMISTRY
ESCI 430 - TRACE-ELEMENT AND ISOTOPE GEOCHEMISTRY FOR EARTH AND ENVIRONMENTAL SCIENCE
ESCI 431 - GEOMORPHOLOGY
ESCI 435 - MECHANICS OF SEDIMENT TRANSPORT
ESCI 452 - GIS FOR SCIENTISTS AND ENGINEERS
ESCI 467 - GEOMECHANICS

Total Credit Hours 10-12

Footnotes and Additional Information
1 Note that the course not completed in the Core Requirements list for the major concentration in Earth Science may be completed and applied towards the major concentration's Elective Requirement.

Policies for the BA Degree with a Major in Environmental Science and a Major Concentration in Earth Science

Transfer Credit
For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines
Students pursuing the major in Environmental Science should be aware of the following program transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

Additional Information
For additional information, please see the following websites:

- https://biosciences.rice.edu/
- https://earthscience.rice.edu/academics/undergraduate-program/

Opportunities for the BA Degree with a Major in Environmental Science and a Major Concentration in Earth Science

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.
Independent Research

Students are encouraged to undertake independent research on environmentally related topics as part of their degree programs, in cooperation with one or more faculty. Course options for independent research, repeatable for credit, include: EBIO 403, EBIO 404, and ESCI 481.

Students also can enroll in senior honors thesis programs within their major concentrations, or by arrangement with other departments, and/or through the Rice Undergraduate Scholars Program. Students completing a thesis will also be eligible for the Distinction in Research and Creative Work, a university honor. Details for each program can be found here:

- **EBIO Honors Research**

- **ESCI Senior Honors Thesis**
  [https://earthscience.rice.edu/academics/undergraduate-program/honors-thesis](https://earthscience.rice.edu/academics/undergraduate-program/honors-thesis)

- **Rice Undergraduate Scholars Program**
  [https://ouri.rice.edu/rice-undergraduate-scholars-program-rusp-1](https://ouri.rice.edu/rice-undergraduate-scholars-program-rusp-1)

Additional Information

For additional information, please see the following websites:

- https://biosciences.rice.edu/
- https://earthscience.rice.edu/academics/undergraduate-program/
- [https://ouri.rice.edu/rice-undergraduate-scholars-program-rusp-1](https://ouri.rice.edu/rice-undergraduate-scholars-program-rusp-1)

Bachelor of Arts (BA) Degree with a Major in Environmental Science and a Major Concentration in Ecology and Evolutionary Biology

Program Learning Outcomes for the BA Degree with a Major in Environmental Science

Upon completing the BA degree with a major in Environmental Science, students will be able to:

1. Demonstrate foundational knowledge in the natural sciences that is fundamental to the environmental sciences or application of the environmental sciences to other fields.
2. Integrate knowledge of natural and applied sciences to understand complex natural systems and cycles.
3. Synthesize knowledge from natural sciences and engineering and understand how it applies to the study of the environment.
4. Understand environmental issues from a scientific perspective and be able to solve issues using a variety of interdisciplinary perspectives (e.g., social sciences, economics, humanities, and/or architecture).

Requirements for the BA Degree with a Major in Environmental Science

For general university requirements, see [Graduation Requirements](#) (p. 26). Students pursuing the BA degree with a major in Environmental Science must complete:

- **A minimum of 22-24 courses (61-67 credit hours), depending on course selection, to satisfy major requirements.**
- **A minimum of 121-127 credit hours to satisfy degree requirements.**
- **A minimum of 60 credit hours outside of major requirements.**
- **A minimum of 4-6 courses (12-21 credit hours), depending on declared major concentration, taken at the 300-level or above.**
- **A capstone senior seminar requirement.**
- **The requirements of a major concentration. When students declare the major** (p. 11) **in Environmental Science, students must additionally identify and declare one of two major concentrations, either in:**
  - **Earth Science** (p. 432), or
  - **Ecology and Evolutionary Biology** (p. 435).

Because of the common core requirements, it is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the [Office of the Registrar](mailto:%20registrar@rice.edu).

Environmental science is an interdisciplinary major that addresses environmental issues in the context of what we know about earth, ecology, and society. In addition to its science core, the major also seeks to provide students with some appreciation of social, cultural, and policy dimensions of environmental issues.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier [https://registrar.rice.edu/facstaff/degreworks/officialcertifier/](https://registrar.rice.edu/facstaff/degreworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Environmental Science</td>
<td>121-127</td>
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Degree Requirements

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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<td></td>
<td><strong>Core Requirements</strong></td>
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<td></td>
<td><strong>Foundation Coursework</strong></td>
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<tr>
<td>BIOC 201</td>
<td>INTRODUCTORY BIOLOGY I</td>
<td>3</td>
</tr>
<tr>
<td>EBIO 202</td>
<td>INTRODUCTORY BIOLOGY II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 121</td>
<td>GENERAL CHEMISTRY I</td>
<td>3</td>
</tr>
<tr>
<td>or CHEM 111</td>
<td>AP/OTH CREDIT IN GENERAL CHEMISTRY I</td>
<td></td>
</tr>
<tr>
<td>CHEM 123</td>
<td>GENERAL CHEMISTRY LABORATORY I</td>
<td>1</td>
</tr>
<tr>
<td>or CHEM 113</td>
<td>AP/OTH CREDIT IN GENERAL CHEMISTRY LAB I</td>
<td></td>
</tr>
<tr>
<td>CHEM 122</td>
<td>GENERAL CHEMISTRY II</td>
<td>3</td>
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<tr>
<td>or CHEM 112</td>
<td>AP/OTH CREDIT IN GENERAL CHEMISTRY II</td>
<td></td>
</tr>
<tr>
<td>CHEM 124</td>
<td>GENERAL CHEMISTRY LABORATORY II</td>
<td>1</td>
</tr>
<tr>
<td>or CHEM 114</td>
<td>AP/OTH CREDIT IN GENERAL CHEMISTRY LAB II</td>
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</tr>
<tr>
<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I</td>
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Bachelor of Arts (BA) Degree with a Major in Environmental Science and a Major Concentration in Ecology and Evolutionary Biology

<table>
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<th>Credits</th>
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<td>AP/OTH CREDIT IN CALCULUS I</td>
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</tr>
<tr>
<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
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</tr>
<tr>
<td>or MATH 106</td>
<td>AP/OTH CREDIT IN CALCULUS II</td>
<td>3</td>
</tr>
<tr>
<td>STAT 280</td>
<td>ELEMENTARY APPLIED STATISTICS</td>
<td>4</td>
</tr>
<tr>
<td>or STAT 305</td>
<td>INTRODUCTION TO STATISTICS FOR BIOSCIENCES</td>
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</table>

**Core Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENST 100 /</td>
<td>ENVIRONMENT, CULTURE AND SOCIETY</td>
<td>3</td>
</tr>
<tr>
<td>ARCH 105</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESCI 115</td>
<td>INTRODUCTION TO THE EARTH</td>
<td>3 or 4</td>
</tr>
<tr>
<td>or ESCI 110</td>
<td>THE EARTH SYSTEM, ENVIRONMENT, AND SOCIETY</td>
<td></td>
</tr>
</tbody>
</table>

**Select 1 course from the following:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ESCI 107</td>
<td>OCEANS AND GLOBAL CHANGE</td>
<td></td>
</tr>
<tr>
<td>ESCI 109</td>
<td>OCEANOGRAPHY</td>
<td></td>
</tr>
<tr>
<td>ESCI 201 /</td>
<td>THE SCIENCE OF CLIMATE CHANGE</td>
<td>2</td>
</tr>
<tr>
<td>ENST 201</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EBIO 213</td>
<td>INTRO EXPERIMENTAL ECOLOGY AND EVOLUTIONARY BIOLOGY</td>
<td>2</td>
</tr>
<tr>
<td>EBIO 325</td>
<td>ECOLOGY</td>
<td>3</td>
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</table>

**Field Experience**

**Select 1-2 courses from the following:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBIO 306</td>
<td>INDEPENDENT RESEARCH FOR ECOLOGY &amp; EVOLUTIONARY BIOLOGY UNDERGRADUATES</td>
<td>2-3</td>
</tr>
<tr>
<td>EBIO 316</td>
<td>LAB MODULE IN ECOLOGY</td>
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</tr>
<tr>
<td>EBIO 317</td>
<td>LAB MODULE IN BEHAVIOR</td>
<td></td>
</tr>
<tr>
<td>EBIO 319</td>
<td>TROPICAL FIELD BIOLOGY</td>
<td></td>
</tr>
<tr>
<td>EBIO 320</td>
<td>ECOLOGY AND CONSERVATION OF BRAZILIAN WETLANDS LABORATORY</td>
<td></td>
</tr>
<tr>
<td>EBIO 324</td>
<td>CONSERVATION BIOLOGY LAB</td>
<td></td>
</tr>
<tr>
<td>EBIO 327</td>
<td>BIOLOGICAL DIVERSITY</td>
<td></td>
</tr>
<tr>
<td>EBIO 330</td>
<td>INSECT BIOLOGY LAB</td>
<td></td>
</tr>
<tr>
<td>EBIO 337</td>
<td>FIELD BIRD BIOLOGY LAB</td>
<td></td>
</tr>
<tr>
<td>ENST 379 /</td>
<td>LAB MODULE IN AQUATIC ECOLOGY WITH SCUBA</td>
<td></td>
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<tr>
<td>EBIO 379</td>
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<tr>
<td>ESCI 103</td>
<td>FIELD TRIPS FOR THE ENVIRONMENT</td>
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<tr>
<td>ESCI 334</td>
<td>GEOLOGICAL TECHNIQUES</td>
<td></td>
</tr>
<tr>
<td>ESCI 380 /</td>
<td>VISUALIZING NATURE</td>
<td></td>
</tr>
<tr>
<td>FOTO 390</td>
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<td>ESCI 390</td>
<td>GEOLOGY FIELD CAMP</td>
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<tr>
<td>ESCI 391</td>
<td>EARTH SCIENCE FIELD EXPERIENCE</td>
<td></td>
</tr>
<tr>
<td>FWIS 187</td>
<td>EXPLORING THE SCIENCE AND HISTORY OF HOUSTON'S BAYOUS</td>
<td></td>
</tr>
</tbody>
</table>

**Major Concentration**

**Select 1 from the following Major Concentrations (see below for Major Concentration requirements):**

**Earth Science**

**Ecology and Evolutionary Biology**

**Advanced Electives**

**Select 1 course from the following:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ANTH 348</td>
<td>ANTHROPOLOGIES OF NATURE</td>
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<tr>
<td>ANTH 381</td>
<td>MEDICAL ANTHROPOLOGY</td>
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<tr>
<td>ENST 302 /</td>
<td>ENVIRONMENTAL ISSUES: RICE INTO THE</td>
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<tr>
<td>SOCI 304</td>
<td>FUTURE</td>
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2019-2020 General Announcements

PDF Generated 1/29/2020
### Majors and Core Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td>PHYS 101 &amp; PHYS 103</td>
<td>MECHANICS (WITH LAB) and MECHANICS DISCUSSION</td>
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<tr>
<td>PHYS 102 &amp; PHYS 104</td>
<td>ELECTRICITY &amp; MAGNETISM (WITH LAB) and ELECTRICITY AND MAGNETISM DISCUSSION</td>
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</table>

#### Capstone Senior Seminar Requirement

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td>ESCI 495 / EBI 495</td>
<td>SEMINAR: TOPICS IN ENVIRONMENTAL SCIENCE</td>
<td>3</td>
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</table>

#### Total Credit Hours Required for the Major in Environmental Science

| Credit Hours | 61-67 |

### University Graduation Requirements (p. 26)

| Credit Hours | 60 |

### Footnotes and Additional Information

1. Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

2. CHEM 151 may be substituted for CHEM 121 or CHEM 111; CHEM 153 may be substituted for CHEM 123 or CHEM 113; CHEM 152 may be substituted for CHEM 122 or CHEM 112, and CHEM 154 may be substituted for CHEM 124 or CHEM 114.

3. The Core Courses acquaint students with a range of environmental topics encountered by scientists, engineers, managers, and policy makers. Core Courses stress the components of the global environment and their interactions, culminating with a tropical seminar that integrates across the field.

4. Students may also petition to complete alternative courses to be applied toward the Advanced Electives requirement.

### Major Concentration: Ecology and Evolutionary Biology

Students must complete a total of 3 courses (minimum of 9 credit hours) as listed below to satisfy the requirements for the major concentration in Ecology and Evolutionary Biology.

<table>
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<th>Title</th>
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<tr>
<td>EBI 270</td>
<td>ECOSYSTEM MANAGEMENT</td>
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</tr>
<tr>
<td>EBI 323 / ENST 323</td>
<td>CONSERVATION BIOLOGY</td>
<td></td>
</tr>
<tr>
<td>EBI 372</td>
<td>CORAL REEF ECOSYSTEMS</td>
<td></td>
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</table>

#### Elective Requirements

Select at least 1 course from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>EBI 270</td>
<td>ECOSYSTEM MANAGEMENT</td>
<td></td>
</tr>
<tr>
<td>EBI 321</td>
<td>ANIMAL BEHAVIOR</td>
<td></td>
</tr>
<tr>
<td>EBI 323 / ENST 323</td>
<td>CONSERVATION BIOLOGY</td>
<td></td>
</tr>
<tr>
<td>EBI 326</td>
<td>INSECT BIOLOGY</td>
<td></td>
</tr>
<tr>
<td>EBI 331 / BIOC 331</td>
<td>BIOLOGY OF INFECTIOUS DISEASES</td>
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</tbody>
</table>

### Policies for the BA Degree with a Major in Environmental Science and a Major Concentration in Ecology and Evolutionary Biology

#### Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

#### Program Transfer Credit Guidelines

Students pursuing the major in Environmental Science should be aware of the following program transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

### Additional Information

For additional information, please see the following websites:

- https://biosciences.rice.edu/
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### Opportunities for the BA Degree with a Major in Environmental Science and a Major Concentration in Ecology and Evolutionary Biology

#### Academic Honors

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Bachelor of Science (BS) Degree with a Major in Environmental Science and a Major Concentration in Earth Science

Program Learning Outcomes for the BS Degree with a Major in Environmental Science

Upon completing the BS degree with a major in Environmental Science, students will be able to:

1. Demonstrate foundational knowledge in the natural sciences that is fundamental to the environmental sciences or application of the environmental sciences to other fields.
2. Integrate knowledge of natural and applied sciences to understand complex natural systems and cycles.
3. Synthesize knowledge from natural sciences and engineering and apply it to the study of the environment.
4. Understand environmental issues from a scientific perspective and be able to solve issues using a variety of interdisciplinary perspectives (e.g., social sciences, economics, humanities, and/or architecture).
5. Demonstrate knowledge and skills suitable for doing research and/or field studies in environmental science.

Requirements for the BS Degree with a Major in Environmental Science

For graduation requirements, see Graduation Requirements (p. 26). Students pursuing the BS degree with a major in Environmental Science must complete:

- A minimum of 25-29 courses (72-78 credit hours), depending on course selection, to satisfy major requirements.
- A minimum of 132-138 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 5-7 courses (15-24 credit hours), depending on declared major concentration, taken at the 300-level or above.
- An advanced field or research experience requirement.
- A capstone senior seminar requirement.
- The requirements of a major concentration. When students declare the major (p. 11) in Environmental Science, students must additionally identify and declare one of two major concentrations, either in:
  - Earth Science (p. 438), or
  - Ecology and Evolutionary Biology (p. 441).

Because of the common core requirements, it is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (%20registrar@rice.edu).

Environmental Science is an interdisciplinary major that addresses environmental issues in the context of what we know about earth, ecology, and society. In addition to its science core, the major also seeks to provide students with some appreciation of social, cultural, and policy dimensions of environmental issues.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<th>Code</th>
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<th>Credit Hours</th>
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<td></td>
<td>Total Credit Hours Required for the BS Degree with a Major in Environmental Science</td>
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Degree Requirements

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<td>Foundation Coursework</td>
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<td>BIOC 201</td>
<td>INTRODUCTORY BIOLOGY I</td>
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<tr>
<td>EBIO 202</td>
<td>INTRODUCTORY BIOLOGY II</td>
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</tr>
<tr>
<td>CHEM 121</td>
<td>GENERAL CHEMISTRY I 1</td>
<td>3</td>
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<tr>
<td></td>
<td>or CHEM 111 AP/OTH CREDIT IN GENERAL CHEMISTRY I</td>
<td></td>
</tr>
</tbody>
</table>
CHEM 123  GENERAL CHEMISTRY LABORATORY I 1
or CHEM 113  AP/OTH CREDIT IN GENERAL CHEMISTRY LAB I
CHEM 122  GENERAL CHEMISTRY II 3
or CHEM 112  AP/OTH CREDIT IN GENERAL CHEMISTRY II
CHEM 124  GENERAL CHEMISTRY LABORATORY II 1
or CHEM 114  AP/OTH CREDIT IN GENERAL CHEMISTRY LAB II
MATH 101  SINGLE VARIABLE CALCULUS I 3
or MATH 105  AP/OTH CREDIT IN CALCULUS I
MATH 102  SINGLE VARIABLE CALCULUS II 3
or MATH 106  AP/OTH CREDIT IN CALCULUS II
STAT 280  ELEMENTARY APPLIED STATISTICS 4
or STAT 305  INTRODUCTION TO STATISTICS FOR BIOSCIENCES

Select 1 course from the following:

PHYS 101  MECHANICS (WITH LAB) & PHYS 103  and MECHANICS DISCUSSION
PHYS 111  HONORS MECHANICS (WITH LAB)
PHYS 125  GENERAL PHYSICS (WITH LAB)

Select 1 course from the following:

PHYS 102  ELECTRICITY & MAGNETISM (WITH LAB) & PHYS 104  and ELECTRICITY AND MAGNETISM DISCUSSION
PHYS 112  HONORS ELECTRICITY & MAGNETISM (WITH LAB)
PHYS 126  GENERAL PHYSICS II (WITH LAB)

Core Courses 2
ENST 100 / ARCH 105  ENVIRONMENT, CULTURE AND SOCIETY 3
ESCI 115  INTRODUCTION TO THE EARTH 3 or 4
or ESCI 110  THE EARTH SYSTEM, ENVIRONMENT, AND SOCIETY

Select 1 course from the following:

ESCI 107  OCEANS AND GLOBAL CHANGE
ESCI 109  OCEANOGRAPHY
ESCI 201 / ENST 201  THE SCIENCE OF CLIMATE CHANGE

EBIO 213  INTRO EXPERIMENTAL ECOLOGY AND EVOLUTIONARY BIOLOGY 2
EBIO 325  ECOLOGY 3

Field Experience
Select 1-2 courses from the following:

EBIO 306  INDEPENDENT RESEARCH FOR ECOLOGY & EVOLUTIONARY BIOLOGY UNDERGRADUATES
EBIO 316  LAB MODULE IN ECOLOGY
EBIO 317  LAB MODULE IN BEHAVIOR
EBIO 319  TROPICAL FIELD BIOLOGY
EBIO 320  ECOLOGY AND CONSERVATION OF BRAZILIAN WETLANDS LABORATORY
EBIO 324  CONSERVATION BIOLOGY LAB
EBIO 327  BIOLOGICAL DIVERSITY
EBIO 330  INSECT BIOLOGY LAB
EBIO 337  FIELD BIRD BIOLOGY LAB
ENST 379 / EBIO 379  LAB MODULE IN AQUATIC ECOLOGY WITH SCUBA
ESCI 103  FIELD TRIPS FOR THE ENVIRONMENT

ESCI 334  GEOLOGICAL TECHNIQUES
ESCI 380 / FOTO 390  VISUALIZING NATURE
FWIS 187  EXPLORING THE SCIENCE AND HISTORY OF HOUSTON'S BAYOUS

Major Concentration
Select 1 from the following Major Concentrations (see below for Major Concentration requirements):

Earth Science
Ecology and Evolutionary Biology

Advanced Electives 3

Select 1 course from the following:

ANTH 348  ANTHROPOLOGIES OF NATURE
ANTH 381  MEDICAL ANTHROPOLOGY
ENST 302 / ENST 304  ENVIRONMENTAL ISSUES: RICE INTO THE FUTURE
ENST 332 / ANTH 332  THE SOCIAL LIFE OF CLEAN ENERGY
ENST 367 / SOCI 367  ENVIRONMENTAL SOCIOLOGY
ENST 437 / ECON 437  ENERGY ECONOMICS
ENST 480 / ECON 480  ENVIRONMENTAL AND ENERGY ECONOMICS
ENST 480 / ECON 480  ENERGY ECONOMICS
Poli 332  URBAN POLITICS
Poli 362  COMPARATIVE URBAN POLITICS AND POLICY
SOCI 313  DEMOGRAPHY
SOCI 423  SOCIOLOGY OF FOOD

Humanities and Architecture
Select 1 course from the following:

ENGL 358  CONSUMPTION AND CONSUMERISM
ENGL 459  STUDIES IN LITERATURE AND ECOLOGY
ENST 202 / HUMA 202  CULTURE, ENERGY, AND THE ENVIRONMENT: AN INTRODUCTION TO ENERGY HUMANITIES
ENST 313 / ARCH 313  SUSTAINABLE DESIGN
ENST 322 / ARCH 322  CASE STUDIES IN SUSTAINABILITY: THE REGENERATIVE REPOSITIONING OF NEW OR EXISTING RICE CAMPUS BLDGS
ENST 368 / ENGL 368  LITERATURE AND THE ENVIRONMENT
HIST 425  20TH CENTURY AMERICAN CONSERVATION MOVEMENT

Natural Sciences and Engineering 4
Select 1 course from the following:

CEVE 302 / ENGI 302  SUSTAINABLE DESIGN
CEVE 308  INTRODUCTION TO AIR POLLUTION CONTROL
CEVE 401  CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE LAB
CEVE 404  ATMOSPHERIC PARTICULATE MATTER

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CEVE 411 ATMOSPHERIC PROCESSES
CEVE 412 HYDROLOGY AND WATER RESOURCES ENGINEERING
CEVE 420 ENVIRONMENTAL REMEDIATION RESTORATION
CEVE 434 FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT
CEVE 484 / STAT 484 ENVIRONMENTAL RISK ASSESSMENT & HUMAN HEALTH
CHEM 211 & CHEM 213 ORGANIC CHEMISTRY I and ORGANIC CHEMISTRY DISCUSSION
ENST 281 / CHBE 281 ENGINEERING SOLUTIONS FOR SUSTAINABLE COMMUNITIES
ENST 307 / CEVE 307 / ESCI 307 ENERGY AND THE ENVIRONMENT
ENST 406 / CEVE 406 INTRODUCTION TO ENVIRONMENTAL LAW

Advanced Field or Research Experience Requirement
Independent Research (see the Opportunities tab for additional information). 5
Select 1 course from the following: 3
- EBIO 403 UNDERGRADUATE HONORS RESEARCH IN ECOLOGY AND EVOLUTIONARY BIOLOGY
  or EBIO 404 UNDERGRADUATE HONORS RESEARCH IN ECOLOGY AND EVOLUTIONARY BIOLOGY
- ESCI 390 GEOLOGY FIELD CAMP
- ESCI 391 EARTH SCIENCE FIELD EXPERIENCE
- ESCI 481 UNDERGRADUATE RESEARCH IN EARTH SCIENCE

Capstone Senior Seminar Requirement
- ESCI 495 / EBIO 495 SEMINAR: TOPICS IN ENVIRONMENTAL SCIENCE

Total Credit Hours Required for the Major in Environmental Science
72-78

University Graduation Requirements (p. 26) 4
60
Total Credit Hours
132-138

Footnotes and Additional Information
* Includes coursework completed as distribution credit, FWIS, LPAR upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.
1 CHEM 151 may be substituted for CHEM 121 or CHEM 111;
CHEM 153 may be substituted for CHEM 123 or CHEM 113;
CHEM 152 may be substituted for CHEM 122 or CHEM 112, and
CHEM 154 may be substituted for CHEM 124 or CHEM 114.
2 The Core Courses acquaint students with a range of environmental topics encountered by scientists, engineers, managers, and policy makers. Core Courses stress the components of the global environment and their interactions, culminating with a tropical seminar that integrates across the field.
3 Students may also petition to complete alternative courses to be applied toward the Advanced Electives requirement.
4 In addition to the courses in the Natural Sciences and Engineering Advanced Electives list, students may complete 1 course listed in the major concentration requirements outside of the student’s declared major concentration.
5 Students are encouraged, but not required, to undertake independent research on environmentally related topics.

Major Concentration: Earth Science
Students must complete a total of 3 courses (minimum of 10-12 credit hours, depending on course selection) as listed below to satisfy requirements for the major concentration in Earth Science.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESCI 321</td>
<td>EARTH SYSTEM EVOLUTION AND CYCLES</td>
<td>7-8</td>
</tr>
<tr>
<td>ESCI 323</td>
<td>EARTH STRUCTURE AND DEFORMATION</td>
<td></td>
</tr>
<tr>
<td>ESCI 340</td>
<td>GLOBAL BIOGEOCHEMICAL CYCLES</td>
<td></td>
</tr>
</tbody>
</table>

Elective Requirement
Select at least 1 course from the following: 1 3-4
- ESCI 321 EARTH SYSTEM EVOLUTION AND CYCLES
- ESCI 322 EARTH CHEMISTRY AND MATERIALS
- ESCI 323 EARTH STRUCTURE AND DEFORMATION
- ESCI 340 / GLOBAL BIOGEOCHEMICAL CYCLES
  - EBIO 340 / ENST 340
- ESCI 418 / QUANTITATIVE HYDROGEOLOGY
- CEVE 418
- ESCI 421 PALEOCEANOGRAPHY
- ESCI 425 / ORGANIC GEOCHEMISTRY
  - CHEM 425
- ESCI 430 TRAC-ELEMENT AND ISOTOPE GEOCHEMISTRY FOR EARTH AND ENVIRONMENTAL SCIENCE
  - ENST 430
- ESCI 431 GEOMORPHOLOGY
- ESCI 435 MECHANICS OF SEDIMENT TRANSPORT
- ESCI 452 GIS FOR SCIENTISTS AND ENGINEERS
- ESCI 467 GEOMECHANICS

Total Credit Hours 10-12

Footnotes and Additional Information
1 Please note that the course not completed in the Core Requirements list for the major concentration in Earth Science may be completed and applied towards the major concentration’s Elective Requirement.

Policies for the BS Degree with a Major in Environmental Science and a Major Concentration in Earth Science

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising
Bachelor of Science (BS) Degree with a Major in Environmental Science and a Major Concentration in Ecology and Evolutionary Biology

Program Learning Outcomes for the BS Degree with a Major in Environmental Science

Upon completing the BS degree with a major in Environmental Science, students will be able to:

1. Demonstrate foundational knowledge in the natural sciences that is fundamental to the environmental sciences or application of the environmental sciences to other fields.
2. Integrate knowledge of natural and applied sciences to understand complex natural systems and cycles.
3. Synthesize knowledge from natural sciences and engineering and apply it to the study of the environment.
4. Understand environmental issues from a scientific perspective and be able to solve issues using a variety of interdisciplinary perspectives (e.g., social sciences, economics, humanities, and/or architecture).
5. Demonstrate knowledge and skills suitable for doing research and/or field studies in environmental science.

Requirements for the BS Degree with a Major in Environmental Science

For graduation requirements, see Graduation Requirements (p. 26). Students pursuing the BS degree with a major in Environmental Science must complete:

- A minimum of 25-29 courses (72-78 credit hours), depending on course selection, to satisfy major requirements.
- A minimum of 132-138 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 5-7 courses (15-24 credit hours), depending on declared major concentration, taken at the 300-level or above.
- An advanced field or research experience requirement.
- A capstone senior seminar requirement.
- The requirements of a major concentration. When students declare the major (p. 11) in Environmental Science, students must additionally identify and declare one of two major concentrations, either in:
  - Earth Science (p. 438), or
  - Ecology and Evolutionary Biology (p. 441).

Because of the common core requirements, it is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (%20Registrar@rice.edu).

Environmental Science is an interdisciplinary major that addresses environmental issues in the context of what we know about earth, ecology, and society. In addition to its science core, the major also seeks to provide students with some appreciation of social, cultural, and policy dimensions of environmental issues.
The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier [https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/].) Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Environmental Science</td>
<td>72-78</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BS Degree with a Major in Environmental Science</td>
<td>132-138</td>
</tr>
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</table>

### Degree Requirements

#### Core Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>Foundation Coursework</td>
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</tr>
<tr>
<td>BIOC 201</td>
<td>INTRODUCTORY BIOLOGY I</td>
<td>3</td>
</tr>
<tr>
<td>EBIO 202</td>
<td>INTRODUCTORY BIOLOGY II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 121</td>
<td>GENERAL CHEMISTRY I 1</td>
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<tr>
<td>or CHEM 111</td>
<td>AP/OTH CREDIT IN GENERAL CHEMISTRY I</td>
<td></td>
</tr>
<tr>
<td>CHEM 123</td>
<td>GENERAL CHEMISTRY LABORATORY I 1</td>
<td>1</td>
</tr>
<tr>
<td>or CHEM 113</td>
<td>AP/OTH CREDIT IN GENERAL CHEMISTRY LAB I</td>
<td></td>
</tr>
<tr>
<td>CHEM 122</td>
<td>GENERAL CHEMISTRY II 1</td>
<td>3</td>
</tr>
<tr>
<td>or CHEM 112</td>
<td>AP/OTH CREDIT IN GENERAL CHEMISTRY II</td>
<td></td>
</tr>
<tr>
<td>CHEM 124</td>
<td>GENERAL CHEMISTRY LABORATORY II 1</td>
<td>1</td>
</tr>
<tr>
<td>or CHEM 114</td>
<td>AP/OTH CREDIT IN GENERAL CHEMISTRY LAB II</td>
<td></td>
</tr>
<tr>
<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I</td>
<td>3</td>
</tr>
<tr>
<td>or MATH 105</td>
<td>AP/OTH CREDIT IN CALCULUS I</td>
<td></td>
</tr>
<tr>
<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
<td>3</td>
</tr>
<tr>
<td>or MATH 106</td>
<td>AP/OTH CREDIT IN CALCULUS II</td>
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</tr>
<tr>
<td>STAT 280</td>
<td>ELEMENTARY APPLIED STATISTICS</td>
<td>4</td>
</tr>
<tr>
<td>or STAT 305</td>
<td>INTRODUCTION TO STATISTICS FOR BIOSCIENCES</td>
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</table>

#### Select 1 course from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>PHYS 101</td>
<td>MECHANICS (WITH LAB)</td>
<td>4</td>
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<tr>
<td>&amp; PHYS 103</td>
<td>and MECHANICS DISCUSSION</td>
<td></td>
</tr>
<tr>
<td>PHYS 111</td>
<td>HONORS MECHANICS (WITH LAB)</td>
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</tr>
<tr>
<td>PHYS 125</td>
<td>GENERAL PHYSICS (WITH LAB)</td>
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</tr>
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#### Select 1 course from the following:

<table>
<thead>
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<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>PHYS 102</td>
<td>ELECTRICITY &amp; MAGNETISM (WITH LAB)</td>
<td>4</td>
</tr>
<tr>
<td>&amp; PHYS 104</td>
<td>and ELECTRICITY AND MAGNETISM DISCUSSION</td>
<td></td>
</tr>
<tr>
<td>PHYS 112</td>
<td>HONORS ELECTRICITY &amp; MAGNETISM (WITH LAB)</td>
<td></td>
</tr>
<tr>
<td>PHYS 126</td>
<td>GENERAL PHYSICS II (WITH LAB)</td>
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</table>

#### Core Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENST 100 / ARCH 105</td>
<td>ENVIRONMENT, CULTURE AND SOCIETY</td>
<td>3</td>
</tr>
<tr>
<td>ESCI 115</td>
<td>INTRODUCTION TO THE EARTH</td>
<td>3 or 4</td>
</tr>
<tr>
<td>or ESCI 110</td>
<td>THE EARTH SYSTEM, ENVIRONMENT, AND SOCIETY</td>
<td></td>
</tr>
</tbody>
</table>

### Select 1 course from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESCI 107</td>
<td>OCEANS AND GLOBAL CHANGE</td>
<td></td>
</tr>
<tr>
<td>ESCI 109</td>
<td>OCEANOGRAPHY</td>
<td></td>
</tr>
<tr>
<td>ESCI 201 / ENST 201</td>
<td>THE SCIENCE OF CLIMATE CHANGE</td>
<td></td>
</tr>
<tr>
<td>EBIO 213</td>
<td>INTRO EXPERIMENTAL ECOLOGY AND EVOLUTIONARY BIOLOGY</td>
<td>2</td>
</tr>
<tr>
<td>EBIO 325</td>
<td>ECOLOGY</td>
<td>3</td>
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</table>

#### Field Experience

<table>
<thead>
<tr>
<th>Select 1-2 courses from the following:</th>
<th>2-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBIO 306</td>
<td>INDEPENDENT RESEARCH FOR ECOLOGY &amp; EVOLUTIONARY BIOLOGY UNDERGRADUATES</td>
</tr>
<tr>
<td>EBIO 316</td>
<td>LAB MODULE IN ECOLOGY</td>
</tr>
<tr>
<td>EBIO 317</td>
<td>LAB MODULE IN BEHAVIOR</td>
</tr>
<tr>
<td>EBIO 319</td>
<td>TROPICAL FIELD BIOLOGY</td>
</tr>
<tr>
<td>EBIO 320</td>
<td>ECOLOGY AND CONSERVATION OF BRAZILIAN WETLANDS LABORATORY</td>
</tr>
<tr>
<td>EBIO 324</td>
<td>CONSERVATION BIOLOGY LAB</td>
</tr>
<tr>
<td>EBIO 327</td>
<td>BIOLOGICAL DIVERSITY</td>
</tr>
<tr>
<td>EBIO 330</td>
<td>INSECT BIOLOGY LAB</td>
</tr>
<tr>
<td>EBIO 337</td>
<td>FIELD BIRD BIOLOGY LAB</td>
</tr>
<tr>
<td>ENST 379 / EBIO 379</td>
<td>LAB MODULE IN AQUATIC ECOLOGY WITH SCUBA</td>
</tr>
<tr>
<td>ESCI 103</td>
<td>FIELD TRIPS FOR THE ENVIRONMENT</td>
</tr>
<tr>
<td>ESCI 334</td>
<td>GEOLOGICAL TECHNIQUES</td>
</tr>
<tr>
<td>ESCI 380 / FOTO 390</td>
<td>VISUALIZING NATURE</td>
</tr>
<tr>
<td>FWIS 187</td>
<td>EXPLORING THE SCIENCE AND HISTORY OF HOUSTON’S BAYOUS</td>
</tr>
</tbody>
</table>

#### Major Concentration

Select 1 from the following Major Concentrations (see below for Major Concentration requirements):

- Earth Science
- Ecology and Evolutionary Biology

#### Advanced Electives

<table>
<thead>
<tr>
<th>Select 1 course from the following:</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 348</td>
<td>ANTHROPOLOGIES OF NATURE</td>
</tr>
<tr>
<td>ANTH 381</td>
<td>MEDICAL ANTHROLOGY</td>
</tr>
<tr>
<td>ENST 302 / SOCI 304</td>
<td>ENVIRONMENTAL ISSUES: RICE INTO THE FUTURE</td>
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<td>ENST 332 / ANTH 332</td>
<td>THE SOCIAL LIFE OF CLEAN ENERGY</td>
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<td>ENST 367 / SOCI 367</td>
<td>ENVIRONMENTAL SOCIOLOGY</td>
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<td>ENST 437 / ECON 437</td>
<td>ENERGY ECONOMICS</td>
</tr>
<tr>
<td>ENST 480 / ECON 480</td>
<td>ENVIRONMENTAL AND ENERGY ECONOMICS</td>
</tr>
<tr>
<td>POLI 332</td>
<td>URBAN POLITICS</td>
</tr>
<tr>
<td>POLI 362</td>
<td>COMPARATIVE URBAN POLITICS AND POLICY</td>
</tr>
<tr>
<td>SOCI 313</td>
<td>DEMOGRAPHY</td>
</tr>
</tbody>
</table>

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SOCI 423 SOCI OLOGY OF FOOD

Humanities and Architecture

Select 1 course from the following:

ENGL 358 CONSUMPTION AND CONSUMERISM
ENGL 459 STUDIES IN LITERATURE AND ECOLOGY
ENST 202 / HUMA 202 CULTURE, ENERGY, AND THE ENVIRONMENT: AN INTRODUCTION TO ENERGY HUMANITIES
ENST 313 / ARCH 313 SUSTAINABLE DESIGN
ENST 322 / ARCH 322 CASE STUDIES IN SUSTAINABILITY: THE REGENERATIVE REPOSITIONING OF NEW OR EXISTING RICE CAMPUS BLDGS
ENST 368 / ENGL 368 LITERATURE AND THE ENVIRONMENT
HIST 425 20TH CENTURY AMERICAN CONSERVATION MOVEMENT

Natural Sciences and Engineering

Select 1 course from the following:

CEVE 302 / ENGI 302 SUSTAINABLE DESIGN
CEVE 308 INTRODUCTION TO AIR POLLUTION CONTROL
CEVE 401 CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE LAB
CEVE 404 ATMOSPHERIC PARTICULATE MATTER
CEVE 411 ATMOSPHERIC PROCESSES
CEVE 412 HYDROLOGY AND WATER RESOURCES ENGINEERING
CEVE 420 ENVIRONMENTAL REMEDIATION RESTORATION
CEVE 434 FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT
CEVE 484 / STAT 484 ENVIRONMENTAL RISK ASSESSMENT & HUMAN HEALTH
CHEM 211 ORGANIC CHEMISTRY I
& CHEM 213 and ORGANIC CHEMISTRY DISCUSSION
ENST 281 / CHBE 281 SUSTAINABLE COMMUNITIES
ENST 307 / CEVE 307 / ESCI 307 ENERGY AND THE ENVIRONMENT
ENST 406 / CEVE 406 INTRODUCTION TO ENVIRONMENTAL LAW

Advanced Field or Research Experience Requirement

Independent Research (see the Opportunities tab for additional information). Select 1 course from the following:

EBIO 403 UNDERGRADUATE HONORS RESEARCH IN ECOLOGY AND EVOLUTIONARY BIOLOGY
or EBIO 404 UNDERGRADUATE HONORS RESEARCH IN ECOLOGY AND EVOLUTIONARY BIOLOGY
ESCI 390 GEOLOGY FIELD CAMP
ESCI 391 EARTH SCIENCE FIELD EXPERIENCE
ESCI 481 UNDERGRADUATE RESEARCH IN EARTH SCIENCE

Capstone Senior Seminar Requirement

ESCI 495 / EBIO 495 SEMINAR: TOPICS IN ENVIRONMENTAL SCIENCE

Total Credit Hours Required for the Major in Environmental Science

72-78

University Graduation Requirements (p. 26)

60

Total Credit Hours

132-138

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 CHEM 151 may be substituted for CHEM 121 or CHEM 111;
CHEM 153 may be substituted for CHEM 123 or CHEM 113;
CHEM 152 may be substituted for CHEM 122 or CHEM 112, and
CHEM 154 may be substituted for CHEM 124 or CHEM 114.

2 The Core Courses acquaint students with a range of environmental topics encountered by scientists, engineers, managers, and policy makers. Core Courses stress the components of the global environment and their interactions, culminating with a tropical seminar that integrates across the field.

3 Students may also petition to complete alternative courses to be applied toward the Advanced Electives requirement.

4 In addition to the courses in the Natural Sciences and Engineering Advanced Electives list, students may complete 1 course listed in the major concentration requirements outside of the student’s declared major concentration.

5 Students are encouraged, but not required, to undertake independent research on environmentally related topics.

Major Concentration: Ecology and Evolutionary Biology

Students must complete a total of 3 courses (9 credit hours) as listed below to satisfy the requirements for the major concentration in Ecology and Evolutionary Biology.

Code Title Credit Hours

Core Requirements

Select 2 courses from the following:

EBIO 270 ECO SYSTEM MANAGEMENT
EBIO 323 / CONSERVATION BIOLOGY
ENST 323
EBIO 372 CORAL REEF ECO SYSTEMS

Elective Requirement

Select at least 1 course from the following:

EBIO 270 ECO SYSTEM MANAGEMENT
EBIO 321 ANIMAL BEHAVIOR
EBIO 323 / CONSERVATION BIOLOGY
ENST 323
EBIO 326 INSECT BIOLOGY
EBIO 331 / BIOLOGY OF INFECTIOUS DISEASES
BIOC 331
EBIO 334 / EVOLUTION
BIOC 334
EBIO 336 PLANT DIVERSITY
EBIO 338  ANALYSIS AND VISUALIZATION OF BIOLOGICAL DATA
EBIO 365  INTRODUCTORY PHYCOLOGY
EBIO 366  APPLIED PHYCOLOGY
EBIO 372  CORAL REEF ECOSYSTEMS
ESCI 340  /  EBIO 340  /  ENST 340  GLOBAL BIOGEOCHEMICAL CYCLES

Total Credit Hours 9

Footnotes and Additional Information
1 Please note that the course not completed in the Core Requirements list for the major concentration in Ecology and Evolutionary Biology may be completed and applied towards the major concentration's Elective Requirement.

Policies for the BS Degree with a Major in Environmental Science and a Major Concentration in Ecology and Evolutionary Biology

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines
Students pursuing the major in Environmental Science should be aware of the following program transfer credit guidelines:

• Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information
For additional information, please see the following websites:

• https://biosciences.rice.edu/
• https://earthscience.rice.edu/academics/undergraduate-program/

Opportunities for the BS Degree with a Major in Environmental Science and a Major Concentration in Ecology and Evolutionary Biology

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Independent Research
Students are encouraged to undertake independent research on environmentally related topics as part of their degree programs, in cooperation with one or more faculty. Course options for independent research, repeatable for credit, include: EBIO 403, EBIO 404, and ESCI 481.

Students also can enroll in senior honors thesis programs within their major concentrations, or by arrangement with other departments, and/or through the Rice Undergraduate Scholars Program. Students completing a thesis will also be eligible for the Distinction in Research and Creative Work, a university honor. Details for each program can be found here:

• EBIO Honors Research (https://biosciences.rice.edu/sites/g/files/bxs1916/f/pdf/undergraduate/Research-Opportunities-Booklet.pdf)
• ESCI Senior Honors Thesis (https://earthscience.rice.edu/academics/undergraduate-program/honors-thesis)
• Rice Undergraduate Scholars Program (https://ouri.rice.edu/rice-undergraduate-scholars-program-rusp-1)

Additional Information
For additional information, please see the following websites:

• https://biosciences.rice.edu/
• https://earthscience.rice.edu/academics/undergraduate-program/

Environmental Studies

Contact Information
Environmental Studies
https://humanities.rice.edu/academics/programs/environmental-studies
116 Humanities Building
713-348-4548

Joseph A. Campana, Jr.
Program Co-Director
Joseph.A.Campana@rice.edu

Richard R. Johnson
Program Co-Director
rrj@rice.edu

Environmental Studies is an interdisciplinary field that explores the interconnection between humans and the natural environment. Modern environmental issues reflect the complex interactions of natural and social systems at global and local scales, and the resulting impacts on the Earth have led many to ask whether humankind has entered into a new epoch in the planet’s history, one in which humans are now a key driver in the change of Earth systems.

The Environmental Studies program fosters the critical, integrative thinking required to better understand the complexities of this human-nature relationship and the resultant scales of impact, and to assess
and develop solutions that meet intergenerational human needs without compromising the natural systems upon which humans depend.

The Environmental Studies program offers an undergraduate minor in Environmental Studies and several interdisciplinary courses for students interested in broadening their understanding of environmental issues. These courses often are team-taught by faculty from various areas of study.

The program in Environmental Studies, along with the Center for Energy and Environmental Research in the Human Sciences, are administered jointly by the School of Humanities and the School of Architecture, with staff support and first point of contact in the School of Humanities.

Minor

- Minor in Environmental Studies (p. 443)

Environmental Studies does not currently offer an academic program at the graduate level.

Co-Directors and Co-Advisors

Joseph A. Campana, Jr.
Richard R. Johnson

Steering Committee

James B. Blackburn
Dominic C. Boyer
Richard R. Johnson
Jeffrey J. Kripal
Julia K. Morgan
Timothy Morton
Evan Siemann
Albert H. Pope

Descriptions and Codes Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule

- Course offerings/subject code: ENST

Program Description and Code

- Environmental Studies: ENST

Undergraduate Minor Description and Code

- Minor in Environmental Studies: ENST

CIP Code and Description

- ENST Minor: CIP Code/Title: 03.0103 - Environmental Studies

Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Minor in Environmental Studies

Program Learning Outcomes for the Minor in Environmental Studies

Upon completing the minor in Environmental Studies, students will be able to:

1. Understand the fundamental science that drives earth/natural systems, and that frames and makes comprehensible current environmental issues.
2. Evaluate the nexus of human activity with environmental processes to examine and understand sustainable (or unsustainable) practices.
3. Develop a cross-disciplinary perspective to better understand environmental issues and solutions through a focus within the natural sciences and/or engineering and a focus within the humanities, social sciences, and/or architecture.

Requirements for the Minor in Environmental Studies

Students pursuing the minor in Environmental Studies must complete:

- A minimum of 6 courses (18 credit hours) to satisfy minor requirements.
- A minimum of 3 courses (9 credit hours) taken at the 300-level or above.

The Environmental Studies minor was specifically created to provide undergraduates from a broad range of academic backgrounds with a cohesive program offering foundational literacy in the social, cultural, and scientific dimensions of environmental issues, and a cross-disciplinary holistic understanding of the challenges and solutions for creating a sustainable world. Students completing the minor will be able to synthesize frameworks, tools, and perspectives from multiple disciplines; master sustainability terminology; understand major environmental issues from multiple perspectives; develop and assess environmental solutions in an informed and logical manner; and convey knowledge and insights about environmental issues in multiple formats.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the minor’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
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Minor Requirements

<table>
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<tr>
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Core Requirements

<table>
<thead>
<tr>
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<th>Title</th>
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</tr>
</thead>
<tbody>
<tr>
<td>ENST 100 / ARCH 105</td>
<td>ENVIRONMENT, CULTURE AND SOCIETY</td>
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### Introductory Course
Select 1 course from the following:  

<table>
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<tr>
<td>EBIO 124</td>
<td>INTRODUCTION TO ECOLOGY AND EVOLUTIONARY BIOLOGY</td>
</tr>
<tr>
<td>ENST 101</td>
<td>THE EARTH</td>
</tr>
<tr>
<td>ESCI 107</td>
<td>OCEANS AND GLOBAL CHANGE</td>
</tr>
<tr>
<td>ESCI 109</td>
<td>OCEANOGRAPHY</td>
</tr>
<tr>
<td>ESCI 110</td>
<td>THE EARTH SYSTEM, ENVIRONMENT, AND SOCIETY</td>
</tr>
<tr>
<td>ESCI 201 / ENST 201</td>
<td>THE SCIENCE OF CLIMATE CHANGE</td>
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### Elective Requirements

**Schools of Architecture, Humanities, and Social Sciences**<br> Select 2 courses from the following:  

<table>
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<tr>
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<tbody>
<tr>
<td>ANTH 332 / ENST 332</td>
<td>THE SOCIAL LIFE OF CLEAN ENERGY</td>
</tr>
<tr>
<td>ARCH 313 / ENST 313</td>
<td>CASE STUDIES IN SUSTAINABLE DESIGN</td>
</tr>
<tr>
<td>ARCH 322 / ENST 322</td>
<td>CASE STUDIES IN SUSTAINABILITY: THE REGENERATIVE REPOSITIONING OF NEW OR EXISTING RICE CAMPUS BLDGS</td>
</tr>
<tr>
<td>ECON 437 / ENST 437</td>
<td>ENERGY ECONOMICS</td>
</tr>
<tr>
<td>ECON 480 / ENST 480</td>
<td>ENVIRONMENTAL ECONOMICS</td>
</tr>
<tr>
<td>ENGL 310</td>
<td>NONFICTION NATURE WRITING</td>
</tr>
<tr>
<td>ENGL 358</td>
<td>CONSUMPTION AND CONSUMERISM</td>
</tr>
<tr>
<td>ENGL 368 / ENST 368</td>
<td>LITERATURE AND THE ENVIRONMENT</td>
</tr>
<tr>
<td>ENGL 459</td>
<td>STUDIES IN LITERATURE AND ECOLOGY</td>
</tr>
<tr>
<td>ENST 445</td>
<td>SEMINAR IN URBAN SUSTAINABILITY AND LIVABILITY RESEARCH METHODS AND APPLICATIONS</td>
</tr>
<tr>
<td>ENST 446</td>
<td>LAB IN ENGAGED URBAN SUSTAINABILITY AND LIVABILITY RESEARCH</td>
</tr>
<tr>
<td>FOTO 390 / ESCI 380</td>
<td>VISUALIZING NATURE</td>
</tr>
<tr>
<td>HART 302</td>
<td>FROM THE SUBLIME TO THE SUSTAINABLE: ART, ARCHITECTURE AND NATURE</td>
</tr>
<tr>
<td>HIST 321</td>
<td>US ENVIRONMENTAL HISTORY</td>
</tr>
<tr>
<td>HIST 425</td>
<td>20TH CENTURY AMERICAN CONSERVATION MOVEMENT</td>
</tr>
<tr>
<td>HUMA 202 / ENST 202</td>
<td>CULTURE, ENERGY AND THE ENVIRONMENT: AN INTRODUCTION TO ENERGY HUMANITIES</td>
</tr>
<tr>
<td>SOCI 304 / ENST 302</td>
<td>ENVIRONMENTAL ISSUES: RICE INTO THE FUTURE</td>
</tr>
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</table>

**Schools of Engineering and Natural Sciences**<br> Select 2 courses from the following:  

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>CEVE 302 / ENGI 302</td>
<td>SUSTAINABLE DESIGN</td>
</tr>
<tr>
<td>CEVE 307 / ENST 307 / ESCI 307</td>
<td>ENERGY AND THE ENVIRONMENT</td>
</tr>
<tr>
<td>CEVE 310</td>
<td>PRINCIPLES OF ENVIRONMENTAL ENGINEERING</td>
</tr>
<tr>
<td>CEVE 314 / BIOE 365 / GLHT 314</td>
<td>SUSTAINABLE WATER PURIFICATION FOR THE DEVELOPING WORLD</td>
</tr>
<tr>
<td>CEVE 406 / ENST 406</td>
<td>INTRODUCTION TO ENVIRONMENTAL LAW</td>
</tr>
<tr>
<td>CHBE 281 / ENST 281</td>
<td>ENGINEERING SUSTAINABLE COMMUNITIES</td>
</tr>
<tr>
<td>EBIO 204 / ENST 204</td>
<td>ENVIRONMENTAL SUSTAINABILITY: THE DESIGN &amp; PRACTICE OF COMMUNITY AGRICULTURE</td>
</tr>
<tr>
<td>EBIO 270</td>
<td>ECOSYSTEM MANAGEMENT</td>
</tr>
<tr>
<td>EBIO 319</td>
<td>TROPICAL FIELD BIOLOGY</td>
</tr>
<tr>
<td>EBIO 320</td>
<td>ECOLOGY AND CONSERVATION OF BRAZILIAN WETLANDS LABORATORY</td>
</tr>
<tr>
<td>EBIO 323 / ENST 323</td>
<td>CONSERVATION BIOLOGY</td>
</tr>
<tr>
<td>EBIO 325</td>
<td>ECOLOGY</td>
</tr>
<tr>
<td>EBIO 327</td>
<td>BIOLOGICAL DIVERSITY</td>
</tr>
<tr>
<td>EBIO 372</td>
<td>CORAL REEF ECOSYSTEMS</td>
</tr>
<tr>
<td>EBIO 379 / ENST 379</td>
<td>LAB MODULE IN AQUATIC ECOLOGY WITH SCUBA</td>
</tr>
<tr>
<td>ELEC 365 / MSNE 365</td>
<td>NANOMATERIALS FOR ENERGY</td>
</tr>
<tr>
<td>ESCI 321</td>
<td>EARTH SYSTEM EVOLUTION AND CYCLES</td>
</tr>
<tr>
<td>ESCI 340 / EBIO 340 / ENST 340</td>
<td>GLOBAL BIOGEOCHEMICAL CYCLES</td>
</tr>
<tr>
<td>ESCI 380 / FOTO 390</td>
<td>VISUALIZING NATURE</td>
</tr>
<tr>
<td>ESCI 407</td>
<td>GEOCHEMISTRY OF EARTH’S SURFACE</td>
</tr>
<tr>
<td>ESCI 425 / CHEM 425 / ENST 425</td>
<td>ORGANIC GEOCHEMISTRY</td>
</tr>
<tr>
<td>ESCI 450</td>
<td>REMOTE SENSING</td>
</tr>
<tr>
<td>ESCI 452</td>
<td>GIS FOR SCIENTISTS AND ENGINEERS</td>
</tr>
<tr>
<td>ESCI 471</td>
<td>EARTH SYSTEMS MODELING I: PHILOSOPHY AND FUNDAMENTALS</td>
</tr>
</tbody>
</table>

**Total Credit Hours**

18

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**Footnotes and Additional Information**

1. Current/former EBIO majors are eligible to substitute EBIO 325 in place of EBIO 124 to meet the introductory course requirement from the natural sciences.

2. Given the wide range of courses at Rice related to Environmental Studies, students are encouraged to contact the Minor Director to suggest courses to include on the list of approved electives.

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**Policies for the Minor in Environmental Studies**

**Program Restrictions and Exclusions**

Students pursuing the minor in Environmental Studies should be aware of the following program restriction:
• As noted in Majors, Minors, and Certificates (p. 11), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

Transfer Credit
For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines
Students pursuing the minor in Environmental Studies should be aware of the following program-specific transfer credit guidelines:

• Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

Distribution Credit Information
The determination of distribution eligibility is done as part of the new course creation process (https://registrar.rice.edu/facstaff/courseprocess/). As part of an annual roll call (https://registrar.rice.edu/facstaff/distribution_credit/) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean's Offices of each of the academic schools.

Faculty and leadership in the academic schools are responsible for ensuring that the courses identified as distribution-eligible meet the criteria as set in the General Announcements (p. 26). Students are responsible for ensuring that they meet graduation requirements (p. 26) by completing coursework designated as distribution at the time of course registration.

Distribution courses from Environmental Studies (ENST) are broadly scoped and thematically diverse and prompt students to explore the cultural, social, and political dimensions of human-environmental relations and environmental systems. They present students with an interdisciplinary spectrum of relevant methods and skills and help students to develop analytical, expressive, and critical knowledge of the relationship of environment, culture, and society across the world. They are introductions to the study of human-environment relations and environmental systems.

Additional Information
For additional information, please see the Environmental Studies website: https://humanities.rice.edu/academics/programs/environmental-studies/(https://humanities.rice.edu/academics/programs/environmental-studies/)

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this minor.

European Studies

Contact Information
Classical and European Studies
https://ces.rice.edu/
207 Rayzor Hall
713-348-4151

Christian J. Emden
Department Chair
emden@rice.edu

European Studies is an interdisciplinary undergraduate major offered by the Classical and European Studies (CES) Department. The major includes courses and faculty from the departments of Art History, English, History, Philosophy, Religion, and Spanish, Portuguese, and Latin American Studies.

The focus of the major in European Studies is a critical understanding of European cultures and societies in a global context that combines the study of literature, philosophy, history, the visual arts, and media.

Bachelor's Program

• Bachelor of Arts (BA) Degree with a Major in European Studies (p. 446)

European Studies does not currently offer an academic program at the graduate level.

Chair
Christian J. Emden

Program Advisor
Christian J. Emden

Professors
Peter C. Caldwell
Steven G. Crowell
Christian Emden
Michael R. Maas
Joseph Manca
Helena Michie
Scott McGill
Donald Ray Morrison
**Description and Code Legend**

*Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

**Course Catalog/Schedule**
- Course offerings/subject code for European Studies: EURO

**Department Description and Code**
- Classical and European Studies: CLEU

**Undergraduate Degree Description and Code**
- Bachelor of Arts degree: BA

**Undergraduate Major Description and Code**
- Major in European Studies: EURO

**CIP Code and Description ¹**
- EURO Major/Program: CIP Code/Title: 05.0106 - European Studies/Civilization

¹ Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: [https://nces.ed.gov/ipeds/cipcode/](https://nces.ed.gov/ipeds/cipcode/)

**Bachelor of Arts (BA) Degree with a Major in European Studies**

**Program Learning Outcomes for the BA Degree with a Major in European Studies**

Upon completing the BA degree with a major in European Studies, students will be able to:

1. Demonstrate a synthetic understanding of European history and identity over a wide period, from antiquity to the modern era.
2. Identify, contextualize, and analyze key aspects of European history and identity—e.g., texts, artifacts, institutions, ideas, events, personalities, and places.
3. Demonstrate successful command of research skills and methodologies appropriate to the major.
4. Communicate orally in clear, informed, and critical terms about European history and identity.
5. Produce papers in analytical and persuasive prose following the conventions of humanities scholarship.

**Requirements for the BA Degree with a Major in European Studies**

For general university requirements, see [Graduation Requirements](p. 26). Students pursuing the BA degree with a major in European Studies must complete:

- A minimum of 10 courses (30 credit hours) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 6 courses (18 credit hours) taken at the 300-level or above.
- A maximum of 4 courses (12 credit hours) from study abroad or transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.
- A Capstone Requirement.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor, or where applicable, the department's Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major's Official Certifier [https://registrar.rice.edu/facstaff/degeworks/officialcertifier/].) Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

<table>
<thead>
<tr>
<th>Code</th>
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**Degree Requirements**

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<tr>
<th>Code</th>
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<tbody>
<tr>
<td></td>
<td>Core Requirements ¹</td>
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<tr>
<td>EURO 101</td>
<td>INTRODUCTION TO EUROPEAN LITERATURE AND CULTURE I</td>
<td>3</td>
</tr>
</tbody>
</table>

¹ [Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics:](https://nces.ed.gov/ipeds/cipcode/)
Elective Requirements

Elective Group A
Select 3 elective courses from Elective Group A course offerings (see course list below)

Elective Group B
Select 4 elective courses from Elective Group B course offerings (see course list below)

Capstone Requirement
EURO 401 CONSTRUCTING EUROPE: CONTESTED IDENTITIES

Total Credit Hours Required for the Major in European Studies 30
Additional Credit Hours to Complete BA Degree Requirements 30

Footnotes and Additional Information
* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The ‘hours outside of the major’ requirements may include all of the above university requirements.

1 A minimum of 6 courses (18 credit hours), including the Core Requirements (EURO 101 and EURO 102) and the Capstone Requirement (EURO 401), must be taken at Rice.

Course Lists to Satisfy Requirements

Elective Requirements
Students must complete a total of 7 courses (21 credit hours), of which 5 courses (15 credit hours) must be at the 300-level or above. Student must take 3 elective courses (9 credit hours) from Elective Group A. Students must take 4 elective courses (12 credit hours) from Elective Group B. Within Elective Group B, a maximum of 2 courses (6 credit hours) can come from any one subject code.

Elective Group A Course List

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>CLAS 301 / MDEM 301 / PHIL 301</td>
<td>ANCIENT AND MEDIEVAL PHILOSOPHY</td>
<td>3</td>
</tr>
<tr>
<td>CLAS 316 / PLST 316</td>
<td>DEMOCRACY AND POLITICAL THEORY IN ANCIENT GREECE</td>
<td>3</td>
</tr>
<tr>
<td>CLAS 324 / HART 327</td>
<td>THE GENESIS OF ROMAN ART</td>
<td>3</td>
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<tr>
<td>FREN 307</td>
<td>THE MANY FACETS OF FRENCH CULTURAL IDENTITY</td>
<td>3</td>
</tr>
<tr>
<td>FREN 311</td>
<td>MAJOR LITERARY WORKS AND ARTIFACTS OF PRE-REVOLUTIONARY FRANCE</td>
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</tr>
<tr>
<td>FREN 312</td>
<td>MAJOR LITERARY WORKS AND ARTIFACTS OF POST-REVOLUTIONARY FRANCE</td>
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<td>FREN 323</td>
<td>FROM EXISTENTIALISM TO CYBERPUNK</td>
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<td>Code</td>
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<td>Credit</td>
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<td>GERM 352</td>
<td>POLITICS OF THE FLESH IN GERMAN LITERATURE, THOUGHT AND FILM</td>
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<tr>
<td>GERM 363</td>
<td>THE WEIMAR REPUBLIC, 1919-1933</td>
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<td>GERM 401</td>
<td>TOPICS IN GERMAN LITERATURE AND CULTURE</td>
<td>1-3</td>
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<td>GERM 420</td>
<td>GERMAN POLITICS/CULTURE AFTER 1945</td>
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<td>GERM 430</td>
<td>GERMAN INTELLECTUAL HISTORY</td>
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<td>LATI 316</td>
<td>READINGS IN VIRGIL'S AENEID</td>
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<td>LATI 317</td>
<td>READINGS IN LIVY</td>
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<td>LATI 318</td>
<td>READINGS IN CICERO</td>
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<td>Politics, Law, and Social Thought</td>
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<td>PLST 301</td>
<td>MODERN POLITICAL THOUGHT: MACHIAVELLI TO RAWLS</td>
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<td>PLST 302</td>
<td>CONTEMPORARY POLITICAL THEORY</td>
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<td>Elective Group B Course List</td>
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<td>ENGL 314 / MDEM 319</td>
<td>MEDIEVAL ROMANCE</td>
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<td>ENGL 317 / MDEM 317 / SWGS 301</td>
<td>ARTHURIAN LITERATURE</td>
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<td>ENGL 321</td>
<td>EARLY SHAKESPEARE</td>
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<td>ENGL 323</td>
<td>RENAISSANCE DRAMA</td>
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<td>ENGL 326</td>
<td>TOPICS IN RENAISSANCE LITERATURE AND CULTURE</td>
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<td>ENGL 328</td>
<td>JOHN MILTON: RADICAL THOUGHT THEN AND NOW</td>
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<td>ENGL 330</td>
<td>ORIGINS OF THE ENGLISH NOVEL</td>
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<td>ENGL 332</td>
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<td>ENGL 333</td>
<td>18TH CENTURY BRITISH FICTION</td>
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<td>ENGL 338</td>
<td>BRITISH ROMANTICISM</td>
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<td>VICTORIAN LITERATURE AND CULTURE</td>
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<tr>
<td>ENGL 343 / SWGS 343</td>
<td>JANE AUSTEN'S WORLDS</td>
<td>3</td>
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<td>ENGL 346</td>
<td>THE MODERN NOVEL IN BRITAIN</td>
<td>3</td>
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<td>ENGL 356</td>
<td>MODERNISMS</td>
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<tr>
<td>Cinema and Media Studies</td>
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<td>FILM 388 / HART 388</td>
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<td>Art History</td>
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<td>HART 330 / MDEM 330</td>
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<td>HART 332 / MDEM 332</td>
<td>ART OF THE COURTS</td>
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<td>HART 340 / MDEM 340</td>
<td>NORTHERN RENAISSANCE ART</td>
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<tr>
<td>HART 341</td>
<td>EARLY RENAISSANCE ART IN ITALY</td>
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<tr>
<td>HART 342</td>
<td>THE HIGH RENAISSANCE AND MANNERISM IN ITALY</td>
<td>3</td>
</tr>
<tr>
<td>HART 344</td>
<td>CAPITALISM AND CULTURE</td>
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</tr>
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<td>HART 354</td>
<td>AGE OF ROMANTICISM IN EUROPE</td>
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<td>HART 358</td>
<td>IMPRESSIONISM AND POST-IMPRESSIONISM</td>
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<td>HART 365</td>
<td>ART BETWEEN THE WARS: EUROPEAN MODERNISM, 1918-1940</td>
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<td>HART 375 / MDEM 378</td>
<td>DUTCH ART IN THE AGE OF REMBRANDT</td>
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<tr>
<td>HART 434 / MDEM 434 / SWGS 434</td>
<td>SEEING SEX IN EUROPEAN ART, 1400-1700</td>
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<td>HART 435 / HIST 443 / MDEM 435</td>
<td>MULTICULTURAL EUROPE, 1400-1700</td>
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<td>MANET(S) AND MODERNISM(S)</td>
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<td>HIST 307</td>
<td>IMPERIAL ROME FROM CAESAR TO DIOCLETIAN</td>
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<td>HIST 308 / MDEM 308</td>
<td>THE WORLD OF LATE ANTIQUITY</td>
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<td>HIST 324 / MDEM 324</td>
<td>COEXISTENCE IN MEDIEVAL SPAIN</td>
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<td>HIST 340 / SWGS 345</td>
<td>EUROPEAN REFORMATIONS</td>
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<td>HIST 356</td>
<td>AFTER NAZISM: GERMAN HISTORY, 1945- PRESENT</td>
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<td>HIST 357 / MDEM 357</td>
<td>JEWS AND CHRISTIANS IN MEDIEVAL EURO</td>
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<td>HIST 370</td>
<td>EUROPEAN INTELLECTUAL HISTORY: BACON TO HEGEL</td>
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<td>HIST 371</td>
<td>HISTORY OF MODERN FRANCE</td>
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<td>HIST 375</td>
<td>EUROPEAN ROMANTICISM, 1750-1850</td>
<td>3</td>
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<td>HIST 392</td>
<td>PRE-MODERN POLITICAL THOUGHT FROM CICERO TO LOCKE</td>
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<tr>
<td>HIST 409</td>
<td>MUSLIMS, JEWS, CHRISTIANS, HERETICS, AND PAGANS IN THE AGE OF THE CRUSADES</td>
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<td>HIST 434</td>
<td>ISLAM AND THE WEST</td>
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<td>WESTERN EUROPEAN WELFARE STATE, 1880-1980: ORIGINS, CONSOLIDATIONS, CRISIS</td>
<td>3</td>
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<td>HIST 457</td>
<td>FOUR MODERN REVOLUTIONS: 1776, 1789, 1917, 1989</td>
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<td>HIST 459</td>
<td>TOPICS IN MODERN GERMAN HISTORY: NAZISM AND THE HOLOCAUST</td>
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<td>PHIL 308</td>
<td>CONTINENTAL PHILOSOPHY</td>
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<td>PHIL 326</td>
<td>HISTORY OF ETHICS</td>
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<td>PHIL 327</td>
<td>HISTORY OF SOCIAL AND POLITICAL PHILOSOPHY</td>
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<td>Religion</td>
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<td>RELI 363</td>
<td>JEWISH PHILOSOPHY: GREAT THINKERS AND THEMES IN JEWISH THOUGHT</td>
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<td>RELI 384</td>
<td>PILGRIMAGE AND CRUSADE</td>
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2019-2020 General Announcements
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REL 406 CHRISTIANITY AND LATE ANTIQUITY 3
REL 449 EARLY CHRISTIAN CONTROVERSIES 3
**Spanish, Portuguese, and Latin American Studies**
SPPO 347 INTRODUCTION TO MEDIEVAL AND EARLY MODERN SPANISH LITERATURE AND CULTURE 3
SPPO 380 CURRENT ISSUES IN SPAIN 3
SPPO 381 SPANISH CINEMA 3
SPPO 462 DON QUIJOTE 3
SPPO 466 THE SPANISH CIVIL WAR 3

**Footnotes and Additional Information**

1. A maximum of 2 courses (6 credit hours) can come from any one subject code in the Elective Group B course list.

**Additional Information**

**Honors Thesis**

Majors in European Studies may fulfill 2 of their elective courses (6 credit hours) by writing an honor thesis in their final year of study. This Honors Thesis course will be a 3 credit hour course that can be repeated in two semesters, Fall and Spring.

**European Languages**

The major in European Studies does not include a language requirement. Students are strongly encouraged to pursue the study of at least one European language (up to and) at an advanced level. Majors with an interest in a European language, however, may take up to two elective courses in that language at the 300-level or above that will count toward the major. These courses constitute two of the elective courses required for the major. These courses do not include FREN 301, FREN 302 or GERM 301, GERM 302.

**Policies for the BA Degree with a Major in European Studies**

**Transfer Credit**

For Rice University’s policy regarding transfer credit, see [Transfer Credit](https://registrar.rice.edu/coursesprocess/) (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [https://oaa.rice.edu](https://oaa.rice.edu). Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

**Departmental Transfer Credit Guidelines**

Students pursuing the major in European Studies should be aware of the following departmental transfer credit guidelines:

- No more than 4 courses (12 credit hours) of transfer credit from U.S. or international universities of similar standing may apply towards the major.
- Requests for transfer credit will be considered by the program director and/or the program’s official transfer credit advisor on an individual case-by-case basis.

**Distribution Credit Information**

The determination of distribution eligibility is done as part of the new course creation process ([https://registrar.rice.edu/coursesprocess/](https://registrar.rice.edu/coursesprocess/)). As part of an annual roll call ([https://registrar.rice.edu/facstaff/distribution_credit/](https://registrar.rice.edu/facstaff/distribution_credit/)) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean's Offices of each of the academic schools.

Faculty and leadership in the academic schools are responsible for ensuring that the courses identified as distribution-eligible meet the criteria as set in the [General Announcements](https://registrar.rice.edu/facstaff/coursesprocess/) (p. 26). Students are responsible for ensuring that they meet [graduation requirements](https://registrar.rice.edu/facstaff/coursesprocess/) (p. 26) by completing coursework designated as distribution at the time of course registration.

Distribution courses from the Department of Classical and European Studies are broad in theme and scope and provide students with a substantial inquiry into literature, art, media, history, thought, and/or politics, including specific national traditions, linguistic contexts, and historical periods. Such courses involve a broad and often interdisciplinary spectrum of knowledge, providing students with the tools for thinking critically about the formation of European culture, its colonial past, and its national and linguistic traditions from antiquity to the present.

**Opportunities for the BA Degree with a Major in European Studies**

**Academic Honors**

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see [Latin Honors](https://humanities.rice.edu/student-life/for-returns/) (p. 48) ([summa cum laude], [magna cum laude], and [cum laude]) and [Distinction in Research and Creative Work](https://humanities.rice.edu/student-life/) (p. 48). Some departments have department-specific Honors awards or designations.

**Additional Information**

For additional information, please see the Classical and European Studies website: [https://ces.rice.edu](https://ces.rice.edu/)

**Financial Computation and Modeling**

**Contact Information**

**Financial Computation and Modeling**
[https://www.cofes.rice.org/](https://www.cofes.rice.org/)
2051 Duncan Hall
713-348-5839

Katherine Bennett Ensor
Program Director
ensor@rice.edu

The interdisciplinary Financial Computation and Modeling (FCAM) program is offered through a collaboration of the departments of Statistics and Economics. The FCAM minor consists of six courses focusing on the strategies and computational technologies used in the financial industry. The minor is designed for those undergraduate
students with strong computational skills and an interest in finance. Many students pursuing the FCAM minor enter careers in the financial industry, either immediately after completion of their undergraduate studies or after graduate studies. Students completing the FCAM minor will understand the complexities of financial markets and their role in and impact on world economies.

The basic tools component of the FCAM curriculum will equip students with the economic, probability, and statistical tools necessary to pursue the advanced analytical courses. In the advanced courses, students will be exposed to state-of-the-art models and methodologies based on long-standing assumptions about the behavior of financial markets. They will also be exposed to alternative views of market behavior and investment strategies. The goal is to educate students to question basic assumptions as well as utilize and understand technologies based on these important assumptions. In the financial industry, a large suite of solutions are implemented and continually enhanced. A goal of the FCAM program is to train leaders in this industry who not only will understand the financial technologies but also will understand the role, impact, and potential pitfalls of these technologies.

**Minor**
- Minor in Financial Computation and Modeling (p. 450)

Financial Computation and Modeling does not currently offer an academic program at the graduate level.

**Director**
Katherine Bennett Ensor, Statistics

**Steering Committee and Undergraduate Advisors**
John Dobelman, Statistics
Ted Loch-Temzelides, Economics

**Description and Code Legend**
*Note:* Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

**Course Catalog/Schedule**
- Course offerings/subject codes: Courses from various subjects may apply toward this program

**Program Description and Code**
- Financial Computation and Modeling: FCAM

**Undergraduate Minor Description and Code**
- Minor in Financial Computation and Modeling: FCAM

**CIP Code and Description**
- FCAM Minor: CIP Code/Title: 27.0305 - Financial Mathematics

**Minor in Financial Computation and Modeling**

**Program Learning Outcomes for the Minor in Financial Computation and Modeling**
Upon completing the minor in Financial Computation and Modeling, students will be able to:

1. Demonstrate knowledge of statistical, mathematical, and computational techniques and methods and how to choose and apply appropriate methods to questions or problems in the field of finance.
2. Understand the basic concepts of Economic Theory and how they apply to financial markets as well as how financial markets impact global economies.
3. Demonstrate an understanding of basic financial databases and the ability to use technologies, like R and Excel, to model and solve financial problems.
4. Understand core quantitative modeling concepts and demonstrate key skills necessary for working in the field of finance and investing.
5. Demonstrate the ability to understand, interpret, and critically evaluate empirical financial studies and investment strategies.

**Requirements for the Minor in Financial Computation and Modeling**
Students pursuing the minor in Financial Computation and Modeling must complete:

- A minimum of 6 courses (19-20 credit hours, depending on course selection) to satisfy minor requirements.
- A minimum of 5 courses (16 credit hours) taken at the 300-level or above.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the minor’s Official Certifier [https://registrar.rice.edu/facstaff/degreeworks/officialcertifier]). Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

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**Minor Requirements**

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<td>ECON 100</td>
<td>PRINCIPLES OF ECONOMICS</td>
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<td>STAT 310 / ECON 307</td>
<td>PROBABILITY AND STATISTICS</td>
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<tr>
<td>or STAT 315</td>
<td>PROBABILITY AND STATISTICS FOR DATA SCIENCE</td>
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<tr>
<td>ECON 310 / STAT 376</td>
<td>ECONOMETRICS</td>
<td>4</td>
</tr>
<tr>
<td>or STAT 410</td>
<td>LINEAR REGRESSION</td>
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</table>

**Elective Requirements**

*Select 3 courses from the following 4 groups:*
Opportunities for the Minor in Financial Computation and Modeling

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Finance Seminar
Students pursuing the FCAM minor have the opportunity to participate in STAT 499 Computational Finance Seminar for 1 credit hour. Students are also encouraged to take part in the annual Eubank Conference on Real World Markets and join the student computational finance club.

Additional Information
For additional information, please see the Resources (Undergraduate) page on the Center for Computational Finance and Economic Systems website: https://www.cofes.rice.org/academic-programs/undergraduate/.

French Studies

Contact Information

Classical and European Studies
https://ces.rice.edu/
207 Rayzor Hall
713-348-4151

Christian J. Emden
Department Chair
emden@rice.edu

French Studies is a major offered by the Classical and European Studies (CES) Department. The French Studies program offers courses in topics from medieval courtly love to French philosophy since the Enlightenment, from post-colonial Africa to social issues in contemporary France, and from women in the nineteenth-century literary imagination to the art of reading and interpretation with a focus not just on the literary and linguistic but also on gender and visual art, history and medicine, post-colonialism and critical theory.

The majority of courses are offered entirely in French but some courses are also offered in English (some of these in collaboration with the other majors offered by the Classical and European Studies department).

Bachelor’s Program

• Bachelor of Arts (BA) Degree with a Major in French Studies (p. 452)

French Studies does not currently offer an academic program at the graduate level.

Chair

Christian J. Emden
Program Advisor
Deborah Nelson-Campbell

Professor
Deborah Nelson-Campbell

Associate Professors
Jacqueline Couti
Julie Fette
Deborah A. Harter
Philip R. Wood

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code for French Studies: FREN

Department Description and Code
• Classical and European Studies: CLEU

Undergraduate Degree Description and Code
• Bachelor of Arts degree: BA

Undergraduate Major Descriptions and Codes
• Major in French Studies: FREN

CIP Code and Description ¹
• FREN Major/Program: CIP Code/Title: 16.0901 - French Language and Literature

¹ Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Bachelor of Arts (BA) Degree with a Major in French Studies

Program Learning Outcomes for the BA Degree with a Major in French Studies
Upon completing the BA degree with a major in French Studies, students will be able to:

1. Communicate fluently in spoken and written French at an advanced level, as indicated by the ability to: understand spoken French, converse in French, critically read and translate French texts, and write in multiple genres in French.

2. Achieve the cultural literacy necessary for studying abroad or practicing internationally-based professions by demonstrating an understanding of the major social, cultural, and political stakes of the French and Francophone world, past and present.

3. Demonstrate an interdisciplinary understanding of French studies through critical investigations of French literature, art, film, and other cultural forms.

4. Understand French language and culture not as isolated geographic phenomena, but in the wider context of multicultural exchange and globalization.

5. Learn and apply various research skills, including critical thinking and reading skills, theory, and criticism, to French texts (broadly construed) in order to produce new critical insights verbally or in writing.

Requirements for the BA Degree with a Major in French Studies
For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in French Studies must complete:

• A minimum of 10 courses (30 credit hours) to satisfy major requirements.
• A minimum of 120 credit hours to satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
• A minimum of 8 courses (24 credit hours) taken at the 300-level or above.
• A maximum of 4 courses (12 credit hours) from study abroad or transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier: https://registrar.rice.edu/facstaff/degeworks/officialcertifier/.) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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Degree Requirements

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<td>Major Literary Works and Artifacts</td>
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<td>FREN 311</td>
<td>MAJOR LITERARY WORKS AND ARTIFACTS OF PRE-REVOLUTIONARY FRANCE</td>
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<td>FREN 312</td>
<td>MAJOR LITERARY WORKS AND ARTIFACTS OF POST-REVOLUTIONARY FRANCE</td>
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<td>FREN 313</td>
<td>MAJOR LITERARY WORKS AND ARTIFACTS OF THE FRANCOPHONE WORLD</td>
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<tr>
<td>FREN 302</td>
<td>WRITING WORKSHOP</td>
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¹ For additional departmental guidelines regarding transfer credit, see the Policies tab.
Select 7 elective courses from departmental (FREN) course offerings. 2

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<td>Total Credit Hours</td>
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</table>

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAR upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 The courses taken to satisfy the Core Requirements must be taken at Rice University. It is strongly suggested that these courses be taken as early as possible.

2 To fulfill the remaining French Studies major requirements, students must complete a total of 7 additional courses (21 credit hours) from departmental (FREN) course offerings as follows: 2 courses (6 credit hours) at the 200-level or above; 3 courses (9 credit hours) at the 300-level or above; and 2 courses (6 credit hours) at the 400-level. Please note: any elective course at the 200-level or 300-level may be replaced by a course at a higher level.

Policies for the BA Degree with a Major in French Studies

Enrollment

As many as two French courses taught in English may count toward a major in French Studies. Students who have taken French courses at the 300 and 400 level (except those taught in English) cannot enroll simultaneously or afterward in 200-level French courses for credit. Students with diplomas from French-speaking institutions must consult with the department before enrolling in courses, and all majors and prospective majors must have their programs of study approved by an undergraduate advisor.

Students who arrive at Rice with AP credit in French of '4' or '5', or who have passed the International Baccalaureate with a '6' or '7' in French, can immediately enroll in all courses at the 300 or 400 level without taking a placement exam. All other students are required to take the placement exam administered by CLIC and will be assigned to courses in accordance with their level.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in French Studies should be aware of the following departmental transfer credit guidelines:

- No more than 4 courses (12 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the major.

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Distribution Credit Information

The determination of distribution eligibility is done as part of the new course creation process (https://registrar.rice.edu/facstaff/courseprocess/). As part of an annual roll call (https://registrar.rice.edu/facstaff/distribution_credit/) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean’s Offices of each of the academic schools.

Faculty and leadership in the academic schools are responsible for ensuring that the courses identified as distribution-eligible meet the criteria as set in the General Announcements (p. 26). Students are responsible for ensuring that they meet graduation requirements (p. 26) by completing coursework designated as distribution at the time of course registration.

Distribution courses from the Department of Classical and European Studies are broad in theme and scope and provide students with a substantial inquiry into literature, art, media, history, thought, and/or politics, including specific national traditions, linguistic contexts, and historical periods. Such courses involve a broad and often interdisciplinary spectrum of knowledge, providing students with the tools for thinking critically about the formation of European culture, its colonial past, and its national and linguistic traditions from antiquity to the present.

Additional Information

For additional information, please see the Classical and European Studies website: https://ces.rice.edu/.

Opportunities for the BA Degree with a Major in French Studies

Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Honors Program

The Honors Program in French Studies is meant to recognize outstanding French majors and to offer an opportunity to complete a senior thesis in close collaboration with a French Studies faculty member. The program provides seniors with the opportunity to develop individual research projects culminating in the Honors thesis.

Study Abroad Opportunities

We strongly encourage students to spend time studying in a francophone country, and to that end the faculty and the Rice Study Abroad Office will help them select an appropriate program.

Additional Information

For additional information, please see the Classical and European Studies website: https://ces.rice.edu/.
German Studies

Contact Information

Classical and European Studies
https://ces.rice.edu/
207 Rayzor Hall
713-348-4151

Christian J. Emden
Department Chair
emden@rice.edu

German Studies is a major offered by the Classical and European Studies (CES) Department. The German Studies program is a research-centered and student-friendly program with a challenging curriculum taught by internationally renowned faculty. The program covers the entire tradition of German culture, history, and politics within a European and global context, from early modern times to the present. Particular strengths of the department are in eighteenth- to twentieth-century literature and culture, media and film studies, modern intellectual history and political thought, and philosophy.

The close connection between research and teaching lies at the heart of the major’s curriculum and enables students to develop original contributions at an early stage. Beyond a detailed and historically grounded understanding of German and European culture, students gain intellectual and social qualities that are highly valued in a global knowledge society: logical reasoning, critical thinking, linguistic skills, and cultural competence. German Studies majors have received Fulbright grants and have continued at some of the best graduate schools in the U.S. and Europe.

Bachelor's Program

- Bachelor of Arts (BA) Degree with a Major in German Studies (p. 454)

German Studies does not currently offer an academic program at the graduate level.

Chair

Christian J. Emden

Program Advisor

Astrid Oesmann

Professors

Christian J. Emden
Uwe Steiner
Klaus H.M. Weissenberger

Associate Professors

Martin Blumenthal-Barby
Astrid Oesmann
German Studies at Rice is a research-centered and undergraduate-focused program with internationally renowned faculty. Courses are offered in both German and English. The program covers German history, literature, and culture, from the seventeenth century to the present, with a strong emphasis on Germany’s role in a wider European and transatlantic context. Particular departmental strengths are in the areas of modern intellectual history, 18th- to 20th-century literature and philosophy, film and media studies, as well as political theory. The close connection between research and teaching lies at the core of the curriculum. For more information please see the Classical and European Studies website at [https://ces.rice.edu/](https://ces.rice.edu/).

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor, or where applicable, the department's Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major's Official Certifier ([https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/](https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

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### Degree Requirements

#### Core Requirements

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<td>GERM 301</td>
<td>THIRD YEAR GERMAN I</td>
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<tr>
<td>GERM 302</td>
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#### Elective Requirements

Select 6 elective courses from departmental (GERM) course offerings.

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<th>Code</th>
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<td>30</td>
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<tr>
<td></td>
<td>Additional Credit Hours to Complete BA Degree Requirements</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>University Graduation Requirements (p. 26)</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>120</td>
</tr>
</tbody>
</table>

### Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAR, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

---

1. Both GERM 263 and GERM 264 may be replaced by an eight-week intensive summer language course at the University of Leipzig, Germany. The Leipzig Summer Program course counts toward the German Studies major at Rice with 6 credit hours. For more information, see the Opportunities tab.
2. GERM 301 and GERM 302 may be replaced by two four-week summer language courses at the University of Leipzig, Germany. For more information, see the Opportunities tab.
3. To fulfill the remaining German Studies major requirements, students must complete a total of 6 additional courses (18 credit hours) from departmental (GERM) course offerings as follows: 4 courses (12 credit hours) at the 300-level or above, and 2 courses (6 credit hours) at the 400-level. Please note: any elective course at the 300-level may be replaced by a course at a higher level.

### Courses Offered in English

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GERM 322 / HUMA 322</td>
<td>MARX, FREUD, EINSTEIN: FOREBEARERS OF MODERNITY</td>
<td>3</td>
</tr>
<tr>
<td>GERM 324 / HUMA 324</td>
<td>BERLIN: RESIDENCE, METROPOLIS, CAPITAL</td>
<td>3</td>
</tr>
<tr>
<td>GERM 325 / HUMA 325</td>
<td>MODERN GERMAN WRITERS: KAFKA</td>
<td>3</td>
</tr>
<tr>
<td>GERM 326 / HUMA 372</td>
<td>THE GERMAN FAIRY TALE: OLD AND NEW</td>
<td>3</td>
</tr>
<tr>
<td>GERM 328 / HUMA 328</td>
<td>GERMAN ADAPTATIONS: TEXT TO FILM</td>
<td>3</td>
</tr>
<tr>
<td>GERM 329 / HUMA 329</td>
<td>LITERATURE OF THE HOLOCAUST AND EXILE</td>
<td>3</td>
</tr>
<tr>
<td>GERM 330</td>
<td>LITERATURE AND FILM IN EAST GERMANY: BEHIND THE IRON CURTAIN</td>
<td>3</td>
</tr>
<tr>
<td>GERM 334</td>
<td>NATIONALISM AND CITIZENSHIP</td>
<td>3</td>
</tr>
<tr>
<td>GERM 338 / HUMA 373 / SWGS 361</td>
<td>NEW GERMAN FILM: HITLER'S CINEMATIC CHILDREN</td>
<td>3</td>
</tr>
<tr>
<td>GERM 339 / HART 398</td>
<td>FROM EXPRESSIONISM TO FASCISM: ART AND FILM IN GERMANY</td>
<td>3</td>
</tr>
<tr>
<td>GERM 340 / HUMA 340</td>
<td>WALTER BENJAMIN: AESTHETICS, HISTORY AND POLITICS</td>
<td>3</td>
</tr>
<tr>
<td>GERM 345</td>
<td>FROM DEMOCRACY TO DICTATORSHIP: GERMANY HISTORY, 1890-1945</td>
<td>3</td>
</tr>
<tr>
<td>GERM 349</td>
<td>GERMAN POLITICAL THOUGHT</td>
<td>3</td>
</tr>
<tr>
<td>GERM 351 / HART 387</td>
<td>HOLOCAUST MEMORY IN MODERN GERMANY</td>
<td>3-4</td>
</tr>
<tr>
<td>GERM 352</td>
<td>POLITICS OF THE FLESH IN GERMANY LITERATURE, THOUGHT AND FILM</td>
<td>3</td>
</tr>
</tbody>
</table>

### Policies for the BA Degree with a Major in German Studies

#### Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: [https://oaa.rice.edu/](https://oaa.rice.edu/). Students are encouraged to meet with their
The Leipzig Summer Program

The Department of German Studies strongly encourages intermediate-level students of German to attend an eight-week, intensive language course at the University of Leipzig’s renowned Herder Institute. The Leipzig course can be used to replace the sequence GERM 263 and GERM 264 or GERM 301 and GERM 302, and it will count toward the German Studies major at Rice with 6 credit hours. Through several generous endowments, the department offers the Leipzig Fellowships that can be used for travel, housing, and tuition expenses in Leipzig.

Details about the Leipzig Summer Program, including information about housing, can be found at https://ces.rice.edu/ and https://www.interdaf.uni-leipzig.de/. Students must apply directly to Leipzig-interDaF for course admission. For further information, contact the Program Advisor for German Studies, Astrid Oesmann, astrid.oesmann@rice.edu.

Additional Information

For additional information, please see the Classical and European Studies website: https://ces.rice.edu/.

See https://humanities.rice.edu/student-life (https://humanities.rice.edu/student-life/) for tables of fellowships, prizes, and internships/practica that may be relevant to this major.

Global Affairs

Opportunities for the BA Degree with a Major in German Studies

Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Honors Program

German Studies offers an honors program for majors excelling in their studies. Honors work consists of two semesters of independent research under faculty supervision on a topic proposed by the student leading to a substantial essay (GERM 493 in fall, GERM 494 in spring). Outstanding students are presented annually with the Max Freund Prize.

The Master of Arts in Global Affairs is a co-sponsored degree between Rice University’s Baker Institute for Public Policy and the School of Social Sciences. The program offers graduate students a professional Master of Arts degree that simultaneously requires high standards of scholarship and practical training for careers in government, the private sector, and international organizations.

The Master of Global Affairs is a two-year, 36 credit hour degree program. The program requires a non-credit bearing pre-term math boot camp held in the evenings before classes begin. The first year core-curriculum requires a sequence of 18 credit hours exposing students to a variety of topics in global affairs. The second year is reserved for pursuit of an Area of Study, participation in a required internship, and completion of a capstone project. The program is considered full-time with classes offered in the evening.

Global Affairs does not currently offer an academic program at the undergraduate level.
Master's Program
• Master of Arts in Global Affairs (MAGA) Degree (p. 457)

Faculty Director
Mark P. Jones

Professors
Songying Fang

Lecturers
Michael Ard
Shushanik Dapanyan
Scott McHugh
Daniel Potter
Andrew Wolfe

Baker Institute Fellows
Joe Barnes
Edward P. Djerejian
Jim Krane
Tony Payan

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: GLBL

Program Description and Code
• Global Affairs: GLBL

Graduate Degree Description and Code
• Master of Arts in Global Affairs degree: MAGA

Graduate Degree Program Description and Code
• Degree Program in Global Affairs: GLBL

CIP Code and Description ¹
• GLBL Major/Program: CIP Code/Title: 45.0901 - International Relations and Affairs

¹ Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Master of Arts in Global Affairs (MAGA) Degree

Program Learning Outcomes for the MAGA Degree
Upon completing the MAGA degree, students will be able to:

1. Demonstrate leadership, communication, and research skills to conduct independent studies enabling them to understand and formulate public policy recommendations in the international arena.

2. Apply quantitative skills to data analysis to make policy recommendations.

3. Describe real-life experience in international public policy development by participating in an internship.

4. Assess the social responsibilities of governments, non-governmental organizations, corporations, and individuals in the global twenty-first century.

5. Analyze and develop new and innovative solutions to emerging challenges in the global community.

Requirements for the MAGA Degree
The MAGA degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MAGA degree must complete:

• A minimum of 36 credit hours to satisfy degree requirements.
• A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
• A minimum of 24 credit hours must be taken at Rice University.
• A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University.
• The requirements for one area of specialization (see below for areas of specialization). The MAGA degree program offers three areas of specialization:
  • International Political Development (p. 458), or
  • International Political Economy (p. 458), or
  • International Security (p. 458).
• The required Graduate Field Internship.
• The required Capstone project.
• A minimum overall GPA of 2.67 or higher in all Rice coursework.
• A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree.

Please Note: Courses offerings may vary. Some listed courses may not be offered every year, and others may be offered that satisfy the requirements with pre-approval. Students should consult their academic advisors before enrolling and check for any course prerequisites.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>36</td>
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</table>

Total Credit Hours Required for the MAGA degree
## Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GLBL 501</td>
<td>GLOBAL SYSTEMS I</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 502</td>
<td>INSTITUTIONS &amp; DEVELOPMENT</td>
<td>1.5</td>
</tr>
<tr>
<td>GLBL 507</td>
<td>DECISION MAKING UNDER UNCERTAINTY</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 514</td>
<td>THE MIDDLE EAST CAULDRON AND UNITED STATES POLICY</td>
<td>1.5</td>
</tr>
<tr>
<td>GLBL 523</td>
<td>QUANTITATIVE APPLICATIONS IN GLOBAL AFFAIRS</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 524</td>
<td>MACROECONOMICS IN A GLOBAL ECONOMY</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 525</td>
<td>INTERNATIONAL SECURITY</td>
<td>3</td>
</tr>
</tbody>
</table>

### Core Requirements

1 Core Requirements must be completed during the first year of study.

2 The Area of Specialization requirement must be completed during the second year of study.

### Area of Specialization

Select 3 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GLBL 531</td>
<td>WORLD POLITICS AND GLOBAL GOVERNANCE</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 532</td>
<td>INTERNATIONAL BUSINESS ENVIRONMENT AND GLOBAL ECONOMIC GOVERNANCE</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 542</td>
<td>INTERNATIONAL MACROECONOMIC POLICY FOR MASTER’S STUDENTS</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 543</td>
<td>ENERGY POLICY</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 553</td>
<td>INTERNATIONAL CRISIS MANAGEMENT IN A MULTI-RISK, INTER-CONNECTED WORLD</td>
<td>3</td>
</tr>
</tbody>
</table>

### Graduate Field Internship Requirement

Select 1 from the following Areas of Specialization (see Areas of Specialization below):

- International Political Development
- International Political Economy
- International Security

### Capstone Requirement

Select 3 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GLBL 531</td>
<td>WORLD POLITICS AND GLOBAL GOVERNANCE</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 532</td>
<td>INTERNATIONAL BUSINESS ENVIRONMENT AND GLOBAL ECONOMIC GOVERNANCE</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 542</td>
<td>INTERNATIONAL MACROECONOMIC POLICY FOR MASTER’S STUDENTS</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 543</td>
<td>ENERGY POLICY</td>
<td>3</td>
</tr>
</tbody>
</table>

### Footnotes and Additional Information

1 Core Requirements must be completed during the first year of study.

2 The Area of Specialization requirement must be completed during the second year of study.

3 Students are required to complete a minimum eight-week extensive field experience in which they intern at one of a variety of internationally-based or internationally-focused governmental and nongovernmental organizations, international commissions, embassies, agencies, or corporations. The internship will provide students valuable real-world application of their degree with the goal of facilitating their employment in these organizations.

4 In the second year, students must select a topic of concentration and pursue in-depth research which delves into the real-world, policy aspects of the topic.

## Areas of Specialization

Students must complete a minimum of 3 courses (9 credit hours) from one area of specialization. Students should choose coursework according to their individual academic interests and career goals. No more than 1 course (3 credit hours) at the undergraduate level (300- or 400-level) can be used toward the area of specialization. The area of specialization requirement must be completed during the second year of study.

### Area of Specialization: International Political Development

Select 3 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GLBL 531</td>
<td>WORLD POLITICS AND GLOBAL GOVERNANCE</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 532</td>
<td>INTERNATIONAL BUSINESS ENVIRONMENT AND GLOBAL ECONOMIC GOVERNANCE</td>
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<tr>
<td>GLBL 542</td>
<td>INTERNATIONAL MACROECONOMIC POLICY FOR MASTER’S STUDENTS</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 543</td>
<td>ENERGY POLICY</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 553</td>
<td>INTERNATIONAL CRISIS MANAGEMENT IN A MULTI-RISK, INTER-CONNECTED WORLD</td>
<td>3</td>
</tr>
</tbody>
</table>

### Area of Specialization: International Political Economy

Select 3 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 540</td>
<td>NEOLIBERALISM AND GLOBALIZATION</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 531</td>
<td>WORLD POLITICS AND GLOBAL GOVERNANCE</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 532</td>
<td>INTERNATIONAL BUSINESS ENVIRONMENT AND GLOBAL ECONOMIC GOVERNANCE</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 542</td>
<td>INTERNATIONAL MACROECONOMIC POLICY FOR MASTER’S STUDENTS</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 543</td>
<td>ENERGY POLICY</td>
<td>3</td>
</tr>
<tr>
<td>HIST 603</td>
<td>AMERICA IN THE MIDDLE EAST</td>
<td>3</td>
</tr>
<tr>
<td>POLI 504</td>
<td>INTRODUCTION TO MAXIMUM LIKELIHOOD ESTIMATION</td>
<td>3</td>
</tr>
<tr>
<td>SOCI 524</td>
<td>RACE AND ETHNICITY SEMINAR</td>
<td>3</td>
</tr>
</tbody>
</table>

### Area of Specialization: International Security

Select 3 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 540</td>
<td>NEOLIBERALISM AND GLOBALIZATION</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 531</td>
<td>WORLD POLITICS AND GLOBAL GOVERNANCE</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 543</td>
<td>ENERGY POLICY</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 551</td>
<td>CYBERPOLITIK: INTERNATIONAL AFFAIRS IN TECHNOLOGY AND INFORMATION</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 552</td>
<td>INTERNATIONAL SECURITY: DE-RISKING NATIONAL THREATS AND BUSINESS THREATS</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 553</td>
<td>INTERNATIONAL CRISIS MANAGEMENT IN A MULTI-RISK, INTER-CONNECTED WORLD</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 554</td>
<td>UNDERSTANDING TERRORISM AND COUNTERTERRORISM</td>
<td>3</td>
</tr>
<tr>
<td>HIST 603</td>
<td>AMERICA IN THE MIDDLE EAST</td>
<td>3</td>
</tr>
</tbody>
</table>
Policies for the MAGA Degree

Admission

Applicants to the Master of Arts in Global Affairs degree program are required to submit:

- Statement of purpose
- Professional resume
- Three letters of recommendation
- Official transcripts from all colleges and universities attended, with official degree conferral date
- Applicants are recommended, but not required to submit scores from either the Graduate Record Examination (GRE) or the Graduate Management Admissions Test (GMAT).
- Approved TOEFL scores for applicants whose native language is not English and who did not receive a degree from a country in which English is the official language of communication.

Foreign Language Proficiency

Students who expect to complete their degree program with a particular regional focus in mind are expected to be proficient in one of the primary languages of that region. Proficiency is defined as the ability to read and speak the language. This requirement can be met in one of three ways:

- By passing a language proficiency exam administered by the Rice Language Center.
- By achieving a grade of B+ (3.33 grade points) or better in an intermediate language course at Rice. Taking this class does not count toward the 36 credit hours total for degree completion.
- By graduating from a high school or university where a language other than English was the primary language of instruction.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

Additional Information

For additional information, please see the Global Affairs website: https://mga.rice.edu/

Global Health Technologies

Contact Information

Global Health Technologies
https://www.rice360.rice.edu/
BioScience Research Collaborative
713-348-4174

Rebecca Richards-Kortum
Director, Rice 360°
rkortum@rice.edu

Yvette Mirabal
Executive Director, Rice 360°
ymirabal@rice.edu

Meaghan Bond
NEST Senior Design Engineer
meaghan.mc.bond@rice.edu

As part of this option and opportunity, Rice undergraduate students:

- must complete the requirements for a bachelor’s degree and the master’s degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
- should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
- more information on this Undergraduate - Graduate Concurrent Enrollment opportunity, including specific information on the registration process can be found here (p. 17).

Additional Information

For additional information, please see the Global Affairs website: https://mga.rice.edu/

Opportunities for the MAGA Degree

Fifth-Year Master’s Degree Option for Rice Undergraduate Students

Rice students have an option to pursue the Master of Arts in Global Affairs (MAGA) degree by adding an additional fifth year to their four undergraduate years of studies.

Advanced Rice undergraduate students in good academic standing may apply to the MAGA degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master’s degree program. A plan of study will need to be approved by the student’s undergraduate advisor and the MAGA program director.

Rice 360°: Institute for Global Health collaborates with multiple departments to offer students a minor in Global Health Technologies (GLHT), a unique, multidisciplinary program to educate and train students to reach beyond traditional disciplinary and geographic boundaries to understand, address, and solve global health disparities. With complementary contributions from the humanities, social science, policy, bioscience, and engineering programs at Rice, the GLHT minor prepares students to integrate diverse perspectives as they develop solutions to the complex problems of global health, using the formal approach of the engineering design process.

The minor is open to Rice undergraduate students from all disciplines and requires completion of seven courses, including five core courses, and two electives. Students begin the minor by taking GLHT 201 which provides an overview of scientific, economic, and policy issues associated with advanced global health technologies, followed by an introductory design course, GLHT 360. The subsequent core course is selected by the student from a collection of approved courses. The final two courses include GLHT 451 (https://ga.rice.edu/search/?P=GLHT%20451/) and GLHT 452 (https://ga.rice.edu/search/?P=GLHT%20452/) which are taken in a two-semester sequence in which multidisciplinary teams of undergraduate students work together to design and implement solutions to existing global health challenges.
in the developing world. Elective courses include a range of subjects. Courses such as Immunology, Health Economics, Medical Chemistry, or Health Policy, provide students experience in engineering and social sciences as applied to international health challenges.

Throughout the program, GLHT students benefit from receiving guidance and mentorship from Rice faculty and graduate students as well as from the Texas Medical Center, partner organizations in developing countries, and clinicians to design low-cost, effective health technologies.

Minor

- Minor in Global Health Technologies (p. 460)

Global Health Technologies does not currently offer an academic program at the graduate level.

Director and Advisor

Rebecca Richards-Kortum

Undergraduate Advisors

Elias K. Bongmba
Z. Maria Oden

Minor Advisor

Yvette Mirabal

Steering Committee

Pedro J.J. Alvarez
Rachel Tolbert Kimbro
Douglas A. Schuler
Tomasz Tkaczyk

Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule

- Course offerings/subject code: GLHT

Program Description and Code

- Global Health Technologies: GLHT

Undergraduate Minor Description and Code

- Minor in Global Health Technologies: GLHT

CIP Code and Description

- GLHT Minor: CIP Code/Title: 51.2210 - International Public Health/ International Health

Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: [https://nces.ed.gov/ipeds/cipcode/](https://nces.ed.gov/ipeds/cipcode/)

Minor in Global Health Technologies

Program Learning Outcomes for the Minor in Global Health Technologies

Upon completing the minor in Global Health Technologies, students will be able to:

1. Demonstrate the ability to prototype and build appropriate technologies that respond to global health design challenges or problems, and/or develop a community health plan or strategy to address these challenges. They will conduct independent research and design—from developing a research question and completing a literature review, to analyzing and interpreting data—to demonstrate the effectiveness of their proposed solution.

2. Demonstrate a broad understanding of the issue of human health, disease, and health care planning from Natural Science, Humanities, and Social Sciences perspectives.

3. Understand the basic elements of human health and disease from evolutionary, biological, and epidemiological perspectives.

4. Demonstrate critical thinking and analysis skills within the realm of global health and its related disciplines, including the ability to critically and responsibly synthesize materials and methods from a range of disciplines to address global health problems or questions.

5. Demonstrate a knowledge of how health and disease are, in part, social and cultural constructs; students will be able to explain how different populations of individuals within the same geographic locale or in very different geographic locales may understand health and disease differently. They will also demonstrate the ability to assess and explain how different kinds of health planning, delivery systems, institutions, and health products would be more or less effective for different populations.

6. Communicate effectively at the college level by demonstrating the ability to write research papers, literature reviews, and other scholarly papers and by being able to verbally present this information effectively and correctly.

Requirements for the Minor in Global Health Technologies

Students pursuing the minor Global Health Technologies must complete:

- A minimum of 7 courses (21 credit hours) to satisfy minor requirements.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the minor’s Official Certifier [https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/]). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Minor in Global Health Technologies</td>
<td>21</td>
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</tbody>
</table>
### Minor Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GLHT 201</td>
<td>INTRODUCTION TO GLOBAL HEALTH</td>
<td>3</td>
</tr>
<tr>
<td>GLHT 360 / BIOE 360</td>
<td>APPROPRIATE DESIGN FOR GLOBAL HEALTH</td>
<td>3</td>
</tr>
</tbody>
</table>

Select 1 course from the following:

- GLHT 314 / BIOE 365 / CEVE 314: SUSTAINABLE WATER PURIFICATION FOR THE DEVELOPING WORLD
- GLHT 392 / BIOE 392: NEEDS FINDING AND DEVELOPMENT IN BIOENGINEERING
- GLHT 464 / BUSI 464 / SOCI 464: SOCIAL ENTREPRENEURSHIP
- PSYC 370: INTRODUCTION TO HUMAN FACTORS AND ERGONOMICS
- SOCI 345: MEDICAL SOCIOLOGY
- SOCI 381: RESEARCH METHODS

### Elective Requirement

Select 1 course from Science/Engineering Electives (see course list below)

Select 1 course from Humanities/Social Science Electives (see course list below)

### Capstone Requirement

- GLHT 451: GLOBAL HEALTH DESIGN CHALLENGES I
- GLHT 452: GLOBAL HEALTH DESIGN CHALLENGES II

Total Credit Hours: 21

### Footnotes and Additional Information

1. All core courses will be offered each year:
   - GLHT 201, PSYC 370, SOCI 381, ANTH 381, GLHT 392 and GLHT 451 in the Fall.
   - GLHT 360, SOCI 345, GLHT 464, GLHT 314 and GLHT 452 in the Spring.

   The sequence indicated is the required sequence, as prerequisites do apply.

   If not selected as a Core course, some courses are also available as Electives (see below for course lists).

2. Prior to enrollment in the capstone courses GLHT 451 and GLHT 452, students must successfully complete all other GLHT minor core course requirements, although electives may be taken concurrently.

### Course Lists to Satisfy Requirements

#### Elective Requirements

To fulfill the remaining Global Health Technologies minor requirements, students must complete a total of 2 additional electives courses (6 credit hours) as listed below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC 318</td>
<td>MICROBIOLOGY LABORATORY</td>
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<tr>
<td>BIOC 372</td>
<td>IMMUNOLOGY</td>
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<tr>
<td>BIOC 424</td>
<td>MICROBIOLOGY AND BIOTECHNOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 447</td>
<td>EXPERIMENTAL BIOLOGY AND THE FUTURE OF MEDICINE</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 450</td>
<td>VIRUSES AND INFECTIOUS DISEASES</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 460</td>
<td>CANCER BIOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 449 / GLHT 449</td>
<td>TROUBLESHOOTING WORKSHOP FOR CLINICALLY-RELEVANT BIOMEDICAL EQUIPMENT</td>
<td>1</td>
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<tr>
<td>CEVE 302 / ENGI 302</td>
<td>SUSTAINABLE DESIGN</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 446 / COMP 446</td>
<td>MOBILE DEVICE APPLICATIONS PROJECT</td>
<td>4</td>
</tr>
<tr>
<td>GLHT 314 / BIOE 365 / CEVE 314</td>
<td>SUSTAINABLE WATER PURIFICATION FOR THE DEVELOPING WORLD</td>
<td>3</td>
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<tr>
<td>GLHT 400</td>
<td>GLOBAL HEALTH TECHNOLOGIES INDEPENDENT RESEARCH PROJECTS</td>
<td>1-3</td>
</tr>
<tr>
<td>GLHT 401</td>
<td>GLHT RESEARCH PAPER WRITING AND SUBMISSION</td>
<td>1</td>
</tr>
<tr>
<td>GLHT 510 / BIOE 510</td>
<td>SEMINAR IN TROPICAL MEDICINE</td>
<td>3</td>
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<tr>
<td>KINE 319</td>
<td>STATISTICS FOR THE HEALTH PROFESSIONAL</td>
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<td>STAT 280</td>
<td>ELEMENTARY APPLIED STATISTICS</td>
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<tr>
<td>STAT 305</td>
<td>INTRODUCTION TO STATISTICS FOR BIOSCIENCES</td>
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</tbody>
</table>

#### Humanities/Social Science Electives

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<tr>
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<tr>
<td>ANTH 366</td>
<td>SCIENCE, LOCAL AND GLOBAL</td>
<td>3</td>
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<tr>
<td>ANTH 381</td>
<td>MEDICAL ANTHROPOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 443</td>
<td>ANTHROPOLOGY OF RACE, ETHNICITY AND HEALTH</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 446</td>
<td>ADVANCED TOPICS IN BIOMEDICAL ANTHROPOLOGY</td>
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</tr>
<tr>
<td>BUSI 464 / GLHT 464 / SOCI 464</td>
<td>SOCIAL ENTREPRENEURSHIP</td>
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<tr>
<td>ECON 450</td>
<td>ECONOMIC DEVELOPMENT</td>
<td>3</td>
</tr>
<tr>
<td>ECON 481</td>
<td>HEALTH ECONOMICS</td>
<td>3</td>
</tr>
<tr>
<td>ECON 484</td>
<td>PUBLIC ECONOMICS</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 273 / SWGS 273</td>
<td>MEDICINE AND MEDIA</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 386 / FILM 381</td>
<td>MEDICAL MEDIA ARTS LAB</td>
<td>4</td>
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<tr>
<td>ENST 313 / ARCH 313</td>
<td>SUSTAINABLE DESIGN</td>
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<tr>
<td>ENST 315</td>
<td>ENVIRONMENTAL HEALTH</td>
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<tr>
<td>HEAL 222</td>
<td>PRINCIPLES OF PUBLIC AND COMMUNITY HEALTH</td>
<td>3</td>
</tr>
<tr>
<td>HEAL 313</td>
<td>FOUNDATIONS OF HEALTH PROMOTION AND EDUCATION</td>
<td>3</td>
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<tr>
<td>HEAL 407</td>
<td>EPIDEMIOLOGY</td>
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<tr>
<td>HEAL 422</td>
<td>THEORIES AND MODELS OF HEALTH BEHAVIOR</td>
<td>3</td>
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</tbody>
</table>
HEAL 460  PLANNING AND EVALUATION OF HEALTH PROMOTION AND EDUCATION  3
HIST 222  HISTORY OF EARLY AFRICA  3
HIST 223  HISTORY OF MODERN AFRICA  3
PHIL 314  THE PHILOSOPHY OF MEDICINE  3
PHIL 315  ETHICS, MEDICINE, AND PUBLIC POLICY  3
PHIL 336  TOPICS IN MEDICAL ETHICS  3
POLI 260 / LEAD 260  ADVOCATING FOR IDEAS TO CHANGE THE WORLD  3
POLI 329  HEALTH POLICY  3
PSYC 345  HEALTH PSYCHOLOGY  3
PSYC 370  INTRODUCTION TO HUMAN FACTORS AND ERGONOMICS  3
PSYC 409  METHODS IN HUMAN-COMPUTER INTERACTION  3
PSYC 480  ADVANCED TOPICS  3
RELI 424  RELIGION AND POLITICS IN AFRICA  3
SOCI 313  DEMOGRAPHY  3
SOCI 345  MEDICAL SOCIOLOGY  3
SOCI 377  HEALTH DISPARITIES IN THE UNITED STATES  3
SOCI 381  RESEARCH METHODS  3
SOCI 406  BASIC DEMOGRAPHIC TECHNIQUES  3
SOCI 453  RACE, MIGRATION, AND HEALTH SEMINAR  3
SOCI 465 / SWGS 465  GENDER AND HEALTH  3

**Program Restrictions and Exclusions**

Students pursuing the minor in Global Health Technologies should be aware of the following program restriction:

- As noted in **Majors, Minors, and Certificates** (p. 11), i.) students may declare a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

**Transfer Credit**

For Rice University’s policy regarding transfer credit, see **Transfer Credit** (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [https://oaa.rice.edu](https://oaa.rice.edu). Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

**Program Transfer Credit Guidelines**

Students pursuing the minor in Global Health Technologies should be aware of the following program-specific transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

**Additional Information**

For additional information, please see the Global Health website: [https://www.rice360.rice.edu/glht-minor](https://www.rice360.rice.edu/glht-minor)

**Opportunities for the Minor in Global Health Technologies**

**Academic Honors**

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see **Latin Honors** (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

**Program Internships and Competition**

**Rice 360° Global Health Summer Internship Program**

The Rice 360° Global Health Technologies Summer Internship Program gives Rice University undergraduate students - both science and non-science majors - first-hand exposure to health care in resource constrained settings. In partnership with clinics, schools, and organizations working in developing countries, the internships allow students to advance their solutions to a global health design challenge in a real-world setting.

The summer internships are held in a number of national and international locations, exposing students to health care challenges and solutions in the developed and developing world. In the past, our students have visited Malawi, Brazil, and the Rio Grande Valley in Texas among other locations. During the internship, students are responsible for the implementation of a GLHT project and a site specific project, both of which are assigned to them. In addition, participants select a project of their choice and work on identifying and documenting five novel ideas or technology ideas at the site.
Summer internships are fully funded experiences, covering the cost of your travel (airfare, visa, and traveler’s insurance), immunizations, housing and a stipend for day to day living expenses (eg. food and local transportation).

For more information visit: [https://www.rice360.rice.edu/internships](https://www.rice360.rice.edu/internships).

**Global Health Technologies Design Competition**

The Rice 360° Annual Undergraduate Global Health Technologies Design Competition is held each Spring at Rice University. It features over 20 student teams from national and international universities who present their low-cost global health technologies. Entries are judged on the quality of the problem definition, the effectiveness and potential impact of the design solution, and the likelihood that the solution can be successful in improving healthcare delivery in low-resource settings by faculty, clinicians, and private and public sector partners from around the country.

Information on the application process and competition guidelines can be found here: [https://www.rice360.rice.edu/design-competition](https://www.rice360.rice.edu/design-competition).

**Additional Information**

For additional information, please see the Global Health website: [https://www.rice360.rice.edu/glht-minor](https://www.rice360.rice.edu/glht-minor).

**Gnosticism, Esotericism and Mysticism**

**Contact Information**

Gnosticism, Esotericism and Mysticism
[https://reli.rice.edu/](https://reli.rice.edu/)
225 Humanities Building
713-348-2092

Elias K. Bongmba
Department Chair
bongmba@rice.edu

The Department of Religion offers the Certificate in Gnosticism, Esotericism and Mysticism (GEM). The GEM certificate provides graduate students with a theoretical orientation, which they then can apply to their chosen concentrations (i.e., African-American religions; African religions; Bible and Beyond; Buddhism; Christianity; Hinduism; Islam; Judaism; American Religion; New Age and New Religious Movements, New Testament and Early Christianity; etc.).

Traditionally the study of religion has privileged the authoritative voices of the religious experts and the scriptural texts that uphold orthodox faith traditions. GEM is a new approach to the study of religion that does not privilege the public orthodox framings but takes seriously the heterodox and esoteric currents that have been actively repressed, censored, or marginalized in a variety of sociological, psychological, philosophical, and political ways. GEM takes into account the plurality of religious voices and expressions, including the neglected currents, in order to reconceive religion. This approach also engages the psychology and the phenomenology of religious experience, rather than relying exclusively on the authorial framings taught by the faith traditions and transmitted in their scriptural texts, interpretations and rituals.

Gnosticism, Esotericism and Mysticism does not currently offer an academic program at the undergraduate level.

**Certificate**

- Certificate in Gnosticism, Esotericism and Mysticism, (p. 463)

**Chair, Department of Religion**

Elias K. Bongmba

**Advisors**

April D. DeConick
Jeffrey J. Kripal

**Professors**

Marcia Brennan
David Cook
April D. DeConick
Anne C. Klein
Jeffrey J. Kripal
William B. Parsons

**Associate Professors**

Claire Fanger
Brian Ogren

**Assistant Professor**

Niki Clements

**Description and Code Legend**

*Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:*

**Course Catalog/Schedule**

- Course offerings/subject code: RELI

**Department Description and Code**

- Religion: RELI

**Graduate Certificate Description and Code**

- Certificate in Gnosticism, Esotericism and Mysticism: GEM

**CIP Code and Description**

- GEM Certificate: CIP Code/Title: 38.0299 - Religion/Religious Studies, Other

1 Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: [https://nces.ed.gov/ipeds/cipcode/](https://nces.ed.gov/ipeds/cipcode)
Program Learning Outcomes for the Certificate in Gnosticism, Esotericism and Mysticism

Upon completing the certificate in Gnosticism, Esotericism and Mysticism, students will be able to:

1. Understand and interpret gnostic, esoteric, and mystic traditions by examining the plurality of religious voices and expressions, including currents that have been marginalized, neglected, repressed, and censored in a variety of sociological, psychological, philosophical, and political ways.

Requirements for the Certificate in Gnosticism, Esotericism and Mysticism

The certificate in Gnosticism, Esotericism, and Mysticism is a graduate certificate. For general university requirements, please see Graduate Certificates (p. 54). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the certificate in Gnosticism, Esotericism and Mysticism must complete:

- A minimum of 6 courses (14 credit hours) to satisfy certificate requirements.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the graduate certificate with a minimum grade of B- (2.67 grade points) in each course.

This certificate is not a freestanding degree program; in addition to fulfilling the certificate requirements outlined below, candidates will be required to complete successfully the degree program to which they have been admitted in order to receive this certificate. Upon completion, the certificate is awarded at the same time as the conferral of the student’s Rice degree, along with a formal notation on their academic transcript.

The courses listed below satisfy the requirements for this certificate. In certain instances, courses not on this official list may be substituted upon approval of the certificate’s academic advisor, or where applicable, the Program Director. Course substitutions must be formally applied and entered into Degree Works by the certificate’s Official Certifier. Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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Certificate Requirements

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<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td><strong>Theory-Intensive Courses</strong></td>
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<tr>
<td>RELI 558</td>
<td>MYSTICISM: THEORIES AND METHODS</td>
<td>3</td>
</tr>
<tr>
<td>RELI 581</td>
<td>Gnosticism Seminar</td>
<td>3</td>
</tr>
</tbody>
</table>

Thematic Courses

Select 1 course from the following:

- RELI 522: Islam’s Mystical and Esoteric Tradition
- RELI 532: Advanced Tibetan Language and Culture
- RELI 570: Buddhist Wisdom Texts
- RELI 588: The History of Religions School
- RELI 589: Mutants and Mystics: Race, Sexuality, and the Future of the Humanities
- RELI 607: Archives of the Impossible
- RELI 615: Secret Religion

Gnosticism, Esotericism and Mysticism (GEM) Research Forum

- RELI 600: GEM Research Forum (2 semesters required, 1st semester) 1

Total Credit Hours 14

Footnotes and Additional Information

1 Students must complete 2 consecutive Fall and Spring semesters of RELI 600 (1 credit hour each semester for 2 credit hours total). This forum meets monthly throughout the semester. RELI 600 is taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade. As a S/U course, it does not apply to the requirement of a minimum grade of B- (2.67 grade points) in each required course.

Policies for the Certificate in Gnosticism, Esotericism and Mysticism

Department of Religion Graduate Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Religion publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Religious_Studies_Graduate_Handbook.pdf

Program Restrictions and Exclusions

Students pursuing the certificate in Gnosticism, Esotericism and Mysticism should be aware of the following program restriction:

- Graduate students may declare their intent to pursue a university certificate only after they have first been admitted into a graduate-level Rice degree-granting program.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.
Additional Information
For additional information, please see the Gnosticism, Esotericism and Mysticism’s page on the Department of Religion website: https://reli.rice.edu/GEM

Opportunities for the Certificate in Gnosticism, Esotericism and Mysticism

Additional Information
For additional information, please see the Gnosticism, Esotericism and Mysticism’s page on the Department of Religion website: https://reli.rice.edu/GEM

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this program.

History

Contact Information

History
https://history.rice.edu/
326 Humanities Building
713-348-4947

Peter C. Caldwell
Department Chair
caldwell@rice.edu

The study of history informs students about the many worlds of the past from which our diverse community has come. It provides analytical tools with which to understand the present in terms of the past, and it helps create a knowledgeable citizenry that can confront the challenges of the future with confidence and historical insight. History is at the heart of the Humanities, which provide the core of a liberal arts education.

The department of History at Rice offers a diverse and exciting range of undergraduate electives that encourage engagement with the past as a way to understand the present and that foster appreciation of past societies for their own sake as important elements of the human experience. Our undergraduate major emphasizes critical skills in communication, writing, and especially research skills, and our department funds travel to archives and libraries as students prepare senior seminar papers and honors theses. The History major is flexible and offers an International Concentration that recognizes study abroad experience and research competency in languages other than English. The Honors Program offers highly motivated students the chance to engage deeply with historical research and writing.

The graduate program, which trains a limited number of carefully selected students, offers these fields: U.S. History, including U.S. and the World topics; Atlantic World history; Latin American history; and the history of the Middle East. These areas are supplemented by an interconnected range of supporting courses and fields, including early modern and modern colonial history, African history, Asian history, European history, world history, gender history, transnational history, economic history, and the history of empires. PhD students may concurrently pursue one of the graduate certificates offered at Rice, such as those offered through the Center for the Study of Women, Gender, and Sexuality, or the Center for Critical and Cultural Theory.

Through graduate reciprocal agreements with the Universidade Estadual de Campinas (UNICAMP) and the Instituto Mora, the department offers highly qualified graduate students the opportunity to earn a second PhD at a top-ranked university in Brazil or Mexico. Students in the dual degree program study in Brazil or Mexico, and write theses that are co-supervised by faculty at Rice, and either UNICAMP, or Mora.

Bachelor’s Programs

- Bachelor of Arts (BA) Degree with a Major in History (p. 466)
- and a Major Concentration in History: International Concentration (p. 470)

Master’s Program

- Master of Arts (MA) Degree in the field of History*

Doctoral Programs

- Doctor of Philosophy (PhD) Degree in the field of History (p. 475)

Coordinated Programs

- Doctor of Philosophy (PhD) Degree in the field of History with Instituto Mora, in Mexico (Dual Degree) (p. 476)
- Doctor of Philosophy (PhD) Degree in the field of History with Universidade Estadual de Campinas (UNICAMP), in Brazil (Dual Degree) (p. 477)

* Although students are not normally admitted to a Master of Arts (MA) degree program, graduate students may earn the MA as they work towards the PhD.

Chair
Peter C. Caldwell

Director of Undergraduate Studies
Lisa A. Balabanlilar

Director of Graduate Studies
Nathan Citino

Professors
Tani E. Barlow
John B. Boles
Douglas G. Brinkley
Peter C. Caldwell
Nathan Citino
Randal L. Hall
Michael R. Maas
Ussama Makdisi
Alida C. Metcalf
Paula A. Sanders
Sayuri Guthrie Shimizu
James Sidbury
Lora Wildenthal
John H. Zammito
Associate Professors
Lisa A. Balabanlilar
Alexander X. Byrd
G. Daniel Cohen
Maya Soifer Irish
Moramay López-Alonso
W. Caleb McDaniel
Elizabeth Petrick
Aysha Pollnitz
Kerry R. Ward
Fay Yarbrough

Assistant Professors
Daniel Domingues Da Silva
Lan Li

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: HIST

Department Description and Code
• History: HIST

Undergraduate Degree Description and Code
• Bachelor of Arts degree: BA

Undergraduate Major Description and Code
• Major in History: HIST

Undergraduate Major Concentration Description and Code
• Major Concentration in History: International Concentration: HINT

Graduate Degree Descriptions and Codes
• Master of Arts degree: MA
• Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code
• Degree Program in History: HIST

CIP Code and Description
1. HIST Major/Program: CIP Code/Title: 54.0101 - History, General
   HINT Major Concentration: CIP Code/Title: 54.0199 - History, Other
1 Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Bachelor of Arts (BA) Degree with a Major in History

Program Learning Outcomes for the BA Degree with a Major in History
Upon completing the BA degree with a major in History, students will be able to:
1. Identify and connect the ways that people, ideas, and technologies have circulated across the range of geographic regions and historical periods.
2. Apply historical questions to concrete cases and demonstrate analytical skills through the use of historical evidence, rigorous logic, and persuasive argument.
3. Exhibit a solid understanding of historical methodologies and research skills, including the careful and creative use of primary and secondary sources that are read critically and weighed carefully as historical evidence.
4. Demonstrate an awareness of the scholarly literature on a given research topic and identify the position of their research within that literature.
5. Exhibit mastery in writing persuasive and analytical prose following the conventions of the discipline.

Requirements for the BA Degree with a Major in History
For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in History must complete:

• A minimum of 10 courses (30 credit hours) to satisfy major requirements.
• A minimum of 120 credit hours to satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
• A minimum of 6 courses (18 credit hours) taken at the 300-level or above.
• A maximum of 4 courses (12 credit hours) from study abroad or transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.
• A minimum of 2 courses (6 credit hours) from departmental course offerings of 400-level seminars.

Some foreign language proficiency is desirable and the department highly recommends that students contemplating graduate work in history study at least one foreign language in some depth.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/.) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary
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<th>Code</th>
<th>Title</th>
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<tr>
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<td>Total Credit Hours Required for the BA Degree with a Major in History</td>
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</tr>
</tbody>
</table>
Degree Requirements

Core Requirements
Select at least 1 course from at least 4 of the 5 following fields (see course lists below):

**Premodern**
- Europe
- United States
- Africa, Asia, Latin America, Middle East
- Transnational, Comparative, World

**Seminar**
Select 2 seminar courses from departmental (HIST) course offerings at the 400-level.

**Elective Requirements**
Select 4 elective courses from departmental (HIST) course offerings.

Total Credit Hours Required for the Major in History
30

Additional Credit Hours to Complete BA Degree Requirements
30

University Graduation Requirements (p. 26)
60

Total Credit Hours
120

Footnotes and Additional Information
* Includes coursework completed as distribution credit, FWIS, LPAR upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 Any departmental (HIST) course offerings between HIST 400 and HIST 499, with the exception of HIST 403 and HIST 404, will fulfill the Seminar Requirement.

2 AP credit for history (HIST 103, HIST 105, HIST 107), HIST 403, and HIST 404, do not fulfill History major requirements as Electives or as Seminar. Additionally, students may take HIST 390 only once to fulfill History major requirements.

Core Requirements
Select at least 1 course (3 credit hours) from at least 4 of the 5 following fields. Of the 10 required courses to satisfy the History major requirements, a minimum of 6 courses total (18 credit hours) must be completed at the 300-level or above.

### Premodern Courses

<table>
<thead>
<tr>
<th>Code</th>
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</thead>
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<tr>
<td>HIST 120 / MDEM 120</td>
<td>MEDIEVAL CIVILIZATIONS</td>
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</tr>
<tr>
<td>HIST 186</td>
<td>HISTORICAL SURVEY OF JEWISH CIVILIZATION FROM ITS ORIGINS TO THE PRESENT</td>
<td>3</td>
</tr>
<tr>
<td>HIST 190</td>
<td>OCEANS IN WORLD HISTORY</td>
<td>3</td>
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<tr>
<td>HIST 200</td>
<td>ANCIENT EMPIRES: ORIGINS OF WESTERN CIVILIZATIONS</td>
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<td>HIST 201 / RELI 203</td>
<td>JUDAISM OF JESUS AND HILLEL</td>
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<td>HISTORY OF SOUTH ASIA</td>
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<td>THE WORLD OF LATE ANTIQUITY</td>
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<td>HIST 316</td>
<td>JEWS AND CHRISTIANS IN THE MEDIEVAL ISLAM WORLD</td>
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<td>HIST 320</td>
<td>IMPERIAL GARDENS: A CULTURAL COMPARISON</td>
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<td>HIST 324 / MDEM 324</td>
<td>COEXISTENCE IN MEDIEVAL SPAIN</td>
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<td>HIST 327 / MDEM 327</td>
<td>MEDIEVAL BORDERLANDS</td>
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<tr>
<td>HIST 357 / MDEM 357</td>
<td>JEWS AND CHRISTIANS IN MEDIEVAL EUROPE</td>
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<td>HIST 361</td>
<td>HISTORY OF PREMODERN BRITAIN: TUDORS AND STUARTS, 1485 - 1707</td>
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<tr>
<td>HIST 381 / RELI 385</td>
<td>GOD, TIME AND HISTORY</td>
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<tr>
<td>HIST 401</td>
<td>THE AGE OF ATILLA THE HUN</td>
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<td>HIST 434</td>
<td>ISLAM AND THE WEST</td>
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<td>HIST 436</td>
<td>AMERICA IN THE MIDDLE EAST</td>
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<td>HIST 494</td>
<td>RULING HINDUSTAN: THE TIMURID-MUGHAL KINGS OF INDIA</td>
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### Europe Courses

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<td>MODERN EUROPE, 1500-1789</td>
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<td>HIST 102</td>
<td>MODERN EUROPE, 1789-PRESENT</td>
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<td>HIST 120 / MDEM 120</td>
<td>MEDIEVAL CIVILIZATIONS</td>
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<td>OCEANS IN WORLD HISTORY</td>
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<td>MEDIEVAL MEDITERRANEAN WORLD</td>
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<tr>
<td>HIST 225</td>
<td>EUROPE SINCE 1945</td>
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<td>HIST 256</td>
<td>EUROPEAN POLITICS AND SOCIETY, 1890-1945</td>
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<tr>
<td>HIST 305</td>
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<tr>
<td>HIST 324 / MDEM 324</td>
<td>COEXISTENCE IN MEDIEVAL SPAIN</td>
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<td>HIST 327 / MDEM 327</td>
<td>MEDIEVAL BORDERLANDS</td>
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<tr>
<td>HIST 329 / ARCH 329 / HART 329</td>
<td>STREETS AND URBAN LIFE: PARIS TO ISTANBUL</td>
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<td>HIST 344</td>
<td>EUROPEAN REFORMATIONS</td>
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<td>HIST 352</td>
<td>HISTORY OF THE COLD WAR</td>
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<tr>
<td>HIST 355 / GERM 345</td>
<td>FROM DEMOCRACY TO DICTATORSHIP: GERMAN HISTORY, 1890-1945</td>
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<td>HIST 356</td>
<td>AFTER NAZISM: GERMAN HISTORY, 1945 - PRESENT</td>
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<td>HIST 357 / MDEM 357</td>
<td>JEWS AND CHRISTIANS IN MEDIEVAL EUROPE</td>
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Bachelor of Arts (BA) Degree with a Major in History

HIST 358  HUMANITARIANISM FROM THE 19TH
CENTURY TO THE PRESENT  3
HIST 361  HISTORY OF PREMODERN BRITAIN:
TUDORS AND STUARTS, 1485 - 1707  3
HIST 362  BRITAIN FROM THE INDUSTRIAL
REVOLUTION TO THE PRESENT  3
HIST 370  EUROPEAN INTELLECTUAL HISTORY:
BACON TO HEGEL  3
HIST 371  HISTORY OF MODERN FRANCE  3
HIST 372  IMMIGRATION AND THE STATE: 19TH &
20TH CENTURY  3
HIST 373  SOCIAL AND POLITICAL THOUGHT IN 19TH
CENTURY EUROPE  3
HIST 374  JEWISH HISTORY, 1500-1948  3
HIST 375  EUROPEAN ROMANTICISM, 1750-1850  3
HIST 376  MODERN SLAVERY AND HUMAN
TRAFFICKING: GLOBAL AND LOCAL  3
HIST 377  THE ARAB-ISRAELI CONFLICT  3
HIST 378  ISLAM AND THE WEST  3
HIST 379  MULTICULTURAL EUROPE, 1400-1700  3
HIST 380  WESTERN EUROPEAN WELFARE STATE,
1880-1980: ORIGINS, CONSOLIDATIONS,
CRISIS  3
HIST 381  FOUR MODERN REVOLUTIONS: 1776, 1789,
1917, 1989  3
HIST 382  TOPICS IN MODERN GERMAN HISTORY:
NAZISM AND THE HOLOCAUST  3
HIST 383  THE SECOND WORLD WAR: A POLITICAL
HISTORY  3

United States Courses

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<td>HIST 111</td>
<td>RED, WHITE AND BLACK IN EARLY AMERICA CREATING RACIAL IDENTITIES IN THE ERA OF THE AMERICAN REVOLUTION</td>
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<td>HIST 117</td>
<td>EARLY AMERICA</td>
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<tr>
<td>HIST 118</td>
<td>THE UNITED STATES, 1848 TO THE PRESENT</td>
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<td>HIST 190</td>
<td>OCEANS IN WORLD HISTORY</td>
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<tr>
<td>HIST 215</td>
<td>BLACKS IN THE AMERICAS</td>
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<tr>
<td>HIST 216</td>
<td>BLACK LIFE IN THE NINETEENTH-CENTURY UNITED STATES</td>
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<tr>
<td>HIST 241 / SWGS 234</td>
<td>U.S. WOMEN'S HISTORY I: COLONIAL BEGINNINGS TO THE CIVIL WAR</td>
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<tr>
<td>HIST 242 / SWGS 235</td>
<td>U.S. WOMEN'S HISTORY II: CIVIL WAR TO THE PRESENT</td>
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<tr>
<td>HIST 246</td>
<td>AMERICAN CIVIL WAR ERA</td>
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<tr>
<td>HIST 266</td>
<td>SLAVERY AND THE FOUNDING FATHERS</td>
<td>3</td>
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<tr>
<td>HIST 268</td>
<td>MODERN SLAVERY AND HUMAN TRAFFICKING</td>
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<tr>
<td>HIST 291</td>
<td>20TH CENTURY AMERICAN PRESIDENTS</td>
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<td>HIST 295</td>
<td>THE AMERICAN SOUTH</td>
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<tr>
<td>HIST 315</td>
<td>BLACKS IN THE AMERICAS</td>
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Afric, Asia, Latin America, Middle East Courses

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<td>OCEANS IN WORLD HISTORY</td>
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<td>HIST 205 / MDEM 205</td>
<td>MEDIEVAL MEDITERRANEAN WORLD</td>
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<td>HIST 215</td>
<td>BLACKS IN THE AMERICAS</td>
<td>3</td>
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<tr>
<td>HIST 218 / ASIA 218 / FILM 218</td>
<td>HISTORY THROUGH FILM IN EAST AND NORTH EAST ASIA</td>
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<td>HIST 226</td>
<td>COLONIAL SPANISH AMERICA</td>
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<td>HIST 227</td>
<td>LATIN AMERICAN CULTURAL TRADITIONS</td>
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<td>HIST 229</td>
<td>HISTORY OF SOUTH AFRICA</td>
<td>3</td>
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<td>HIST 251 / LASR 251</td>
<td>CONTINUITIES AND CHANGES IN BRAZILIAN HISTORY</td>
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<td>HIST 266</td>
<td>SLAVERY AND THE FOUNDING FATHERS</td>
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<td>MODERN SLAVERY AND HUMAN TRAFFICKING</td>
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<td>BLACKS IN THE AMERICAS</td>
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<td>POVERTY AND SOCIAL JUSTICE IN LATIN AMERICA</td>
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<td>HIST 329 /</td>
<td>STREETS AND URBAN LIFE: PARIS TO ISTANBUL</td>
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<td>HART 329</td>
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<td>HIST 330</td>
<td>ATLANTIC SLAVE TRADE AND THE ORIGINS OF AFRO AMERICA</td>
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<td>HIST 338 /</td>
<td>19TH CENTURY WOMEN'S NARRATIVES</td>
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<td>SWGS 338</td>
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<td>HIST 352</td>
<td>HISTORY OF THE COLD WAR</td>
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<td>HIST 366 /</td>
<td>RIO DE JANEIRO: A SOCIAL AND ARCHITECTURAL HISTORY</td>
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<td>MODERN ARAB HISTORY</td>
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<td>HIST 384 /</td>
<td>MODERN GIRL AND ASIA IN THE WORLD</td>
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<td>ASIA 328 /</td>
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<td>SWGS 384</td>
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<tr>
<td>HIST 389 /</td>
<td>INDIAN OCEAN WORLD HISTORY</td>
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<td>ASIA 389</td>
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<td>HIST 402</td>
<td>CHINESE WOMEN THROUGH TIME</td>
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<td>HIST 424</td>
<td>RAJ AND RESISTANCE</td>
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<td>HIST 428</td>
<td>MODERN SLAVERY AND HUMAN TRAFFICKING: GLOBAL AND LOCAL</td>
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<td>HIST 433</td>
<td>THE ARAB-ISRAELI CONFLICT</td>
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<td>AMERICA IN THE MIDDLE EAST</td>
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<td>TOPICS IN LATIN AMERICAN HISTORY</td>
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<td>RULING HINDUSTAN: THE TIMURID-MUGHAL KINGS OF INDIA</td>
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<td>COMPARATIVE MODERNIZATION OF CHINA AND JAPAN</td>
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### Transnational, Comparative, World Courses

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<td>MEDIEVAL CIVILIZATIONS</td>
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<td>THE ATLANTIC WORLD: ORIGINS TO THE AGE OF REVOLUTION</td>
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<td>OCEANS IN WORLD HISTORY</td>
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<td>HIST 200</td>
<td>ANCIENT EMPIRES: ORIGINS OF WESTERN CIVILIZATIONS</td>
<td>3</td>
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<td>HIST 204</td>
<td>THE IDEA OF AFRICA</td>
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<td>MEDIEVAL MEDITERRANEAN WORLD</td>
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### Policies for the BA Degree with a Major in History

#### Transfer Credit

For Rice University’s policy regarding transfer credit, see [Transfer Credit](p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [https://oaa.rice.edu](https://oaa.rice.edu). Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

#### Departmental Transfer Credit Guidelines

Students pursuing the major in History should be aware of the following departmental transfer credit guidelines:

- No more than 4 courses (12 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the major.
- Requests for transfer credit will be considered by the departmental Director of Undergraduate Studies (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.
• Courses taken at another university must be equivalent in required reading, writing, research and testing, as well as classroom hours, of a Rice history course. Regarding subject matter, however, there does not have to be an equivalent course in the Rice history course offerings, unless the student requires distribution credit.

• Rice students planning to study at a foreign university must also obtain pre-approval from the Rice Study Abroad Office.

• AP, IB or A-level credit (and the corresponding Rice transfer credit) may not be used to satisfy any requirements for the history major (even though a student may be able to use the articulated credit hours toward general university requirements).

• The Department of History does not accept online courses for transfer credit.

Distribution Credit Information
The determination of distribution eligibility is done as part of the new course creation process (https://registrar.rice.edu/facstaff/courseprocess/). As part of an annual roll call (https://registrar.rice.edu/facstaff/distribution_credit/) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean's Offices of each of the academic schools.

Faculty and leadership in the academic schools are responsible for ensuring that the courses identified as distribution-eligible meet the criteria as set in the General Announcements (p. 26). Students are responsible for ensuring that they meet graduation requirements (p. 26) by completing coursework designated as distribution at the time of course registration.

Distribution courses from History (HIST) are generally 100- and 200-level introductory courses that do not presuppose work in History or the Humanities.

Additional Information
For additional information, please see the History website: https://history.rice.edu/.

Opportunities for the BA Degree with a Major in History

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Departmental Honors Program in History
Qualified undergraduates may enroll for 6 semester credit hours of directed honors research and writing, completing an honors thesis in their senior year (these 6 credit hours are in addition to the 30 hours required for the major). Accepted students enroll in HIST 403 for 3 credits in the Fall of their senior year and in HIST 404 for 3 credits in the Spring of their senior year. Application to the program is required. For current procedures, see the department website (http://history.rice.edu/). Financial assistance is available to conduct related research during the summer between the junior and senior year for all students accepted into the Honors Program.

Research Assistantships
The Department of History offers several paid Research Assistantships to give undergraduate students the opportunity to work closely with a faculty member and exercise their historical research skills.

Ira and Patricia Gruber Fund for Undergraduate Research
This fund supports, among other things, independent research projects carried out by history majors under the supervision of department faculty. Typical forms of support include reimbursements or advances for travel to an archive to do research or to a conference to present a paper.

Charles Garside, Jr. Prize in History
Awarded to a 'distinguished student of history to honor the memory of Charles Garside, Jr.,' a member of the Rice faculty from 1966-1987. The prize offers the winners time to broaden and deepen their education through travel and reflection.

Additional Information
For additional information, please see the History website: https://history.rice.edu/.

See https://humanities.rice.edu/student-life (https://humanities.rice.edu/student-life/) for tables of fellowships, prizes, and internships/practica that may be relevant to this major.

Bachelor of Arts (BA) Degree with a Major in History and a Major Concentration in History: International Concentration

Program Learning Outcomes for the BA Degree with a Major in History and an International Major Concentration

Upon completing the BA degree with a major in History, students will be able to:

1. Identify and connect the ways that people, ideas, and technologies have circulated across the range of geographic regions and historical periods.

2. Apply historical questions to concrete cases and demonstrate analytical skills through the use of historical evidence, rigorous logic, and persuasive argument.

3. Exhibit a solid understanding of historical methodologies and research skills, including the careful and creative use of primary and secondary sources that are read critically and weighed carefully as historical evidence.

4. Demonstrate an awareness of the scholarly literature on a given research topic and identify the position of their research within that literature.

5. Exhibit mastery in writing persuasive and analytical prose following the conventions of the discipline.

Additionally, upon completing the BA degree with a major in History and a major concentration in History: International Concentration, students will be able to:
1. Experience a different language and culture in situ.
2. Demonstrate the ability to use a second language for research.

Requirements for the BA Degree with a Major in History

For general university requirements, see Graduation Requirements (p. 26).

Students pursuing the BA degree with a major in History must complete:

- A minimum of 10 courses (30 credit hours) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 6 courses (18 credit hours) taken at the 300-level or above.
- A maximum of 4 courses (12 credit hours) from study abroad or transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.
- A minimum of 2 courses (6 credit hours) from departmental course offerings of 400-level seminars.

In addition to the degree requirements, students following the major concentration in History: International Concentration will be required to:

- Complete a signification study abroad experience (such as those recommended by Rice’s Office of International Programs).
- Demonstrate research competence in a language other than English.

Students may demonstrate language competency in two ways. Students who pass a departmental language exam will be certified as having met the language requirement. Students who complete a history honors thesis or a 400-level seminar paper that draws on a significant number of non-English secondary or primary sources will also be certified as having met the stipulation.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier.) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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Degree Requirements

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<tr>
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<td>Select at least 1 course from at least 4 of the 5 following fields (see course lists below):</td>
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Premodern Courses

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<td>THE AGE OF ATILLA THE HUN</td>
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<td>ISLAM AND THE WEST</td>
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<td>AMERICA IN THE MIDDLE EAST</td>
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<td>RULING HINDUSTAN: THE TIMURID-MUGHAL KINGS OF INDIA</td>
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**Europe Courses**

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<td>BRITAIN FROM THE INDUSTRIAL REVOLUTION TO THE PRESENT</td>
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**United States Courses**

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<td>HIST 117</td>
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<td>THE UNITED STATES, 1848 TO THE PRESENT</td>
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<td>OCEANS IN WORLD HISTORY</td>
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<td>HIST 215</td>
<td>BLACKS IN THE AMERICAS</td>
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<td>AMERICAN CIVIL WAR ERA</td>
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<td>SLAVERY AND THE FOUNDING FATHERS</td>
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<td>20TH CENTURY AMERICAN PRESIDENTS</td>
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<td>ATLANTIC SLAVE TRADE AND THE ORIGINS OF AFRO AMERICA</td>
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<td>BLACK AMERICA: FROM NADIR THROUGH THE GREAT DEPRESSION</td>
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<td>AMERICAN RADICALS AND REFORMERS</td>
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**Africa, Asia, Latin America, Middle East Courses**

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<td>HISTORY OF SOUTH AFRICA</td>
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**Transnational, Comparative, World Courses**

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<td>ANCIENT EMPIRES: ORIGINS OF WESTERN CIVILIZATIONS</td>
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Bachelor of Arts (BA) Degree with a Major in History and a Major Concentration in History: International Concentration

Policies for the BA Degree with a Major in History and an International Major Concentration

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the major in History should be aware of the following departmental transfer credit guidelines:

- No more than 4 courses (12 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the major.
- Requests for transfer credit will be considered by the departmental Director of Undergraduate Studies (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.
- Courses taken at another university must be equivalent in required reading, writing, research and testing, as well as classroom hours, of a Rice history course. Regarding subject matter, however, there does not have to be an equivalent course in the Rice history course offerings, unless the student requires distribution credit.
- Rice students planning to study at a foreign university must also obtain pre-approval from the Rice Study Abroad Office.
- AP, IB or A-level credit (and the corresponding Rice transfer credit) may not be used to satisfy any requirements for the history major (even though a student may be able to use the articulated credit hours toward general university requirements).
- The Department of History does not accept online courses for transfer credit.

Distribution Credit Information
The determination of distribution eligibility is done as part of the new course creation process (https://registrar.rice.edu/facstaff/courseprocess/). As part of an annual roll call (https://registrar.rice.edu/facstaff/distribution_credit/) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean’s Offices of each of the academic schools.

Faculty and leadership in the academic schools are responsible for ensuring that the courses identified as distribution-eligible meet the criteria as set in the General Announcements (p. 26). Students are responsible for ensuring that they meet graduation requirements (p. 26) by completing coursework designated as distribution at the time of course registration.

Distribution courses from History (HIST) are generally 100- and 200-level introductory courses that do not presuppose work in History or the Humanities.

Additional Information
For additional information, please see the History website: https://history.rice.edu/.

Opportunities for the BA Degree with a Major in History and an International Major Concentration

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Departmental Honors Program in History
Qualified undergraduates may enroll for 6 semester credit hours of directed honors research and writing, completing an honors thesis in their senior year (these 6 credit hours are in addition to the 30 hours required for the major). Accepted students enroll in HIST 403 for 3 credits in the Fall of their senior year and in HIST 404 for 3 credits in the Spring of their senior year. Application to the program is required. For current procedures, see the department website (http://history.rice.edu/). Financial assistance is available to conduct related research during the summer between the junior and senior year for all students accepted into the Honors Program.

Research Assistantships
The Department of History offers several paid Research Assistantships to give undergraduate students the opportunity to work closely with a faculty member and exercise their historical research skills.

Ira and Patricia Gruber Fund for Undergraduate Research
This fund supports, among other things, independent research projects carried out by history majors under the supervision of department faculty.
Typical forms of support include reimbursements or advances for travel to an archive to do research or to a conference to present a paper.

**Charles Garside, Jr. Prize in History**
Awarded to a distinguished student of history to honor the memory of Charles Garside, Jr., a member of the Rice faculty from 1966-1987. The prize offers the winners time to broaden and deepen their education through travel and reflection.

**Additional Information**
For additional information, please see the History website: [https://history.rice.edu/](https://history.rice.edu/).

See [https://humanities.rice.edu/student-life](https://humanities.rice.edu/student-life/) for tables of fellowships, prizes, and internships/practica that may be relevant to this major.

## Doctor of Philosophy (PhD) Degree in the field of History

### Program Learning Outcomes for the MA and PhD Degrees in the field of History

Upon completing the MA and PhD degrees in the field of History, students will be able to:

1. Develop analytic skills in critical thinking and writing that are of value both inside and outside the academy.
2. Conduct original research that makes a contribution to the field.
3. Be equipped to enter the historical profession as academics who can teach, present work to peers, and communicate effectively with the public.
4. Acquire expertise in their major field of historical inquiry and learn the skills necessary to write historical monographs.

### Requirements for the MA and PhD Degrees in the field of History

#### MA Degree Program

The MA degree is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). The department gives priority to applicants for the PhD. Completion of the MA degree usually takes two years; no more than three years may elapse between graduate admission and the completion of the MA degree unless the department graduate committee approves an extension. Students pursuing the MA degree in the field of History must complete the degree in one of the following three ways:

1. completion of one year of coursework (18 credit hours) and a thesis written and defended in an oral examination during the second year, or
2. completion of two years of coursework (36 credit hours), normally including at least two seminar research papers, or
3. for students continuing to the PhD, completion of all requirements for PhD candidacy, including written and oral examinations.

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</table>

#### PhD Degree Program

For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Doctoral candidates must prepare themselves in three fields of history: two in their major area of specialization, and a third in an area not included in the first two fields. Students who wish to pursue a third field in an area outside the department should petition the graduate committee by the end of their second semester.

The requirements for completing the degree will be administered as flexibly as possible within the bounds of general university requirements (p. 49). These requirements state that the PhD degree will be awarded after successful completion of at least 90 semester hours of advanced study and an original investigation reported in an approved thesis. The student may apply for formal admission to candidacy for the PhD degree after passing the qualifying exam.

Students pursuing the PhD degree in the field of History must:

- Prepare themselves thoroughly in three examination fields.
- Take 8 graduate seminars, including HIST 575.
- Pass an examination in the principal language of research and in one additional language. If the principal language of research is English, candidates must pass an examination in one other language.
- Perform satisfactorily on written and oral examinations.
- Complete a thesis presenting the results of original research.
- Defend the thesis in a public oral examination.

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tr>
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<td>90</td>
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</table>

## Policies for the PhD Degree in the field of History

### Department of History Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Department of History publishes a graduate program handbook, which can be found here: [https://gradhandbooks.rice.edu/2019_20/History_Graduate_Handbook.pdf](https://gradhandbooks.rice.edu/2019_20/History_Graduate_Handbook.pdf)

### Admission

The Rice University graduate program in history is primarily a PhD program. Students who have a BA in history (or its equivalent) are eligible to apply to the PhD program. Although many successful candidates to the PhD program have an MA or other advanced degree, advanced study is not a requirement for admission. Graduate study is offered in these fields: U.S. history, including U.S. and the World topics; Atlantic
World history; Latin American history; and the history of the Middle East. These areas are supplemented by an interconnected range of supporting courses and fields, including early modern and modern colonial history, African history, Asian history, European history, world history, gender history, transnational history, economic history, and the history of empires. Further information is available at the department website (http://history.rice.edu/). For general university requirements, see Graduate Degrees (p. 49).

Financial Support
The department awards graduate tuition waivers and fellowship stipends, within the limits of available funds, to qualified PhD candidates with demonstrated ability. All graduate students in the history department are expected to participate in the professional activities of the department as part of their training. These include, but are not limited to, assisting with the Journal of Southern History or serving as research assistants or teaching assistants for department members. As far as possible, these assignments are kept consistent with the areas of interests of the students.

Additional Information
For additional information, please see the History website: https://history.rice.edu/.

Opportunities for the PhD Degree in the field of History

Information regarding resources and opportunities for the Department of History graduate students, including conference and research travels support, as well as additional funding, can be found on the History website: https://history.rice.edu/graduate (https://history.rice.edu/graduate/).

Teaching Opportunities
Avenues for teaching experience at Rice for graduate students include:

The Program in Writing and Communication (PWC) (http://pwc.rice.edu/) hires a number of graduate students each semester for instructor and teaching assistant positions (http://pwc.rice.edu/graduate-students-postdocs-2/) for the University’s First-Year Writing Intensive Seminars (FWIS).

The Center for Writing, Oral, and Visual Communication (CWOVC (https://cwovc.rice.edu/home/)) hires student consultants enthusiastic about working with Rice students to improve communication skills. The annual job notice is posted in late March and training is provided to successful applicants.

A competitive, sixth-year fellowship serving as the Boles Editing Fellow for the Journal of Southern History is also available.

Additional Information
For additional information, please see the History website: https://history.rice.edu/.

See https://humanities.rice.edu/student-life (https://humanities.rice.edu/student-life/) for tables of fellowships, prizes, and internships/practica that may be relevant to this degree.

Dual Doctor of Philosophy (PhD) Degree in the field of History, with Instituto Mora, in Mexico

Program Learning Outcomes for the Dual PhD Degree in the field of History, with Instituto Mora, in Mexico

Upon completing the Dual PhD program in the field of History with Instituto Mora, students will be able to:

1. Write and present orally at the level expected for PhD students at Instituto Mora and Rice.
2. Be widely read in historical literature relevant to their research topic in English and Spanish.
3. Work in archives and libraries in the United States and Mexico.
4. Do original research in relevant primary sources in both languages.
5. Understand two distinct academic traditions and learn from both.

Requirements for the Dual PhD Degree in the field of History, with Instituto Mora, in Mexico

For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55).

Rice will award the PhD Degree in the field of History to Instituto Mora students who have successfully completed the following requirements:

1. Passed their comprehensive examinations and been admitted to candidacy at Instituto Mora.
2. Completed 6 graduate level courses at Rice, of which one must be HIST 575, one must be a History Graduate Research seminar, and one must be a History Graduate Reading seminar.
3. Written a thesis in the language of their home institution and a summary in English that is equivalent in style, scholarship, and length to an academic journal article.
4. Successfully presented the thesis, and the summary, in English, to a faculty panel at Rice.
5. Successfully defended the thesis at Instituto Mora.

The Instituto Mora will award the Doctorado en Historia Moderna y Contemporánea to Rice students who have successfully completed the following requirements:

1. Passed their comprehensive examinations and been admitted to candidacy at Rice.
2. Completed 8 graduate-level courses at Mora, of which must include Teoría de la Historia; Seminarios de tesis I and II; 2 courses chosen from any of these categories: Teoría Antropológica, Teoría Social, Teoría del Derecho, or Teoría Económica, and 3 additional graduate seminars.
3. Written a thesis in the language of their home institution and a summary in Spanish that is equivalent in style, scholarship and length to an academic journal article.
4. Successfully defended the doctoral thesis at Rice.
Policies for the Dual PhD Degree in the field of History, with Instituto Mora, in Mexico

Department of History Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Department of History publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/History_Graduate_Handbook.pdf

Additional Information

For additional information, please see the History website: https://history.rice.edu/.

Opportunities for the Dual PhD Degree in the field of History, with Instituto Mora, in Mexico

Additional Information

For additional information, please see the History website: https://history.rice.edu/.

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this degree.

Dual Doctor of Philosophy (PhD) Degree in the field of History, with Universidade Estadual de Campinas (UNICAMP), in Brazil

Program Learning Outcomes for the Dual PhD Degree in the field of History, with Universidade Estadual de Campinas (UNICAMP), in Brazil

Upon completing the Dual PhD program in the field of History with the Universidade Estadual de Campinas (UNICAMP), students will be able to:

1. Demonstrate oral and written fluency at the graduate level in the two target languages.
2. Demonstrate knowledge of the historiography on their research topic(s) in the two target languages.
3. Demonstrate the ability to work with archives and libraries abroad; and demonstrate the ability to do research in the primary sources in the two target languages.
4. Demonstrate the ability to work with two advisors showing an understanding of two distinct academic communities.

Requirements for the Dual PhD Degree in the field of History, with Universidade Estadual de Campinas (UNICAMP), in Brazil

For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55).

Rice will award a PhD degree in the field of History to UNICAMP students who have successfully completed the following requirements:

1. Passed their comprehensive examinations and been admitted to candidacy at UNICAMP.
2. Completed 6 graduate-level courses at Rice, which one must be HIST 575, one must be a History research seminar, and one must be a History reading seminar. Students must be enrolled in at least 9 credit hours per semester while at Rice University.
3. Written a thesis in the language of their home institution and a summary in English that is equivalent in style, scholarship, and length to an academic journal article.
4. Successfully presented the thesis and the summary in English to a faculty panel at Rice.
5. Successfully defended the thesis at UNICAMP.

UNICAMP will award the Doutor em História to Rice students who have successfully completed the following requirements:

1. Passed their comprehensive examinations and been admitted to candidacy at Rice.
2. Completed 2 semesters of coursework at UNICAMP, including all required courses for UNICAMP PhD students in History.
3. Written a dissertation in the language of their home institution and a summary in Portuguese, that is equivalent in style, scholarship, and length to an academic journal article.
4. Successfully presented the thesis, and the summary, in Portuguese, to a faculty panel at UNICAMP.
5. Successfully defended the thesis at Rice.

Summary

<table>
<thead>
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<th>Credit Hours</th>
</tr>
</thead>
<tbody>
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</table>

Policies for the Dual PhD Degree in the field of History, with Universidade Estadual de Campinas (UNICAMP), in Brazil

Department of History Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Department of History publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/History_Graduate_Handbook.pdf
Human-Computer Interaction and Human Factors

Contact Information
Psychological Sciences
https://psychology.rice.edu/
464 Sewall Hall
713-348-4856

Michael D. Byrne
Professor and Program Director
byrne@rice.edu

The Rice University Department of Psychological Sciences offers the Master of Human-Computer Interaction and Human Factors degree, which examines the scientific consideration of people in the design of products, services, and systems.

Human Factors is responsible for ensuring that systems meet the needs and expectations of the user, and more importantly, conform to the capabilities and limitations of those users. Human Factors can increase the ability of users to use effectively complex systems and enhance the safety of those systems. Human Factors focuses much of its efforts to the study of complex human-machine interfaces such as automobile controls, aircraft cockpits, medical devices, and many others.

Human-Computer Interaction is the subarea within Human Factors particularly concerned with computer systems. Human-Computer Interaction and Human Factors is particularly concerned with issues of usability, that is, how the design of technological systems impacts how efficiently and effectively people can use those systems.

Human-Computer Interaction and Human Factors does not currently offer an academic program at the undergraduate level.

Master's Program

- Master of Human-Computer Interaction and Human Factors (MHCIHF) Degree (p. 478)
## Requirements for the MHCIHF Degree

The MHCIHF degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MHCIHF degree must complete:

- A minimum of 11 courses (37 credit hours) to satisfy degree requirements.
- A minimum of 37 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- An internship. All students in the Master’s program are required to intern in the summer between their two years of study. That internship is reflected in the student’s course of study as PSYC 595, and students should register for that summer course. Faculty in the HCI and HF area have relationships with multiple local and national companies and government labs that would be suitable. Students sponsored by their employer may return to that company for the summer internship, provided that the work was classified as human factors-related.
- A capstone design course. (This is to be a project course, supervised jointly by all the HCI and HF faculty, and should be taken in the second semester of the second year.)
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 3.00 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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### Degree Requirements

#### Core Requirements

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<tr>
<th>Code</th>
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<tr>
<td>PSYC 502 / STAT 509</td>
<td>ADVANCED PSYCHOLOGICAL STATISTICS I</td>
<td>4</td>
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<tr>
<td>PSYC 503 / STAT 510</td>
<td>ADVANCED PSYCHOLOGICAL STATISTICS II</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 520</td>
<td>FOUNDATIONS OF COGNITIVE PSYCHOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 531</td>
<td>HF/HCI RESEARCH SEMINAR (4 semesters required, 1st semester)</td>
<td>1</td>
</tr>
<tr>
<td>PSYC 531</td>
<td>HF/HCI RESEARCH SEMINAR (4 semesters required, 2nd semester)</td>
<td>1</td>
</tr>
<tr>
<td>PSYC 531</td>
<td>HF/HCI RESEARCH SEMINAR (4 semesters required, 3rd semester)</td>
<td>1</td>
</tr>
<tr>
<td>PSYC 531</td>
<td>HF/HCI RESEARCH SEMINAR (4 semesters required, 4th semester)</td>
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#### Internship Requirement

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<tbody>
<tr>
<td>PSYC 595</td>
<td>HUMAN-COMPUTER INTERACTION AND HUMAN FACTORS PROFESSIONAL MASTER’S INTERNSHIP</td>
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</tbody>
</table>

#### Elective Requirements

Select 2 courses from the following:

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<thead>
<tr>
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<th>Title</th>
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<tbody>
<tr>
<td>PSYC 504</td>
<td>COMPUTER APPLICATIONS IN PSYCHOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 522</td>
<td>INFORMATION PROCESSING AND ATTENTION</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 524</td>
<td>MEMORY</td>
<td>3</td>
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<tr>
<td>PSYC 525</td>
<td>PSYCHOLINGUISTICS</td>
<td>3</td>
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<tr>
<td>PSYC 527</td>
<td>REASONING, DECISION MAKING, PROBLEM SOLVING</td>
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<td>PSYC 530</td>
<td>FOUNDATIONS OF I/O PSYCHOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 543</td>
<td>COMPUTATIONAL MODELING OF COGNITIVE PROCESSES</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 581</td>
<td>VISION SCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 601</td>
<td>MULTIVARIATE STATISTICS</td>
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<td>PSYC 602</td>
<td>PSYCHOMETRICS</td>
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<td>PSYC 630</td>
<td>ADVANCED TOPICS IN I/O</td>
<td>3</td>
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<tr>
<td>PSYC 634</td>
<td>PERSONNEL PSYCHOLOGY</td>
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<tr>
<td>PSYC 640</td>
<td>TOPICS IN HUMAN-COMPUTER INTERACTION</td>
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<td>PSYC 662</td>
<td>NON-TRADITIONAL INTERFACES</td>
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<td>PSYC 663</td>
<td>MEDICAL HUMAN FACTORS</td>
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<td>PSYC 664</td>
<td>USABILITY ASSESSMENT</td>
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#### Capstone Requirement

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<tr>
<td>PSYC 600</td>
<td>HCI &amp; HF PROFESSIONAL MASTER’S CAPSTONE PROJECT</td>
<td>6</td>
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</table>

**Total Credit Hours** 37

### Footnotes and Additional Information

1. All students in the Master’s program are required to intern in the summer between their two years of study. That internship is reflected in the student’s course of study as PSYC 595, and students should register for that summer course. Faculty in the HCI and HF area have relationships with multiple local and national companies and government labs that would be suitable. Students sponsored by their employer may return to that company for the summer internship, provided that the work was classified as human factors-related.

2. The capstone requirement, PSYC 600, is to be a project course, supervised jointly by all the HCI and HF faculty, and should be taken in the second semester of the second year.

### Proposed Plan-of-Study

The following plan-of-study represents the lockstep five-semester sequence in which students pursuing the MHCIHF degree complete the required coursework.
Humanities Research Center

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<th>Course</th>
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<td>PSYC 531</td>
<td>HF/HCI RESEARCH SEMINAR</td>
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</tr>
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<td>PSYC 541</td>
<td>HUMAN-COMPUTER INTERACTION</td>
<td>3</td>
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<tr>
<td>PSYC 609</td>
<td>METHODS IN HUMAN-COMPUTER INTERACTION</td>
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<td></td>
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<tr>
<td>2nd Semester</td>
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<td>PSYC 531</td>
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<td>PSYC 503 / STAT 510</td>
<td>ADVANCED PSYCHOLOGICAL STATISTICS II</td>
<td>3</td>
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<td>PSYC 540</td>
<td>FOUNDATIONS OF ENGINEERING PSYCHOLOGY</td>
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<td>PSYC 561</td>
<td>TEACHING IN PSYCHOLOGY</td>
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<td></td>
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<td>3rd Semester</td>
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<td>PSYC 595</td>
<td>HUMAN-COMPUTER INTERACTION AND HUMAN FACTORS PROFESSIONAL MASTER'S INTERNSHIP</td>
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<tr>
<td></td>
<td>Credit Hours</td>
<td>1</td>
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<tr>
<td>4th Semester</td>
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<tr>
<td>PSYC 531</td>
<td>HF/HCI RESEARCH SEMINAR</td>
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<tr>
<td>PSYC 520</td>
<td>FOUNDATIONS OF COGNITIVE PSYCHOLOGY</td>
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<td>Elective one</td>
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<td></td>
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<tr>
<td>5th Semester</td>
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<td>PSYC 531</td>
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</tr>
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<td>Elective two</td>
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<tr>
<td>PSYC 600</td>
<td>HCI &amp; HF PROFESSIONAL MASTER'S CAPSTONE PROJECT</td>
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<tr>
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<td>37</td>
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</table>

Footnotes and Additional Information
1 All students in the Master’s program are required to intern in the summer between their two years of study. That internship is reflected in the student's course of study as PSYC 595, and students should register for that summer course. Faculty in the HCI and HF area have relationships with multiple local and national companies and government labs that would be suitable. Students sponsored by their employer may return to that company for the summer internship, provided that the work was classified as human factors-related.

2 The capstone requirement, PSYC 600, is to be a project course, supervised jointly by all the HCI and HF faculty.

Policies for the MHCIHF Degree

Department of Psychological Sciences Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Psychological Sciences, the home department for the Human-Computer Interaction and Human Factors program, publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Psychology_MHCIHF_Graduate_Handbook.pdf

Admission

Admission to graduate study in Human-Computer Interaction and Human Factors is open to qualified students holding a BS or a BA degree in a quantitative field from an accredited institution. The MHCIHF degree governing committee will evaluate the previous academic record and credentials of each applicant individually, and will make all admissions decisions.

Financial Aid

No financial aid is available from Rice University or the Psychological Sciences Department for students in the MHCIHF degree program.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines

Students pursuing the MHCIHF degree should be aware of the following program transfer credit guidelines:

- No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing at Rice may apply towards the degree. Transferred courses must be comparable in content and depth to the corresponding course at Rice, and must not have counted toward another degree.
- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

Additional Information

For additional information, please see the Psychological Sciences website: https://psychology.rice.edu/.

Opportunities for the MHCIHF Degree

Additional Information

For additional information, please see the Psychological Sciences website: https://psychology.rice.edu/.

Humanities Research Center

Contact Information

Humanities Research Center
https://hrc.rice.edu/
306 Herring Hall
713-348-4227
Farès el-Dahdah
Director
fdahdah@rice.edu

The Humanities Research Center (HRC) identifies, encourages, and funds research projects by faculty, visiting scholars, graduate, and undergraduate students in the School of Humanities and beyond. This
involves fostering scholarly work, facilitating research between the School of Humanities and other areas of Rice University, and leading institutional change by partnering with other foundations, centers, research institutions, and universities. Independent initiatives are also taken by the HRC in order to incubate ideas and detect disciplinary changes that shape the future of the university.

The HRC has recently launched initiatives in Spatial Studies and Public Humanities with focus areas in Cultural Heritage, Medical Humanities, critical platform studies, and Post-Harvey Houston. The Minor in Medical Humanities examines medicine through humanistic disciplines such as history, ethics, religion, literature, cultural anthropology, media studies, and the visual and dramatic arts. The Minor in Museums and Cultural Heritage examines the history, politics, materiality, and aesthetics of museum curation practices, technologies of cultural preservation and dissemination, and the place of tangible and intangible collective heritage in human social life. Other ongoing programs include research project funding, visiting scholarships, seminars, courses, conferences, workshops, lecture series, practica, exhibitions, performances, and film series.

Minor

- Minor in Medical Humanities (p. 565)
- Minor in Museums and Cultural Heritage (p. 576)

The Humanities Research Center does not currently offer an academic program at the graduate level.

Director

Farès el-Dahdah

Director, Grants and Initiatives

Melissa Bailar

Professor

Farès el-Dahdah

Lecturer

John Mulligan

Adjunct Lecturer

Melissa Bailar

Postdoctoral Fellows

Joseph Carson
Elvan Cobb
Anna Giustina
Andrew Lee
Michael Miller

Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule

- Course offerings/subject code: HURC

Center Description and Code

- Humanities Research Center: HURC

Undergraduate Minor Description and Code

- Minor in Medical Humanities: MDHM
- Minor in Museums and Cultural Heritage: MUCH

CIP Code and Description

- MDHM Minor: CIP Code/Title: 30.2701 - Human Biology
- MUCH Minor: CIP Code/Title: 30.1401 - Museology/Museum Studies

1 Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Industrial Engineering

Contact Information

Industrial Engineering
https://mie.rice.edu
2036 Duncan Hall
713-348-4178

Andrew J. Schaefer
Program Director
andrew.schaefer@rice.edu

Eylem Tekin
Program Director
eylem.tekin@rice.edu

The Master of Industrial Engineering degree is a graduate degree program administered by the George R. Brown School of Engineering, with the participation of the Rice University Departments of Mechanical Engineering and Statistics, and the Rice Center for Operations Research.

The program is designed to explore modern industrial systems, which arise in fields such as manufacturing, services, supply chain management, energy, transportation and healthcare. Analyzing and optimizing their performance is very challenging; for example, the number of ways that Federal Express can route its vehicles vastly exceeds the number of atoms in the universe. These analyses are crucial; their financial impact typically exceeds the profit margins in many industries, such as transportation and retailing.

To meet these challenges, the Master of Industrial Engineering degree emphasizes improving the quality and reliability of complex systems. It provides students with a deep set of analytical and engineering skills to make data-driven decision needed in every major economic sector. Graduates will help industry, governments, and non-profits improve efficiency in changing and uncertain environments.

Industrial Engineering does not currently offer an academic program at the undergraduate level.

Master's Program

- Master of Industrial Engineering (MIE) Degree (p. 482)
Coordinated Program
• Master of Industrial Engineering (MIE) Degree / Master of Business Administration (MBA) Degree (p. 484)

Directors
Andrew J. Schaefer
Eylem Tekin

Professors
Michael D. Byrne, Psychological Sciences
Patricia DeLucia, Psychological Sciences
Fathi Ghorbel, Mechanical Engineering
Illya V. Hicks, Computational & Applied Mathematics
C. Fred Higgs III, Mechanical Engineering
Marcia K. O'Malley, Mechanical Engineering
Amit Pazgal, Business
Eduardo Salas, Psychological Sciences
Andrew J. Schaefer, Computational & Applied Mathematics
Laura Schaefer, Mechanical Engineering
Pol D. Spanos, Mechanical Engineering
Richard A. Tapia, Computational & Applied Mathematics
Yin Zhang, Computational & Applied Mathematics

Associate Professors
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Philip A. Ernst, Statistics
Philip T. Kortum, Psychological Sciences

Assistant Professors
Matthew Brake, Mechanical Engineering
Pedram Hassanzadeh, Mechanical Engineering
Joseph Huchette, Computational and Applied Mathematics
Santiago Segarra, Electrical and Computer Engineering

Assistant Teaching Professor
Eleazar Marquez, Mechanical Engineering

Professor in the Practice
John Dobelman, Statistics

Lecturer
Eylem Tekin, Industrial Engineering

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: INDE

Program Description and Code
• Industrial Engineering: INDE

Graduate Degree Description and Code
• Master of Industrial Engineering: MIE

Graduate Degree Program Description and Code
• Degree Program in Industrial Engineering: INDE

CIP Code and Description ¹
• INDE Major/Program: CIP Code/Title: 14.3701 - Operations Research

¹ Classification of Instructional Code/Title: 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Master of Industrial Engineering (MIE) Degree

Program Learning Outcomes for the MIE Degree

Upon completing the MIE degree, students will be able to:
1. Build physical and mathematical models of complex systems that arise in real-world situations.
2. Understand the flow of material from manufacturing to warehouses to customers through physical or mathematical models.
3. Produce data-driven and implementable solutions that improve the efficiency of real-world systems.
4. Communicate the solutions and insights generated by the models to a non-technical audience.

Requirements for the MIE Degree

The MIE degree is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MIE degree must complete:

• A minimum of 11 courses (31 credit hours) to satisfy degree requirements.
• A minimum of 31 credit hours of graduate-level study (coursework at the 500-level or above).
• A minimum of 9 courses (25 credit hours), including the capstone course (INDE 590), must be taken at Rice University.
• A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
• A capstone course (INDE 590), which includes a field report related to one of the following four core requirements in the curriculum: INDE 509, INDE 546, MECH 543, or INDE 572.¹
• A minimum overall GPA of 2.67 or higher in all Rice coursework.
• A minimum GPA of 3.00 or higher in all Rice coursework that satisfies requirements for the non-thesis master's degree.

The Master of Industrial Engineering (MIE) is a non-thesis master's degree intended for students who have completed a 4-year bachelor's program in engineering, or related field, and wish to join the workforce as practicing professionals, rather than pursuing a research-oriented or academic career. It offers preparation in advanced engineering topics in order to enhance an engineer's technical qualifications and increases competitiveness in the job market. The MIE degree program is open to students who have shown academic excellence in their undergraduate studies.
The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

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<thead>
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</thead>
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### Degree Requirements

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<th>Code</th>
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<tbody>
<tr>
<td>INDE 501</td>
<td>FUNDAMENTALS OF INDUSTRIAL ENGINEERING</td>
<td>3</td>
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<tr>
<td>INDE 509</td>
<td>INTRODUCTION TO HUMAN FACTORS ENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td>INDE 545</td>
<td>PRESCRIPTIVE ANALYTICS</td>
<td>3</td>
</tr>
<tr>
<td>INDE 546</td>
<td>COMPUTATIONAL PRESCRIPTIVE ANALYTICS</td>
<td>3</td>
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<tr>
<td>MECH 503</td>
<td>COMPUTER AIDED DESIGN</td>
<td>3</td>
</tr>
<tr>
<td>MECH 543</td>
<td>MANUFACTURING PROCESSES AND SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>INDE 571</td>
<td>PROBABILITY AND STATISTICAL INFERENCE</td>
<td>3</td>
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<tr>
<td>INDE 572</td>
<td>STOCHASTIC PROCESSES AND SIMULATION</td>
<td>3</td>
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</tbody>
</table>

#### Core Requirements

#### Technical Elective Requirements

**Students must complete 2 courses (6 credit hours) from the George R. Brown School of Engineering**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>INDE 590</td>
<td>MASTER'S IN INDUSTRIAL ENGINEERING CAPSTONE EXPERIENCE</td>
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</table>

### Proposed Plan-of-Study

The following plan-of-study represents a lockstep three-semester sequence in which students pursuing the MIE degree complete the required coursework.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>First Year</td>
<td></td>
</tr>
<tr>
<td>INDE 501</td>
<td>FUNDAMENTALS OF INDUSTRIAL ENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td>INDE 545</td>
<td>PRESCRIPTIVE ANALYTICS</td>
<td>3</td>
</tr>
<tr>
<td>INDE 571</td>
<td>PROBABILITY AND STATISTICAL INFERENCE</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>2nd Semester</td>
<td>Credit Hours</td>
</tr>
<tr>
<td>INDE 509</td>
<td>INTRODUCTION TO HUMAN FACTORS ENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td>INDE 546</td>
<td>COMPUTATIONAL PRESCRIPTIVE ANALYTICS</td>
<td>3</td>
</tr>
<tr>
<td>MECH 543</td>
<td>MANUFACTURING PROCESSES AND SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>INDE 572</td>
<td>STOCHASTIC PROCESSES AND SIMULATION</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Second Year</td>
<td>Credit Hours</td>
</tr>
<tr>
<td>INDE 590</td>
<td>MASTER'S IN INDUSTRIAL ENGINEERING CAPSTONE EXPERIENCE</td>
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</tr>
<tr>
<td>MECH 503</td>
<td>COMPUTER AIDED DESIGN</td>
<td>3</td>
</tr>
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<td>Elective One</td>
<td>Technical Elective (Elective One)</td>
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</tr>
<tr>
<td>Elective Two</td>
<td>Technical Elective (Elective Two)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>31</td>
</tr>
</tbody>
</table>

### Footnotes and Additional Information

1. MIE students are required to complete a capstone course (INDE 590), which includes writing a field report related to one of the following four core requirements in the curriculum: INDE 509, INDE 546, MECH 543, or INDE 572. With the approval of the course instructor, the student must prepare a report relevant to the course material, and present it in class. Topics must be approved no later than the end of the seventh week of the semester. The final written report is due by the last class meeting.

2. The George R. Brown School of Engineering offers courses in the following subject codes: BIOE, CAAM, CEVE, CHBE, COMP, ELEC, ENGI, GLHT, INDE, MECH, MSNE, SSPB, and STAT.

**Policies for the MIE Degree**

**Industrial Engineering Graduate Program Handbook**

**Admission**

Admission to graduate study in Industrial Engineering is open to qualified students holding a BS or a BA degree in a quantitative field from an accredited institution. The MIE degree governing committee will evaluate the previous academic record and credentials of each applicant individually, and will make all admissions decisions.

**Financial Aid**

No financial aid is available from Rice University or the Industrial Engineering program for students in the MIE degree program.

**Transfer Credit**

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions.
on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

**Program Transfer Credit Guidelines**

Students pursuing the MIE degree should be aware of the following program-specific transfer credit guidelines:

- No more than 2 courses (6 credit hours) of transfer credit from another U.S. or international universities of similar standing at Rice may apply towards the degree. Transferred courses must be comparable in content and depth to the corresponding course at Rice, and must not have counted toward another degree.
- Requests for transfer credit will be considered by the Industrial Engineering Graduate Committee Chair, and the instructor of the equivalent Rice course.

**Additional Information**

For additional information, please see the Industrial Engineering website: [https://engrprofmasters.rice.edu](https://engrprofmasters.rice.edu).

**Opportunities for the MIE Degree**

**Fifth-Year Master's Degree Option for Rice Undergraduate Students**

Rice students have an option to pursue the Master of Industrial Engineering (MIE) degree by adding an additional fifth year to their four undergraduate years of science engineering studies.

Advanced Rice undergraduate students in good academic standing may apply to the MIE degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master’s degree program. A plan of study will need to be approved by the student’s undergraduate advisor and the MIE program director.

As part of this option and opportunity, Rice undergraduate students:

- must complete the requirements for a bachelor's degree and the master's degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
- should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
- more information on this Undergraduate - Graduate Concurrent Enrollment opportunity, including specific information on the registration process can be found here (p. 17).

**Additional Information**

For additional information, please see the Industrial Engineering website: [https://engrprofmasters.rice.edu](https://engrprofmasters.rice.edu).

**Master of Industrial Engineering (MIE) Degree / Master of Business Administration (MBA) Degree**

**Program Learning Outcomes for the MIE Degree**

Upon completing the MIE degree, students will be able to:

1. Build physical and mathematical models of complex systems that arise in real-world situations.
2. Understand the flow of material from manufacturing to warehouses to customers through physical or mathematical models.
3. Produce data-driven and implementable solutions that improve the efficiency of real-world systems.
4. Communicate the solutions and insights generated by the models to a non-technical audience.

**Program Learning Outcomes for the MBA Degree**

Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

**Requirements for the MIE/MBA Coordinated Degrees Program**

Students may earn a coordinated MBA degree and a non-thesis Master of Engineering degree from the George R. Brown School of Engineering in the following fields:

- Chemical Engineering (MChE)
- Computational and Applied Mathematics (MCAAM)
- Computer Science (MCS)
- Industrial Engineering (MIE)
- Materials Science and Nanoengineering (MMSNE)
- Mechanical Engineering (MME)
- Statistics (MStat)

For the coordinated MBA/Master of Engineering degrees, students must complete:

- A minimum of 69 credit hours in approved coursework*, including:
  - A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the Master of Engineering degree requirements
  - A minimum of 24 credit hours in the corresponding engineering discipline
  - A minimum of 6 credit hours in elective requirements*
- A minimum of 45 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the MBA degree requirements
  - A minimum of 45 credit hours of business coursework
  - All MBA core requirements, the global field experience, custom core requirements, and coordinated elective requirements

*Note: A maximum of 6 credit hours of the Master of Engineering degree elective requirements may be selected from business course
offerings (MGMP, MGMT, or MICO) and used to fulfill the requirements for both the MBA and the Master of Engineering degrees.

Students plan their course schedules in consultation with the George R. Brown School of Engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department. Coordinated degrees candidates can fulfill requirements for both degrees within 2 academic years.

For general university requirements, see Graduate Degrees (p. 49). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Candidates in the MBA/Master of Engineering coordinated degrees program must complete all requirements as listed for both degrees, and must apply and be accepted in both degree programs.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Total Credit Hours Required for the Coordinated Master of Engineering Degree</td>
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</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the Coordinated MBA Degree</td>
<td>Minimum of 45</td>
</tr>
</tbody>
</table>

### Coordinated MIE Degree Requirements

Students in the coordinated MBA/MIE degrees program must complete the Core Requirements and Capstone Requirement of the MIE degree program (p. 482) and Coordinated MIE Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td></td>
<td>MIE Core Requirements</td>
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<tr>
<td></td>
<td>MIE Capstone Requirement</td>
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<tr>
<td></td>
<td>Coordinated MIE Elective Requirements</td>
<td>6</td>
</tr>
</tbody>
</table>

Select a maximum of 6 credit hours from approved course offerings (MGMP, MGMT, or MICO) from the Jones Graduate School of Business at the 500-level or above

Total Credit Hours 31

### Coordinated MBA Degree Requirements

Students in the coordinated MBA/Master of Engineering degrees program or in the coordinated MBA/Master of Science degree from the Professional Science Master’s (PSM) degrees program must complete the Core Requirements, Global Field Experience, and Custom Core Requirements of the full-time MBA degree program (p. 214) and the Coordinated MBA Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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</thead>
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<td>Full-time MBA Core Requirements</td>
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<td></td>
<td>Full-time MBA Global Field Experience Requirement</td>
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<td></td>
<td>Full-time MBA Custom Core Courses</td>
<td>3-6</td>
</tr>
<tr>
<td></td>
<td>Coordinated MBA Elective Requirements</td>
<td>12-15</td>
</tr>
</tbody>
</table>

Select an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours.

Total Credit Hours 45

### Footnotes and Additional Information

1. To fulfill the remaining requirements for the coordinated MBA degree program, students must complete an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours. (MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.) The second year of the program is dedicated entirely to MBA elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. MBA electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.

### Policies for the MIE/MBA Coordinated Degrees Program

#### Additional Information

For additional information on these two degrees:

1. Please see the Industrial Engineering website: https://engrprofmasters.rice.edu/
2. Please see the Jones Graduate School of Business website: https://business.rice.edu/

### Opportunities for the MIE/MBA Coordinated Degrees Program

#### Additional Information

For additional information on these two degrees:

1. Please see the Industrial Engineering website: https://engrprofmasters.rice.edu/
2. Please see the Jones Graduate School of Business website: https://business.rice.edu/

### Jewish Studies

#### Contact Information

Jewish Studies

https://jewishstudies.rice.edu/

120 Rayzor Hall

713-348-4512

Matthias Henze

Program Director

mhenze@rice.edu
Jewish Studies is an interdisciplinary field that crosses traditional boundaries between academic fields and departments. Courses in Jewish Studies allow students to study Judaism as it has evolved from an ancient set of shared religious practices into the pluralistic religion and culture that it is today. In both the humanities and social sciences, Jewish Studies broadly examines the texts, history, languages, philosophy, literature, and culture of the Jewish people from the ancient to the modern. The study of Jewish life and culture provides an opportunity to explore the continuities and diversity of Judaism as it has been lived and practiced for over three millennia all over the world.

Diversity of thought is a hallmark of Jewish culture dating back to the earliest Jewish texts, and we strive to follow this model in our courses. The diverse and interdisciplinary nature of the Program in Jewish Studies allows undergraduates the opportunity to enrich their major fields of study with a specific focus on Judaism and Jewish culture. The Program in Jewish Studies at Rice also forms an important bridge to the community, making use of the rich resources available in Houston, engaging with local institutions, and participating in timely public discussions.

**Minor**

- Minor in Jewish Studies (p. 486)

Jewish Studies does not currently offer an academic program at the graduate level.

**Director**

Matthias Henze

**Associate Director**

Melissa Weininger

**Professors**

Matthias Henze  
Michael R. Maas  
Paula A. Sanders  
Klaus H.M. Weissenberger  
Diane Wolfthal

**Associate Professors**

G. Daniel Cohen  
Gisela Heffes  
Maya Soifer Irish  
Susan Lurie  
Astrid Oesmann  
Brian Ogren

**Lecturer**

Melissa Weininger

**Adjunct Lecturer**

Joshua Furman

**Postdoctoral Fellow**

Charles McDonald

---

### Description and Code Legend

**Note:** Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

**Course Catalog/Schedule**

- Course offerings/subject codes: Courses from various subjects may apply towards this program

**Program Description and Code**

- Jewish Studies: JWST

**Undergraduate Minor Description and Code**

- Minor in Jewish Studies: JWST

**CIP Code and Description**

1. JWST Minor: CIP Code/Title: 38.0206 - Jewish/Judaic Studies

   Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: [https://nces.ed.gov/ipeds/cipcode/](https://nces.ed.gov/ipeds/cipcode/)

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### Minor in Jewish Studies

**Program Learning Outcomes for the Minor in Jewish Studies**

Upon completing the minor in Jewish Studies, students will be able to:

1. Demonstrate knowledge of key Jewish religious traditions, texts, and figures throughout history, from the ancient to the contemporary, as well as the place of those traditions, texts, and figures within specific historical, geographical, or sociopolitical contexts.

2. Demonstrate knowledge of Jewish history and culture during different time periods and in different geographical locations.

3. Demonstrate the ability to understand and apply theories and methods from multiple disciplines—including religious studies, literature, history, film, and sociology—to address key issues or undertake research in the field of Jewish studies; synthesize theories and methods from multiple disciplines to address questions within the field of Jewish studies.

4. Demonstrate the ability to read and interpret primary and secondary texts critically, including ancient as well as modern literature, religious texts, film, and modern scholarship; demonstrate the ability to use these texts to develop and support evidence-based research questions and arguments in discussions, verbal presentations, and in research papers.

5. Demonstrate the ability to communicate effectively in writing and orally at the college level; this includes demonstrating the ability to communicate in a critical, scholarly manner by developing evidence-based research questions and arguments, using and citing evidence to support argumentation, and writing and speaking clearly and correctly.

### Requirements for the Minor in Jewish Studies

Students pursuing the minor in Jewish Studies must complete:

- A minimum of 6 courses (18-21 credit hours, depending on course selection) to satisfy minor requirements.
A minimum of 3 courses (9 credit hours) taken at the 300-level or above.

A maximum of 3 courses (9 credit hours) from study abroad or transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab.

A maximum of 2 courses from Hebrew (HEBR) course offerings.

A maximum of 2 courses from Religion (RELI) course offerings.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the minor’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/)). Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td>Total Credit Hours Required for the Minor in Jewish Studies</td>
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### Minor Requirements

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<th>Credit Hours</th>
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<tr>
<td>JWST 120</td>
<td>ISRAEL: LANGUAGE AND CULTURE I</td>
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</tr>
<tr>
<td>JWST 121</td>
<td>ISRAEL: LANGUAGE AND CULTURE II</td>
<td>3-4</td>
</tr>
<tr>
<td>JWST 317</td>
<td>JEWISH GRAPHIC NOVEL</td>
<td>3-4</td>
</tr>
<tr>
<td>JWST 318 / SWGS 318</td>
<td>ISRAELI WOMEN WRITERS</td>
<td>3-4</td>
</tr>
<tr>
<td>JWST 348 / SWGS 348</td>
<td>SEX AND GENDER IN MODERN JEWISH CULTURE</td>
<td>3-4</td>
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<tr>
<td>JWST 351 / FILM 351</td>
<td>HOLOCAUST REPRESENTATION IN LITERATURE, ART, AND FILM</td>
<td>3-4</td>
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<tr>
<td>ENGL 265</td>
<td>JEWISH-AMERICAN LITERATURE AND CULTURE</td>
<td>3-4</td>
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<tr>
<td>FWIS 177</td>
<td>BIZARRE BIBLICAL STORIES</td>
<td>3-4</td>
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<tr>
<td>GERM 325 / HUMA 325</td>
<td>MODERN GERMAN WRITERS: KAFKA</td>
<td>3-4</td>
</tr>
<tr>
<td>GERM 329 / HUMA 329</td>
<td>LITERATURE OF THE HOLOCAUST AND EXILE</td>
<td>3-4</td>
</tr>
<tr>
<td>GERM 351 / HART 387</td>
<td>HOLOCAUST MEMORY IN MODERN GERMANY</td>
<td>3-4</td>
</tr>
<tr>
<td>HEBR 125</td>
<td>INTRODUCTION TO BIBLICAL HEBREW I</td>
<td>3-4</td>
</tr>
<tr>
<td>HEBR 126</td>
<td>INTRODUCTION TO BIBLICAL HEBREW II</td>
<td>3-4</td>
</tr>
<tr>
<td>RELI 213</td>
<td>THE PROPHET JEREMIAH: THE BIBLICAL BOOK AND ITS RECEPTION IN JUDAISM AND CHRISTIANITY</td>
<td>3-4</td>
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<tr>
<td>RELI 243</td>
<td>THE BOOK OF GENESIS</td>
<td>3-4</td>
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<tr>
<td>RELI 318</td>
<td>THE BIBLE: A BRIEF INTELLECTUAL HISTORY</td>
<td>3-4</td>
</tr>
<tr>
<td>RELI 339</td>
<td>APOCALYPSE THEN AND NOW</td>
<td>3-4</td>
</tr>
<tr>
<td>RELI 381</td>
<td>THE MESSIAH</td>
<td>3-4</td>
</tr>
<tr>
<td>RELI 382</td>
<td>LOST JUDAISMS: THE APOCRYPHAL WRITINGS</td>
<td>3-4</td>
</tr>
<tr>
<td>RELI 383</td>
<td>THE DEAD SEA SCROLLS</td>
<td>3-4</td>
</tr>
<tr>
<td>RELI 388</td>
<td>THE PSALMS AND THEIR POETIC AFTERLIFE</td>
<td>3-4</td>
</tr>
</tbody>
</table>

### Course Lists to Satisfy Requirements

#### Elective Requirements

To fulfill the remaining Jewish Studies minor requirements, students must complete a total of 5 additional courses (15-17 credit hours, depending on course selection) from the following categories as listed below. At least 1 course (3 credit hours) must be completed from each of the three categories. If a course is listed in more than one category, students can elect a category for which the course counts, yet each course can apply to only one category. Two additional electives (6 credit hours) must be selected from any of the approved Jewish Studies coursework to total 5 elective courses (15 credit hours).

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>JWST 120</td>
<td>ISRAEL: LANGUAGE AND CULTURE I</td>
<td>3-4</td>
</tr>
<tr>
<td>JWST 121</td>
<td>ISRAEL: LANGUAGE AND CULTURE II</td>
<td>3-4</td>
</tr>
<tr>
<td>JWST 317</td>
<td>JEWISH GRAPHIC NOVEL</td>
<td>3-4</td>
</tr>
<tr>
<td>JWST 318 / SWGS 318</td>
<td>ISRAELI WOMEN WRITERS</td>
<td>3-4</td>
</tr>
<tr>
<td>JWST 348 / SWGS 348</td>
<td>SEX AND GENDER IN MODERN JEWISH CULTURE</td>
<td>3-4</td>
</tr>
<tr>
<td>JWST 351 / FILM 351</td>
<td>HOLOCAUST REPRESENTATION IN LITERATURE, ART, AND FILM</td>
<td>3-4</td>
</tr>
<tr>
<td>ENGL 265</td>
<td>JEWISH-AMERICAN LITERATURE AND CULTURE</td>
<td>3-4</td>
</tr>
<tr>
<td>FWIS 177</td>
<td>BIZARRE BIBLICAL STORIES</td>
<td>3-4</td>
</tr>
<tr>
<td>GERM 325 / HUMA 325</td>
<td>MODERN GERMAN WRITERS: KAFKA</td>
<td>3-4</td>
</tr>
<tr>
<td>GERM 329 / HUMA 329</td>
<td>LITERATURE OF THE HOLOCAUST AND EXILE</td>
<td>3-4</td>
</tr>
<tr>
<td>GERM 351 / HART 387</td>
<td>HOLOCAUST MEMORY IN MODERN GERMANY</td>
<td>3-4</td>
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<tr>
<td>HEBR 125</td>
<td>INTRODUCTION TO BIBLICAL HEBREW I</td>
<td>3-4</td>
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<tr>
<td>HEBR 126</td>
<td>INTRODUCTION TO BIBLICAL HEBREW II</td>
<td>3-4</td>
</tr>
<tr>
<td>RELI 213</td>
<td>THE PROPHET JEREMIAH: THE BIBLICAL BOOK AND ITS RECEPTION IN JUDAISM AND CHRISTIANITY</td>
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<tr>
<td>RELI 243</td>
<td>THE BOOK OF GENESIS</td>
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</tr>
<tr>
<td>RELI 318</td>
<td>THE BIBLE: A BRIEF INTELLECTUAL HISTORY</td>
<td>3-4</td>
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<tr>
<td>RELI 339</td>
<td>APOCALYPSE THEN AND NOW</td>
<td>3-4</td>
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<tr>
<td>RELI 381</td>
<td>THE MESSIAH</td>
<td>3-4</td>
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<tr>
<td>RELI 382</td>
<td>LOST JUDAISMS: THE APOCRYPHAL WRITINGS</td>
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<td>RELI 383</td>
<td>THE DEAD SEA SCROLLS</td>
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</tr>
<tr>
<td>RELI 388</td>
<td>THE PSALMS AND THEIR POETIC AFTERLIFE</td>
<td>3-4</td>
</tr>
</tbody>
</table>
Policies for the Minor in Jewish Studies

The courses used to meet the Jewish Studies minor are open to all students at Rice from all backgrounds. Our classes meet student interests in Jewish experience and its importance for history, literature, art, politics, law, and philosophy.

Program Restrictions

Students pursuing the minor in Jewish Studies should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 11), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines

Students pursuing the minor in Jewish Studies should be aware of the following program-specific transfer credit guidelines:

- No more than 3 courses (9 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the minor.
- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Distribution Credit Information

The determination of distribution eligibility is done as part of the new course creation process (https://registrar.rice.edu/facstaff/courseprocess/). As part of an annual roll call (https://registrar.rice.edu/facstaff/distribution_credit/) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean’s Offices of each of the academic schools.

Faculty and leadership in the academic schools are responsible for ensuring that the courses identified as distribution-eligible meet the criteria as set in the General Announcements (p. 26). Students are responsible for ensuring that they meet graduation requirements (p. 26) by completing coursework designated as distribution at the time of course registration.

Distribution courses from Jewish Studies (JWST) are broad in theme and scope and prompt students to consider the ways in which the study of Jewish history, culture, and religious practice inform the general study of the Humanities. Like the field of Jewish Studies itself, these courses are interdisciplinary in nature and offer students tools for making critical arguments about what Jewish history and culture can teach us about...
broader historical and cultural questions. Most of these courses are introductions to basic elements of the study of Judaism and Jewish culture.

Additional Information
For additional information, please see the Jewish Studies website: https://jewishstudies.rice.edu.

Opportunities for the Minor in Jewish Studies

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Additional Information
For additional information, please see the Jewish Studies website: https://jewishstudies.rice.edu/

See https://humanities.rice.edu/student-life/ for tables of fellowships, prizes, and internships/practica that may be relevant to this minor.

Kinesiology

Contact Information

Kinesiology
https://kinesiology.rice.edu/
S203 Tudor Fieldhouse
713-348-8816

Heidi Perkins
Department Chair
hperkins@rice.edu

Rice’s Kinesiology department was one of the first in the nation to institute an academic program structure that allows students to concentrate their efforts in a specific sub-discipline. Within the Kinesiology major, there are two distinct major concentrations: Health Sciences and Sports Medicine.

Major in Kinesiology and a Major Concentration in Health Sciences

The goal of the health sciences program is to provide students with a fundamental background in health promotion and disease prevention. This background will enable them to understand the role that health promotion plays in society and the mechanisms that affect public and community health while also considering the complexities of maintaining an optimal level of personal health. The health science program is viewed as an excellent option for undergraduate students who are preparing to enter graduate school in public health, health promotion, and health education, as well as other health-related graduate or professional programs such as medicine or dentistry.

Major in Kinesiology and a Major Concentration in Sports Medicine

The sports medicine curriculum intends to provide a strong natural science foundation and interface this foundation with application to the human body. Prerequisite courses in chemistry and physics, elective courses in biology and biochemistry, as well as an array of required and elective courses offered within the department provide this foundation. The sports medicine program is the only academic specialization on campus that provides detailed exposure to human anatomy and human physiology. In addition, students receive coursework in foundations of Kinesiology, research methods, motor learning, statistics, exercise physiology, and sports medicine. Practical experience is afforded through several academic labs. Other elective courses include epidemiology, case studies in human performance, motor control, advanced exercise physiology and preventive medicine, sports nutrition, medical terminology, and muscle physiology and plasticity. During advising sessions, students are encouraged to select from these electives according to their respective career goals. Students in the sports medicine program are expected to develop a strong scientific knowledge.

Students who choose the sports medicine program typically continue their education at the graduate level or plan on attending medical school or other medically related professional schools, such as physical therapy. Graduates also may be directly employed in medical and corporate settings, which include both preventative and rehabilitative programs. Graduates who choose not to seek post-baccalaureate education generally are encouraged to obtain certification for exercise testing, physical fitness evaluation, or exercise prescription through the American College of Sports Medicine (https://acsm.org/) website.

Bachelor’s Programs
• Bachelor of Arts (BA) Degree with a Major in Kinesiology
  • and a Major Concentration in Health Sciences (p. 490)
  • and a Major Concentration in Sports Medicine (p. 492)

Kinesiology does not currently offer an academic program at the graduate level.

Chair
Heidi Perkins

Professors Emeriti
Bruce Etnyre
Nicholas K. Iammarino
Eva J. Lee
Dale W. Spence

Teaching Professor
Heidi Perkins

Associate Teaching Professor
Augusto X. Rodriguez

Assistant Teaching Professors
Cassandra S. Diep
Amanda Perkins Ball
Clinical Professor
Brian Gibson

Lecturers
Lisa Basgall
Nicholas K. Iammarino
Laura Kabiri

Part-Time Lecturers
Roberta Anding
Jaime Aparicio
Steven L. Jones
Nathan Parker
Wendy Schell
P. Burke Wilson

Adjunct Faculty
Karen Basen-Engquist
Daniel C. Hughes
Thomas Krouskop
Alexis Ortiz
Dawn Stuckey
Armin Weinberg

Descriptions and Codes Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code for Emergency Medical Services/Practice: EMSP
• Course offerings/subject code for Health Sciences: HEAL
• Course offerings/subject code for Kinesiology: KINE

Department Description and Code
• Kinesiology: KINE

Undergraduate Degree Description Code
• Bachelor of Arts degree: BA

Undergraduate Major Description and Code
• Major in Kinesiology: KINE

Undergraduate Major Concentration Descriptions and Codes
• Major Concentration in Health Sciences: KHSC
• Major Concentration in Sports Medicine: KSPM

CIP Code and Description
• KINE Major/Program: CIP Code/Title: 31.0505 - Kinesiology and Exercise Science
• KHSC Major Concentration: CIP Code/Title: 51.0001 - Health and Wellness, General
• KSPM Major Concentration: CIP Code/Title: 31.0505 - Kinesiology and Exercise Science

Bachelor of Arts (BA) Degree with a Major in Kinesiology and a Major Concentration in Health Sciences

Program Learning Outcomes for the BA Degree with a Major in Kinesiology and a Major Concentration in Health Sciences

Upon completing the BA degree with a major in Kinesiology and a major concentration in Health Sciences, students will be able to:

1. Prepare and deliver presentations effectively and be able to use information technology.
2. Work and collaborate in groups toward a common goal.
3. Read, select, and interpret important information from health sciences literature. They will be able to design and conduct public health research studies using appropriate methodologies.
4. Promote public health education within the framework of legal, ethical, moral, and professional standards.
5. Collaborate with other professionals, staff, and communities in the planning and implementation, and evaluation of health education programs. They will be able to administer and manage health education programs, serve as a health education resource person, and communicate and advocate for health and health education.

Requirements for the BA Degree with a Major in Kinesiology and a Major Concentration in Health Sciences

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Kinesiology and a major concentration in Health Sciences must complete:

• A minimum of 14 courses (42 credit hours) to satisfy major requirements.
• A minimum of 120 credit hours satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
• A minimum of 5 courses (15 credit hours) taken at the 300-level or above.
• The requirements of a major concentration. When students declare the major (p. 11) in Kinesiology, students must additionally identify and declare one of two major concentrations, either in:
  • Health Sciences (p. 490), or
  • Sports Medicine (p. 492).

It is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (%20registrar@rice.edu).

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s
Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
<thead>
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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
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<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Kinesiology and a Major Concentration in Health Sciences</td>
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### Degree Requirements

#### Core Requirements

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<tr>
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<tbody>
<tr>
<td>HEAL 222</td>
<td>PRINCIPLES OF PUBLIC AND COMMUNITY HEALTH</td>
</tr>
<tr>
<td>HEAL 313</td>
<td>FOUNDATIONS OF HEALTH PROMOTION AND EDUCATION</td>
</tr>
<tr>
<td>HEAL 407</td>
<td>EPIDEMIOLOGY</td>
</tr>
<tr>
<td>HEAL 422</td>
<td>THEORIES AND MODELS OF HEALTH BEHAVIOR</td>
</tr>
<tr>
<td>HEAL 460</td>
<td>PLANNING AND EVALUATION OF HEALTH PROMOTION AND EDUCATION</td>
</tr>
<tr>
<td>KINE 319</td>
<td>STATISTICS FOR THE HEALTH PROFESSIONAL</td>
</tr>
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#### Elective Requirements

Select 8 courses (see course list below)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>ANTH 381</td>
<td>MEDICAL ANTHROPOLOGY</td>
</tr>
<tr>
<td>ANTH 386</td>
<td>MEDICAL ANTHROPOLOGY OF FOOD AND HEALTH</td>
</tr>
<tr>
<td>ANTH 446</td>
<td>ADVANCED TOPICS IN BIOMEDICAL ANTHROPOLOGY</td>
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<td>BIOC 122</td>
<td>BIOLOGY FOR VOTERS</td>
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<tr>
<td>BIOC 201</td>
<td>INTRODUCTORY BIOLOGY I</td>
</tr>
<tr>
<td>BIOE 360</td>
<td>APPROPRIATE DESIGN FOR GLOBAL HEALTH</td>
</tr>
<tr>
<td>BIOC 201</td>
<td>INTRODUCTORY BIOLOGY I</td>
</tr>
<tr>
<td>ENGL 272</td>
<td>LITERATURE AND MEDICINE</td>
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<tr>
<td>ENGL 273</td>
<td>MEDICINE AND MEDIA</td>
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<td>GLHT 201</td>
<td>INTRODUCTION TO GLOBAL HEALTH</td>
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<tr>
<td>HNTR 103</td>
<td>NUTRITION</td>
</tr>
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<td>HNTR 119</td>
<td>INTRODUCTION TO HEALTH AND WELLNESS</td>
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<td>HNTR 132</td>
<td>MEDICAL TERMINOLOGY</td>
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<td>HNTR 208</td>
<td>CHEMICAL ALTERATIONS OF BEHAVIOR</td>
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<td>HNTR 212</td>
<td>CONSUMER HEALTH AND THE MEDIA</td>
</tr>
<tr>
<td>HNTR 306</td>
<td>HUMAN SEXUALITY</td>
</tr>
<tr>
<td>HNTR 350</td>
<td>UNDERSTANDING CANCER</td>
</tr>
<tr>
<td>HNTR 360</td>
<td>VIOLENCE IN AMERICA: A PUBLIC HEALTH PERSPECTIVE</td>
</tr>
<tr>
<td>HNTR 375</td>
<td>THE BUILT ENVIRONMENT AND PUBLIC HEALTH</td>
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<tr>
<td>HNTR 379</td>
<td>INTERNSHIP IN HEALTH SCIENCES</td>
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<td>HNTR 380</td>
<td>DISPARITIES IN HEALTH IN AMERICA</td>
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<tr>
<td>HNTR 495</td>
<td>INDEPENDENT RESEARCH IN HEALTH SCIENCES</td>
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<tr>
<td>HNTR 498</td>
<td>SPECIAL TOPICS IN HEALTH SCIENCES</td>
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<td>KINE 300</td>
<td>HUMAN ANATOMY WITH LAB</td>
</tr>
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<td>KINE 301</td>
<td>HUMAN PHYSIOLOGY</td>
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<td>KINE 326</td>
<td>EXERCISE EPIDEMIOLOGY</td>
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<td>KINE 440</td>
<td>RESEARCH METHODS</td>
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<tr>
<td>MDHM 201</td>
<td>INTRODUCTION TO MEDICAL HUMANITIES</td>
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<tr>
<td>PHIL 314</td>
<td>THE PHILOSOPHY OF MEDICINE</td>
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<td>PHIL 315</td>
<td>ETHICS, MEDICINE, AND PUBLIC POLICY</td>
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<td>PHIL 336</td>
<td>TOPICS IN MEDICAL ETHICS</td>
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<td>POLI 329</td>
<td>HEALTH POLICY</td>
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<td>PSYC 345</td>
<td>HEALTH PSYCHOLOGY</td>
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<td>PSYC 346</td>
<td>STRESS AND HEALTH ACROSS THE LIFESPAN</td>
</tr>
<tr>
<td>SOCI 313</td>
<td>DEMOGRAPHY</td>
</tr>
<tr>
<td>SOCI 345</td>
<td>MEDICAL SOCIOLOGY</td>
</tr>
</tbody>
</table>

### Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

1 Core Requirements include an introductory course designed to acquaint students with the fundamental concepts of personal health and models of health promotion, understanding and assessing community health needs, methods of understanding the disease process, a course that introduces statistics, a professional preparation course that introduces students to the profession, theories and models commonly used in health promotion research and practice, and an application course in which students plan a health promotion program.

### Elective Requirements

To fulfill the elective requirements for the Major in Kinesiology and the Major Concentration in Health Sciences, students must complete a total of 8 elective courses (minimum of 24 credit hours) from the course list below. This list of electives is drawn from course offerings that are both within the Department of Kinesiology and, at present, more than 20 courses from other academic departments at Rice. In keeping with the university’s interest in an interdisciplinary approach to undergraduate education, this allows students to choose health-related courses from within the schools of natural sciences, social sciences, and humanities.
Bachelor of Arts (BA) Degree with a Major in Kinesiology and a Major Concentration in Sports Medicine

Program Learning Outcomes for the BA Degree with a Major in Kinesiology and a Major Concentration in Sports Medicine

Upon completing the BA degree with a major in Kinesiology and a major concentration in Sports Medicine, students will be able to:

1. Prepare and deliver presentations effectively and be able to use information technology.
2. Work and collaborate in groups toward a common goal.
3. Read, select, and interpret important information from sports sciences literature. They will be able to design and conduct research studies using appropriate methodologies.
4. Identify and apply ethical standards to the design and execution of research studies.
5. Understand principles of human nutrition and its application to exercise and sport.
6. Understand the principles of sports psychology.
7. Be knowledgeable of anatomy relevant to sport, exercise, and sport injury. They will develop an understanding of principles of biomechanics applied to exercise and sporting activities. Students will be knowledgeable of prevention, diagnosis, and treatment of injuries and diseases related to exercise and sports.
8. Collect and analyze data in a motor learning, exercise physiology, or other sports medicine lab settings.

Requirements for the BA Degree with a Major in Kinesiology and a Major Concentration in Sports Medicine

For general university requirements, see Graduation Requirements (p. 26).

Students pursuing the BA degree with a major in Kinesiology and a major concentration in Sports Medicine must complete:

- A minimum of 15 courses (44 credit hours) to satisfy major requirements.
- A minimum of 120 credit hours satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 9 courses (26 credit hours) taken at the 300-level or above.
- The requirements of a major concentration. When students declare the major (p. 11) in Kinesiology, students must additionally identify and declare one of two major concentrations, either in:
  - Health Sciences (p. 490), or
  - Sports Medicine (p. 492).

It is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (%20Registrar@rice.edu).

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions...)

Policies for the BA Degree with a Major in Kinesiology and a Major Concentration in Health Sciences

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in Kinesiology should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information

For additional information, please see the Kinesiology website: https://kinesiology.rice.edu/

Opportunities for the BA Degree with a Major in Kinesiology and a Major Concentration in Health Sciences

Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Unique Program: Rice-UTSPH Public Health Scholars

Rice undergraduate students interested in pursuing a Master of Public Health (MPH) degree at the University of Texas School of Public Health (UTSPH) may apply to the Rice-UTSPH Public Health Scholars Program. This unique coordinated program enables accepted Rice students to earn credit towards their Rice undergraduate degree (BA or BS with any major), and to accelerate in the completion of their UTSPH Master of Public Health degree to within one year after completing their Rice undergraduate degree.

For more information on the Rice-UTSPH program, please see the program's website: https://dou.rice.edu/student-resources/public-health-scholars-program (https://dou.rice.edu/student-resources/public-health-scholars-program/?).

Additional Information

For additional information, please see the Kinesiology website: https://kinesiology.rice.edu/
must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Kinesiology and a Major Concentration in Sports Medicine</td>
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</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Kinesiology and a Major Concentration in Sports Medicine</td>
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### Degree Requirements

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<tr>
<td>HEAL 103</td>
<td>NUTRITION</td>
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<td>KINE 301</td>
<td>HUMAN PHYSIOLOGY</td>
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<td>KINE 302</td>
<td>BIOMECHANICS</td>
<td>3</td>
</tr>
<tr>
<td>KINE 310</td>
<td>PSYCHOLOGICAL ASPECTS OF SPORT AND EXERCISE</td>
<td>3</td>
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<td>KINE 311</td>
<td>MOTOR LEARNING</td>
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<td>KINE 319</td>
<td>STATISTICS FOR THE HEALTH PROFESSION</td>
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<td>KINE 321</td>
<td>EXERCISE PHYSIOLOGY</td>
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<tr>
<td>KINE 323</td>
<td>EXERCISE PHYSIOLOGY LABORATORY</td>
<td>1</td>
</tr>
<tr>
<td>KINE 440</td>
<td>RESEARCH METHODS</td>
<td>3</td>
</tr>
</tbody>
</table>

|      | Elective Requirements                      |              |
|      | Select 5 elective courses (see course list below) | 15           |
|      | Total Credit Hours Required for the Major in Kinesiology and a Major Concentration in Sports Medicine | 44           |
|      | Additional Credit Hours to Complete BA Degree Requirements | 16           |
|      | University Graduation Requirements (p. 26)**4** | 60           |

|      | Total Credit Hours                          | 120          |

### Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAR upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

**1** The Core Requirements include detailed exposure to human anatomy and human physiology. In addition, students receive coursework in research methods, motor learning, statistics, exercise physiology, and sports psychology.

### Elective Requirements

To fulfill the elective requirements for the Major in Kinesiology and a Major Concentration in Sports Medicine, students must complete a total of 5 elective courses (minimum of 15 credit hours) from the course list below. This list of electives is drawn from course offerings that are both within the Department of Kinesiology and other academic departments. Kinesiology elective courses include epidemiology, case studies in human performance, motor control, advanced exercise physiology and preventive medicine, sports nutrition, medical terminology and muscle physiology and plasticity. Electives from other departments include courses in chemistry, physics, biology and biochemistry, which may also be utilized as medical school prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
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<td>BIOC 201</td>
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<td>INTERMEDIATE EXPERIMENTAL BIOSCIENCES</td>
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<td>BIOCHEMISTRY I</td>
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<td>BIOC 302</td>
<td>BIOCHEMISTRY II</td>
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<td>BIOC 311</td>
<td>ADVANCED EXPERIMENTAL BIOSCIENCES</td>
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<td>BIOC 313</td>
<td>EXPERIMENTAL SYNTHETIC BIOLOGY</td>
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<td>CHEM 122</td>
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<tr>
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<td>GENERAL CHEMISTRY LABORATORY II</td>
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<td>CHEM 113AP/OTH CREDIT IN GENERAL CHEMISTRY LAB</td>
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<td>SCIENTIFIC FOUNDATIONS OF KINESIOLOGY</td>
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<td>KINE 326</td>
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<td>KINE 403</td>
<td>SPORT NUTRITION</td>
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<tr>
<td>KINE 410</td>
<td>CASE STUDIES IN HUMAN PERFORMANCE</td>
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<tr>
<td>KINE 412</td>
<td>MOTOR CONTROL</td>
<td></td>
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<tr>
<td>KINE 415</td>
<td>PSYCHOLOGICAL ASPECTS OF SPORTS INJURY &amp; REHABILITATION</td>
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<td>KINE 421</td>
<td>ADVANCED TOPICS IN EXERCISE PHYSIOLOGY AND PREVENTIVE MEDICINE</td>
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<td>KINE 430</td>
<td>SPORTS INJURY: EVALUATION, MANAGEMENT, AND TREATMENT</td>
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<td>KINE 495</td>
<td>INDEPENDENT RESEARCH IN SPORTS MEDICINE</td>
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<td>KINE 498</td>
<td>SPECIAL TOPICS IN SPORTS MEDICINE</td>
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<td>KINE 499</td>
<td>TEACHING PRACTICUM IN SPORTS MEDICINE</td>
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<td>PHYS 101 &amp; PHYS 103</td>
<td>MECHANICS (WITH LAB) and MECHANICS DISCUSSION</td>
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<td>PHYS 102 &amp; PHYS 104</td>
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<td>PHYS 125</td>
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<td>PHYS 126</td>
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<td>PSYC 202</td>
<td>INTRODUCTION TO SOCIAL PSYCHOLOGY</td>
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</tbody>
</table>
Footnotes and Additional Information

1 CHEM 151 may be substituted for CHEM 121 or CHEM 111; CHEM 153 may be substituted for CHEM 123 or CHEM 113; CHEM 152 may be substituted for CHEM 122 or CHEM 112, and CHEM 154 may be substituted for CHEM 124 or CHEM 114.

Policies for the BA Degree with a Major in Kinesiology and a Major Concentration in Sports Medicine

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in Kinesiology should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information

For additional information, please see the Kinesiology website: https://kinesiology.rice.edu/

Opportunities for the BA Degree with a Major in Kinesiology and a Major Concentration in Sports Medicine

Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Additional Information

For additional information, please see the Kinesiology website: https://kinesiology.rice.edu/

Languages and Intercultural Communication

Contact Information

Languages and Intercultural Communication

https://clic.rice.edu/

235 Rayzor Hall

713-348-5844

Hélade Santos
Director of Language Instruction
helade.santos@rice.edu

M. Rafael Salaberry
Director of Research
salaberry@rice.edu

The Center for Languages and Intercultural Communication (CLIC) focuses on developing Rice students’ communicative, interactional, and intercultural abilities and knowledge in non-native and heritage languages. Thus, CLIC seeks to provide a broad and critical educational experience that promotes multilingualism and helps students become culturally competent and interact successfully, appropriately, and respectfully with people from different countries and sociocultural backgrounds.

The Center for Languages and Intercultural Communication supports students pursuing language-related degrees in other departments, including Asian Studies (p. 143), Classical and European Studies (p. 327), History (p. 465), Linguistics (p. 524), and Spanish, Portuguese and Latin American Studies (p. 822).

Certificates

- Certificate in Language and Intercultural Communication - Arabic (p. 495)
- Certificate in Language and Intercultural Communication - Chinese (p. 497)
- Certificate in Language and Intercultural Communication - French (p. 499)
- Certificate in Language and Intercultural Communication - German (p. 501)
- Certificate in Language and Intercultural Communication - Hindi (p. 503)
- Certificate in Language and Intercultural Communication - Italian (p. 504)
- Certificate in Language and Intercultural Communication - Japanese (p. 506)
- Certificate in Language and Intercultural Communication - Korean (p. 508)
- Certificate in Language and Intercultural Communication - Portuguese (p. 510)
- Certificate in Language and Intercultural Communication - Russian (p. 512)
- Certificate in Language and Intercultural Communication - Spanish (p. 514)

The Center for Languages and Intercultural Communication does not currently offer an academic program at the graduate level.

Director of Language Instruction
Hélade Santos

Director of Research
M. Rafael Salaberry
Teaching Professor
Meng Yeh

Lecturers
Shaimaa Abouzeid, Arabic
Ali Al-Maqtaqi, Arabic
Fatima Baig, German
Charla Bennaji, Spanish
Aymara Boggiano, Spanish
Thais M. Diaz Montalvo, Spanish
Maryam Emami, French
Liang Fu, Chinese
Claudia García-Rueda, Spanish
Cristina Giliberti, Italian
S.C. Kaplan, French
Eun Hee Kim, Korean
Katharina Kley, German

Jessica Morones, Spanish
Larisa Moskvitina, Russian
Naoko Ozaki, Japanese
Hélade Santos, Portuguese, Spanish
Jayoung Song, Korean
Maria Luján Stasevicius, Spanish
Hiromi Takayama, Japanese
Luziris Pineda Turi, Spanish

Postdoctoral Fellows
Wei-Li Hsu
Aisulu Raspayeva

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
- Course offerings/subject code: CLIC

Center Description and Code
- Center for Languages and Intercultural Communication: CLIC

Undergraduate Certificate Descriptions and Codes
- Certificate in Language and Intercultural Communication - Arabic: LAR
- Certificate in Language and Intercultural Communication - Chinese: LZH
- Certificate in Language and Intercultural Communication - French: LFR
- Certificate in Language and Intercultural Communication - German: LDE
- Certificate in Language and Intercultural Communication - Hindi: LHI
- Certificate in Language and Intercultural Communication - Italian: LIT
- Certificate in Language and Intercultural Communication - Japanese: LJA
- Certificate in Language and Intercultural Communication - Korean: LKO
- Certificate in Language and Intercultural Communication - Portuguese: LPT
- Certificate in Language and Intercultural Communication - Russian: LRU
- Certificate in Language and Intercultural Communication - Spanish: LES

CIP Code and Description
1
- Certificate - LAR: CIP Code/Title: 16.1101 - Arabic Language and Literature
- Certificate - LFR: CIP Code/Title: 16.0901 - French Language and Literature
- Certificate - LDE: CIP Code/Title: 16.0501 - German Language and Literature
- Certificate - LHI: CIP Code/Title: 16.0701 - Hindi Language and Literature
- Certificate - LIT: CIP Code/Title: 16.0902 - Italian Language and Literature
- Certificate - LKO: CIP Code/Title: 16.0303 - Korean Language and Literature
- Certificate - LPT: CIP Code/Title: 16.0904 - Portuguese Language and Literature
- Certificate - LRU: CIP Code/Title: 16.0402 - Russian Language and Literature
- Certificate - LES: CIP Code/Title: 16.0905 - Spanish Language and Literature

1 Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Certificate in Language and Intercultural Communication - Arabic

Program Learning Outcomes for the Certificate in Language and Intercultural Communication
Upon completing the certificate in Language and Intercultural Communication, students will be able to:

1. Speak in the target language with or to native speakers with enough fluency and minimal obstacles for both the student and the interlocutor, even in spontaneous situations.
2. Write in the target language in a clear, detailed, relatively complex, and context appropriate manner.
3. Understand key socio-cultural differences associated with the target language.

Requirements for the Certificate in Language and Intercultural Communication - Arabic
Students pursuing the Certificate in Language and Intercultural Communication must complete:

2019-2020 General Announcements
PDF Generated 1/29/2020
• A minimum of 4 courses (12 credit hours) to satisfy certificate requirements.
• An Experiential Learning opportunity (at least 6 of the required 12 credit hours) through an approved study abroad program.
• An Outcomes Assessment to evaluate language proficiency.
• A minimum overall GPA of 2.00 in required coursework with a minimum grade of C (2.00 grade points) in each course.

This certificate is not a freestanding degree program; in addition to fulfilling the certificate requirements outlined below, candidates will be required to complete successfully the degree program to which they have been admitted in order to receive this certificate. Upon completion, the certificate is awarded at the same time as the conferral of the student’s Rice degree, along with a formal notation on their academic transcript.

The courses listed below satisfy the requirements for this certificate. In certain instances, courses not on this official list may be substituted upon approval of the certificate’s academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the certificate’s Official Certifier (https://registrar.rice.edu/facstaff/degeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
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<tr>
<th>Code</th>
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<th>Credit Hours</th>
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</table>

Total Credit Hours Required for the Certificate in Language and Intercultural Communication - Arabic 12

### Certificate Requirements

#### Required Courses in Target Language

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
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<tbody>
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</table>

Select 2 courses from Arabic course offerings (ARAB) at the 200-level or above 1
Select 2 courses from Arabic course offerings (ARAB) at the 300-level or above

#### Experiential Learning

Complete at least 6 of the required 12 credit hours through an approved study abroad program 2

#### Outcomes Assessment

Complete an oral exam and a 500-word essay written in the target language 3

Total Credit Hours 12

### Footnotes and Additional Information

1. ARAB 222, AP/OTH Credit Arabic Language, will not fulfill this requirement.
2. Rice faculty-led study abroad programs are preferred for meeting the experiential learning component, but in cases when there are no Rice faculty-led programs offered, students should consult with the Certificate advisor for alternative options that include academic content and goals that are similar to the Rice faculty-led programs.
3. In order meet the Outcomes Assessment requirement for the Certificate, students will complete an examination consisting of oral and written assessments in the target language. After completing the Certificate requirements and as a result of the assessment, students are placed at their level of proficiency following the Common European Framework of Reference for Languages (CEFR). The CEFR level reached will be noted in an official letter from CLIC, as well as via a notation on the student’s official Rice academic transcript.

### Policies for the Certificate in Language and Intercultural Communication - Arabic

#### Language Placement Testing

Students are required to take a Language Placement Test to ensure that they are placed in the appropriate course in their target language. Placement tests are administered online prior to and during both fall and spring registration.

#### Program Restrictions and Exclusions

Students pursuing the Certificate in Language and Intercultural Communication should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 11), students may declare their intent to pursue a university certificate only after they have first declared a major.

#### Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

#### Program Transfer Credit Guidelines

Students pursuing the certificate in Language and Intercultural Communication should be aware of the following program-specific transfer credit guidelines:

- The Center for Languages and Intercultural Communication (CLIC) will determine equivalency for foreign language classes taken at other colleges or universities and approve them for transfer credit.
- Students wanting Rice equivalent credit should obtain approval in writing from CLIC before taking language courses outside of Rice.
- Students who study abroad should have their transfer credits pre-approved by CLIC before they commit to a study-abroad program.
- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.
- When requesting Rice equivalent credit for foreign language acquisition courses, students should submit no less than the following to CLIC for approval:
  - the appropriate transfer credit request form from the Office of the Registrar.
  - a program description for courses taken abroad or catalog description for courses taken in the United States.
  - a course syllabus for the course they wish to take or have taken, or a web address of the program if one is available.
• CLIC does not award Rice equivalent course transfer credit for online courses or coursework taken at community colleges, online universities, ‘for-profit’ universities, or two-year colleges.
• Students should be aware that the approval process takes about one week and should plan accordingly.

Distribution Credit Information
The determination of distribution eligibility is done as part of the new course creation process (https://registrar.rice.edu/facstaff/courseprocess/). As part of an annual roll call (https://registrar.rice.edu/facstaff/distribution_credit/) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean's Offices of each of the academic schools.

Faculty and leadership in the academic schools are responsible for ensuring that the courses identified as distribution-eligible meet the criteria as set in the General Announcements (p. 26). Students are responsible for ensuring that they meet graduation requirements (p. 26) by completing coursework designated as distribution at the time of course registration.

Distribution courses from the Center for Languages and Intercultural Communication (CLIC) are broad in theme and scope. Students in these courses will develop increased intercultural and interactional competence, which includes a critical understanding of the sociolinguistic and sociocultural aspects shared by the community of users of the target language. These courses encourage students to probe the modes of knowledge and inquiry characteristic of the humanities. A central component of these courses is the development of students’ critical thinking and analytical abilities. This is accomplished through the analysis of spoken and written interactions which allows students to understand linguistic forms, uses of vocabulary, varieties of intonation, social situations and their effects on language use, and language behavior in different situations. The ultimate goals are to question students’ own sociolinguistic and sociocultural norms and give them the tools to appropriately engage with the target language communities. These courses will also provide students with the essential knowledge and tools for thinking critically about history and culture, and for understanding the centrality of such capacity to informed participation in social, political, and professional life since it is precisely through understanding the language of history and culture that students can understand these.

Additional Information
For additional information, please see the Center for Languages and Intercultural Communication website: https://clic.rice.edu/

Opportunities for the Certificate in Language and Intercultural Communication - Arabic
Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Scholarships
The Center for Languages and Intercultural Communication invests in students participating in CLIC-sponsored study abroad programs by occasionally offering scholarships to offset the cost of tuition. When funding is available, the scholarships are offered in the spring semester for study abroad programs taking place the following summer.

Additional Information
For additional information, please see the Center for Languages and Intercultural Communication website: https://clic.rice.edu/

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this program.

Certificate in Language and Intercultural Communication - Chinese
Program Learning Outcomes for the Certificate in Language and Intercultural Communication
Upon completing the certificate in Language and Intercultural Communication, students will be able to:

1. Speak in the target language with or to native speakers with enough fluency and minimal obstacles for both the student and the interlocutor, even in spontaneous situations.
2. Write in the target language in a clear, detailed, relatively complex, and context appropriate manner.
3. Understand key socio-cultural differences associated with the target language.

Requirements for the Certificate in Language and Intercultural Communication - Chinese
Students pursuing the Certificate in Language and Intercultural Communication must complete:

• A minimum of 4 courses (12 credit hours) to satisfy certificate requirements.
• An Experiential Learning opportunity (at least 6 of the required 12 credit hours) through an approved study abroad program.
• An Outcomes Assessment to evaluate language proficiency.
• A minimum overall GPA of 2.00 in required coursework with a minimum grade of C (2.00 grade points) in each course.

This certificate is not a freestanding degree program; in addition to fulfilling the certificate requirements outlined below, candidates will be required to complete successfully the degree program to which they have been admitted in order to receive this certificate. Upon completion, the certificate is awarded at the same time as the conferral of the student’s Rice degree, along with a formal notation on their academic transcript.

The courses listed below satisfy the requirements for this certificate. In certain instances, courses not on this official list may be substituted upon approval of the certificate’s academic advisor, or where applicable,
the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the certificate’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

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**Certificate Requirements**

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<td>Required Courses in Target Language</td>
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<td></td>
<td>Select 2 courses from Chinese course offerings (CHIN) at the 300-level or above</td>
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<td>Experiential Learning</td>
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<td></td>
<td>Complete at least 6 of the required 12 credit hours through an approved study abroad program</td>
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<tr>
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<td>Outcomes Assessment</td>
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<tr>
<td></td>
<td>Complete an oral exam and a 500-word essay written in the target language</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>12</td>
</tr>
</tbody>
</table>

**Program Restrictions and Exclusions**

Students pursuing the certificate in Language and Intercultural Communication should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 11), students may declare their intent to pursue a university certificate only after they have first declared a major.

**Transfer Credit**

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

**Program Transfer Credit Guidelines**

Students pursuing the certificate in Language and Intercultural Communication should be aware of the following program-specific transfer credit guidelines:

- The Center for Languages and Intercultural Communication (CLIC) will determine equivalency for foreign language classes taken at other colleges or universities and approve them for transfer credit.
- Students wanting Rice equivalent credit should obtain approval in writing from CLIC before taking language courses outside of Rice.
- Students who study abroad should have their transfer credits pre-approved by CLIC before they commit to a study-abroad program.
- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.
- When requesting Rice equivalent credit for foreign language acquisition courses, students should submit no less than the following to CLIC for approval:
  - the appropriate transfer credit request form from the Office of the Registrar.
  - a program description for courses taken abroad.
  - a course syllabus for the course they wish to take or have taken, or a web address of the program if one is available.
- CLIC does not award Rice equivalent course transfer credit for online courses or coursework taken at community colleges, online universities, ‘for-profit’ universities, or two-year colleges.
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**Distribution Credit Information**

The determination of distribution eligibility is done as part of the new course creation process (https://registrar.rice.edu/facstaff/courseprocess/). As part of an annual roll call (https://registrar.rice.edu/facstaff/distribution_credit/) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean's Offices of each of the academic schools.

Faculty and leadership in the academic schools are responsible for ensuring that the courses identified as distribution-eligible meet the criteria as set in the General Announcements (p. 26). Students are responsible for ensuring that they meet graduation requirements (p. 26).
by completing coursework designated as distribution at the time of course registration.

Distribution courses from the Center for Languages and Intercultural Communication (CLIC) are broad in theme and scope. Students in these courses will develop increased intercultural and interactional competence, which includes a critical understanding of the sociolinguistic and sociocultural aspects shared by the community of users of the target language. These courses encourage students to probe the modes of knowledge and inquiry characteristic of the humanities. A central component of these courses is the development of students' critical thinking and analytical abilities. This is accomplished through the analysis of spoken and written interactions which allows students to understand linguistic forms, uses of vocabulary, varieties of intonation, social situations and their effects on language use, and language behavior in different situations. The ultimate goals are to question students' own sociolinguistic and sociocultural norms and give them the tools to appropriately engage with the target language communities. These courses will also provide students with the essential knowledge and tools for thinking critically about history and culture, and for understanding the centrality of such capacity to informed participation in social, political, and professional life since it is precisely through understanding the language of history and culture that students can understand these.

Additional Information

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Opportunities for the Certificate in Language and Intercultural Communication - Chinese

Academic Honors

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Scholarships

The Center for Languages and Intercultural Communication invests in students participating in CLIC-sponsored study abroad programs by occasionally offering scholarships to offset the cost of tuition. When funding is available, the scholarships are offered in the spring semester for study abroad programs taking place the following summer.

Additional Information

For additional information, please see the Center for Languages and Intercultural Communication website: https://clic.rice.edu/

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this program.

Certificate in Language and Intercultural Communication - French

Program Learning Outcomes for the Certificate in Language and Intercultural Communication

Upon completing the certificate in Language and Intercultural Communication, students will be able to:

1. Speak in the target language with or to native speakers with enough fluency and minimal obstacles for both the student and the interlocutor, even in spontaneous situations.
2. Write in the target language in a clear, detailed, relatively complex, and context appropriate manner.
3. Understand key socio-cultural differences associated with the target language.

Requirements for the Certificate in Language and Intercultural Communication - French

Students pursuing the Certificate in Language and Intercultural Communication must complete:

- A minimum of 4 courses (12 credit hours) to satisfy certificate requirements.
- An Experiential Learning opportunity (at least 6 of the required 12 credit hours) through an approved study abroad program.
- An Outcomes Assessment to evaluate language proficiency.
- A minimum overall GPA of 2.00 in required coursework with a minimum grade of C (2.00 grade points) in each course.

This certificate is not a freestanding degree program; in addition to fulfilling the certificate requirements outlined below, candidates will be required to complete successfully the degree program to which they have been admitted in order to receive this certificate. Upon completion, the certificate is awarded at the same time as the conferral of the student’s Rice degree, along with a formal notation on their academic transcript.

The courses listed below satisfy the requirements for this certificate. In certain instances, courses not on this official list may be substituted upon approval of the certificate's academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the certificate’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

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<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Certificate in Language and Intercultural Communication - French</td>
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Certificate Requirements

<table>
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<tr>
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</table>

Required Courses in Target Language

Select 2 courses from French course offerings (FREN) at the 200-level or above

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</thead>
<tbody>
<tr>
<td></td>
<td>Required Courses in Target Language</td>
<td>6</td>
</tr>
</tbody>
</table>


Select 2 courses from French course offerings (FREN) at the 300-level or above.

**Experiential Learning**

Complete at least 6 of the required 12 credit hours through an approved study abroad program.

**Outcomes Assessment**

Complete an oral exam and a 500-word essay written in the target language.

**Total Credit Hours**

12

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**Footnotes and Additional Information**

1. FREN 222, AP/OTH Credit French Language, will not fulfill this requirement.
2. Rice faculty-led study abroad programs are preferred for meeting the experiential learning component, but in cases when there are no Rice faculty-led programs offered, students should consult with the Certificate advisor for alternative options that include academic content and goals that are similar to the Rice faculty-led programs.
3. In order to meet the Outcomes Assessment requirement for the Certificate, students will complete an examination consisting of oral and written assessments in the target language. After completing the Certificate requirements and as a result of the assessment, students are placed at their level of proficiency following the Common European Framework of Reference for Languages (CEFR). The CEFR level reached will be noted in an official letter from CLIC, as well as via a notation on the student's official Rice academic transcript.

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**Policies for the Certificate in Language and Intercultural Communication - French**

**Language Placement Testing**

Students are required to take a Language Placement Test to ensure that they are placed in the appropriate course in their target language. Placement tests are administered online prior to and during both fall and spring registration.

**Program Restrictions and Exclusions**

Students pursuing the certificate in Language and Intercultural Communication should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 11), students may declare their intent to pursue a university certificate only after they have first declared a major.

**Transfer Credit**

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

**Program Transfer Credit Guidelines**

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- Students wanting Rice equivalent credit should obtain approval in writing from CLIC before taking language courses outside of Rice.
- Students who study abroad should have their transfer credits pre-approved by CLIC before they commit to a study-abroad program.
- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.
- When requesting Rice equivalent credit for foreign language acquisition courses, students should submit no less than the following to CLIC for approval:
  - the appropriate transfer credit request form from the Office of the Registrar.
  - a program description for courses taken abroad or catalog description for courses taken in the United States.
  - a course syllabus for the course they wish to take or have taken, or a web address of the program if one is available.
- CLIC does not award Rice equivalent course transfer credit for online courses or coursework taken at community colleges, online universities, ‘for-profit’ universities, or two-year colleges.
- Students should be aware that the approval process takes about one week and should plan accordingly.

**Distribution Credit Information**

The determination of distribution eligibility is done as part of the new course creation process (https://registrar.rice.edu/facstaff/courseprocess/). As part of an annual roll call (https://registrar.rice.edu/facstaff/distribution_credit/) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean's Offices of each of the academic schools.

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Distribution courses from the Center for Languages and Intercultural Communication (CLIC) are broad in theme and scope. Students in these courses will develop increased intercultural and interactional competence, which includes a critical understanding of the sociolinguistic and sociocultural aspects shared by the community of users of the target language. These courses encourage students to probe the modes of knowledge and inquiry characteristic of the humanities. A central component of these courses is the development of students' critical thinking and analytical abilities. This is accomplished through the analysis of spoken and written interactions which allows students to understand linguistic forms, uses of vocabulary, varieties of intonation, social situations and their effects on language use, and language behavior in different situations. The ultimate goals are to question students’ own sociolinguistic and sociocultural norms and give them the tools to appropriately engage with the target language communities. These courses will also provide students with the essential knowledge and tools for thinking critically about history and culture, and for understanding the centrality of such capacity to informed participation in social, political, and professional life since it is precisely...
through understanding the language of history and culture that students can understand these.

**Additional Information**
For additional information, please see the Center for Languages and Intercultural Communication website: [https://clic.rice.edu/](https://clic.rice.edu/).

**Opportunities for the Certificate in Language and Intercultural Communication - French**

**Academic Honors**
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see [Latin Honors](#) (p. 48) ([summa cum laude](#), [magna cum laude](#), and [cum laude](#)). Some departments have department-specific Honors awards or designations.

**Scholarships**
The Center for Languages and Intercultural Communication invests in students participating in CLIC-sponsored study abroad programs by occasionally offering scholarships to offset the cost of tuition. When funding is available, the scholarships are offered in the spring semester for study abroad programs taking place the following summer.

**Additional Information**
For additional information, please see the Center for Languages and Intercultural Communication website: [https://clic.rice.edu/](https://clic.rice.edu/).

See [https://humanities.rice.edu/student-life](https://humanities.rice.edu/student-life/) for tables of fellowships, prizes, and internships/practica that may be relevant to this program.

**Certificate in Language and Intercultural Communication - German**

**Program Learning Outcomes for the Certificate in Language and Intercultural Communication**

Upon completing the certificate in Language and Intercultural Communication, students will be able to:

1. Speak in the target language with or to native speakers with enough fluency and minimal obstacles for both the student and the interlocutor, even in spontaneous situations.
2. Write in the target language in a clear, detailed, relatively complex, and context appropriate manner.
3. Understand key socio-cultural differences associated with the target language.

**Requirements for the Certificate in Language and Intercultural Communication - German**

Students pursuing the Certificate in Language and Intercultural Communication must complete:

- A minimum of 4 courses (12 credit hours) to satisfy certificate requirements.
- An Experiential Learning opportunity (at least 6 of the required 12 credit hours) through an approved study abroad program.
- An Outcomes Assessment to evaluate language proficiency.
- A minimum overall GPA of 2.00 in required coursework with a minimum grade of C (2.00 grade points) in each course.

This certificate is not a freestanding degree program; in addition to fulfilling the certificate requirements outlined below, candidates will be required to complete successfully the degree program to which they have been admitted in order to receive this certificate. Upon completion, the certificate is awarded at the same time as the conferral of the student's Rice degree, along with a formal notation on their academic transcript.

The courses listed below satisfy the requirements for this certificate. In certain instances, courses not on this official list may be substituted upon approval of the certificate's academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the certificate's Official Certifier [https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/].) Students and their academic advisors should identify and clearly document the courses to be taken.

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**Certificate Requirements**

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<th>Code</th>
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<tr>
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<td>Required Courses in Target Language</td>
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<tr>
<td></td>
<td>Select 2 courses from German course offerings (GERM) at the 200-level or above</td>
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<td>Select 2 courses from German course offerings (GERM) at the 300-level or above</td>
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<tr>
<td></td>
<td>Experiential Learning</td>
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<td>Outcomes Assessment</td>
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**Footnotes and Additional Information**

1. GERM 222, AP/OTH Credit German Language, will not fulfill this requirement.

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2019-2020 General Announcements
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2 Rice faculty-led study abroad programs are preferred for meeting the experiential learning component, but in cases when there are no Rice faculty-led programs offered, students should consult with the Certificate advisor for alternative options that include academic content and goals that are similar to the Rice faculty-led programs.

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Policies for the Certificate in Language and Intercultural Communication - German

Language Placement Testing
Students are required to take a Language Placement Test to ensure that they are placed in the appropriate course in their target language. Placement tests are administered online prior to and during both fall and spring registration.

Program Restrictions and Exclusions
Students pursuing the certificate in Language and Intercultural Communication should be aware of the following program restrictions:

- As noted in Majors, Minors, and Certificates (p. 11), students may declare their intent to pursue a university certificate only after they have first declared a major.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines
Students pursuing the certificate in Language and Intercultural Communication should be aware of the following program-specific transfer credit guidelines:

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- Students should be aware that the approval process takes about one week and should plan accordingly.

Distribution Credit Information
The determination of distribution eligibility is done as part of the new course creation process (https://registrar.rice.edu/facstaff/coursecreation/). As part of an annual roll call (https://registrar.rice.edu/facstaff/distribution_credit/) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean's Offices of each of the academic schools.

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Additional Information
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Opportunities for the Certificate in Language and Intercultural Communication - German

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum
laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

**Scholarships**

The Center for Languages and Intercultural Communication invests in students participating in CLIC-sponsored study abroad programs by occasionally offering scholarships to offset the cost of tuition. When funding is available, the scholarships are offered in the spring semester for study abroad programs taking place the following summer.

**Additional Information**

For additional information, please see the Center for Languages and Intercultural Communication website: [https://clic.rice.edu/](https://clic.rice.edu/)

See [https://humanities.rice.edu/student-life](https://humanities.rice.edu/student-life/) for tables of fellowships, prizes, and internships/practica that may be relevant to this program.

### Certificate in Language and Intercultural Communication - Hindi

**Program Learning Outcomes for the Certificate in Language and Intercultural Communication**

Upon completing the certificate in Language and Intercultural Communication, students will be able to:

1. Speak in the target language with or to native speakers with enough fluency and minimal obstacles for both the student and the interlocutor, even in spontaneous situations.
2. Write in the target language in a clear, detailed, relatively complex, and context appropriate manner.
3. Understand key socio-cultural differences associated with the target language.

**Requirements for the Certificate in Language and Intercultural Communication - Hindi**

Students pursuing the Certificate in Language and Intercultural Communication must complete:

- A minimum of 4 courses (12 credit hours) to satisfy certificate requirements.
- An Experiential Learning opportunity (at least 6 of the required 12 credit hours) through an approved study abroad program.
- An Outcomes Assessment to evaluate language proficiency.
- A minimum overall GPA of 2.00 in required coursework with a minimum grade of C (2.00 grade points) in each course.

This certificate is not a freestanding degree program; in addition to fulfilling the certificate requirements outlined below, candidates will be required to complete successfully the degree program to which they have been admitted in order to receive this certificate. Upon completion, the certificate is awarded at the same time as the conferral of the student's Rice degree, along with a formal notation on their academic transcript.

The courses listed below satisfy the requirements for this certificate. In certain instances, courses not on this official list may be substituted upon approval of the certificate's academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the certificate's Official Certifier [https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/].) Students and their academic advisors should identify and clearly document the courses to be taken.

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**Certificate Requirements**

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**Footnotes and Additional Information**

1. Rice faculty-led study abroad programs are preferred for meeting the experiential learning component, but in cases when there are no Rice faculty-led programs offered, students should consult with the Certificate advisor for alternative options that include academic content and goals that are similar to the Rice faculty-led programs.
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### Policies for the Certificate in Language and Intercultural Communication - Hindi

**Language Placement Testing**

Students are required to take a Language Placement Test to ensure that they are placed in the appropriate course in their target language. Placement tests are administered online prior to and during both fall and spring registration.

**Program Restrictions and Exclusions**

Students pursuing the certificate in Language and Intercultural Communication should be aware of the following program restriction:
• As noted in Majors, Minors, and Certificates (p. 11), students may declare their intent to pursue a university certificate only after they have first declared a major.

Transfer Credit
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Opportunities for the Certificate in Language and Intercultural Communication - Hindi

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See https://humanities.rice.edu/student-life (https://humanities.rice.edu/student-life/) for tables of fellowships, prizes, and internships/practica that may be relevant to this program.

Certificate in Language and Intercultural Communication - Italian

Program Learning Outcomes for the Certificate in Language and Intercultural Communication
Upon completing the certificate in Language and Intercultural Communication, students will be able to:
1. Speak in the target language with or to native speakers with enough fluency and minimal obstacles for both the student and the interlocutor, even in spontaneous situations.

2. Write in the target language in a clear, detailed, relatively complex, and context appropriate manner.

3. Understand key socio-cultural differences associated with the target language.

Requirements for the Certificate in Language and Intercultural Communication - Italian

Students pursuing the Certificate in Language and Intercultural Communication must complete:

- A minimum of 4 courses (12 credit hours) to satisfy certificate requirements.
- An Experiential Learning opportunity (at least 6 of the required 12 credit hours) through an approved study abroad program.
- An Outcomes Assessment to evaluate language proficiency.
- A minimum overall GPA of 2.00 in required coursework with a minimum grade of C (2.00 grade points) in each course.

This certificate is not a freestanding degree program; in addition to fulfilling the certificate requirements outlined below, candidates will be required to complete successfully the degree program to which they have been admitted in order to receive this certificate. Upon completion, the certificate is awarded at the same time as the conferral of the student’s Rice degree, along with a formal notation on their academic transcript.

The courses listed below satisfy the requirements for this certificate. In certain instances, courses not on this official list may be substituted upon approval of the certificate’s academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the certificate’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

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<tr>
<td>Total Credit Hours</td>
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Required Courses in Target Language

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<th>Code</th>
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<td>Select 2 courses from Italian course offerings (ITAL) at the 300-level or above</td>
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Experiential Learning

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<td>Complete at least 6 of the required 12 credit hours through an approved study abroad program</td>
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Outcomes Assessment

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<tr>
<td>3</td>
<td>Complete an oral exam and a 500-word essay written in the target language</td>
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Policies for the Certificate in Language and Intercultural Communication - Italian

Language Placement Testing

Students are required to take a Language Placement Test to ensure that they are placed in the appropriate course in their target language. Placement tests are administered online prior to and during both fall and spring registration.

Program Restrictions and Exclusions

Students pursuing the certificate in Language and Intercultural Communication should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 11), students may declare their intent to pursue a university certificate only after they have first declared a major.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

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Students pursuing the certificate in Language and Intercultural Communication should be aware of the following program-specific transfer credit guidelines:

- The Center for Languages and Intercultural Communication (CLIC) will determine equivalency for foreign language classes taken at other colleges or universities and approve them for transfer credit.
- Students wanting Rice equivalent credit should obtain approval in writing from CLIC before taking language courses outside of Rice.
- Students who study abroad should have their transfer credits pre-approved by CLIC before they commit to a study-abroad program.

Footnotes and Additional Information

1. ITAL 222, AP/OTH Credit Italian Language, will not fulfill this requirement.

2. Rice faculty-led study abroad programs are preferred for meeting the experiential learning component, but in cases when there are no Rice faculty-led programs offered, students should consult with the Certificate advisor for alternative options that include academic content and goals that are similar to the Rice faculty-led programs.

3. In order meet the Outcomes Assessment requirement for the Certificate, students will complete an examination consisting of oral and written assessments in the target language. After completing the Certificate requirements and as a result of the assessment, students are placed at their level of proficiency following the Common European Framework of Reference for Languages (CEFR). The CEFR level reached will be noted in an official letter from CLIC, as well as via a notation on the student’s official Rice academic transcript.
• Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

• When requesting Rice equivalent credit for foreign language acquisition courses, students should submit no less than the following to CLIC for approval:
  • the appropriate transfer credit request form from the Office of the Registrar.
  • a program description for courses taken abroad or catalog description for courses taken in the United States.
  • a course syllabus for the course they wish to take or have taken, or a web address of the program if one is available.

• CLIC does not award Rice equivalent course transfer credit for online courses or coursework taken at community colleges, online universities, ‘for-profit’ universities, or two-year colleges.

• Students should be aware that the approval process takes about one week and should plan accordingly.

**Distribution Credit Information**

The determination of distribution eligibility is done as part of the new course creation process (https://registrar.rice.edu/facstaff/courseprocess/). As part of an annual roll call (https://registrar.rice.edu/facstaff/distribution_credit/) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean’s Offices of each of the academic schools.

Faculty and leadership in the academic schools are responsible for ensuring that the courses identified as distribution-eligible meet the criteria as set in the General Announcements (p. 26). Students are responsible for ensuring that they meet graduation requirements (p. 26) by completing coursework designated as distribution at the time of course registration.

Distribution courses from the Center for Languages and Intercultural Communication (CLIC) are broad in theme and scope. Students in these courses will develop increased intercultural and interactional competence, which includes a critical understanding of the sociolinguistic and sociocultural aspects shared by the community of users of the target language. These courses encourage students to probe the modes of knowledge and inquiry characteristic of the humanities. A central component of these courses is the development of students’ critical thinking and analytical abilities. This is accomplished through the analysis of spoken and written interactions which allows students to understand linguistic forms, uses of vocabulary, varieties of intonation, social situations and their effects on language use, and language behavior in different situations. The ultimate goals are to question students’ own sociolinguistic and sociocultural norms and give them the tools to appropriately engage with the target language communities. These courses will also provide students with the essential knowledge and tools for thinking critically about history and culture, and for understanding the centrality of such capacity to informed participation in social, political, and professional life since it is precisely through understanding the language of history and culture that students can understand these.

**Additional Information**

For additional information, please see the Center for Languages and Intercultural Communication website: https://clic.rice.edu/.

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**Opportunities for the Certificate in Language and Intercultural Communication - Italian**

**Academic Honors**

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

**Scholarships**

The Center for Languages and Intercultural Communication invests in students participating in CLIC-sponsored study abroad programs by occasionally offering scholarships to offset the cost of tuition. When funding is available, the scholarships are offered in the spring semester for study abroad programs taking place the following summer.

**Additional Information**

For additional information, please see the Center for Languages and Intercultural Communication website: https://clic.rice.edu/.

See https://humanities.rice.edu/student-life/ for tables of fellowships, prizes, and internships/practica that may be relevant to this program.

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**Certificate in Language and Intercultural Communication - Japanese**

**Program Learning Outcomes for the Certificate in Language and Intercultural Communication**

Upon completing the certificate in Language and Intercultural Communication, students will be able to:

1. Speak in the target language with or to native speakers with enough fluency and minimal obstacles for both the student and the interlocutor, even in spontaneous situations.

2. Write in the target language in a clear, detailed, relatively complex, and context appropriate manner.

3. Understand key socio-cultural differences associated with the target language.

**Requirements for the Certificate in Language and Intercultural Communication - Japanese**

Students pursuing the Certificate in Language and Intercultural Communication must complete:

• A minimum of 4 courses (12 credit hours) to satisfy certificate requirements.

• An Experiential Learning opportunity (at least 6 of the required 12 credit hours) through an approved study abroad program.
• An Outcomes Assessment to evaluate language proficiency.
• A minimum overall GPA of 2.00 in required coursework with a minimum grade of C (2.00 grade points) in each course.

This certificate is not a freestanding degree program; in addition to fulfilling the certificate requirements outlined below, candidates will be required to complete successfully the degree program to which they have been admitted in order to receive this certificate. Upon completion, the certificate is awarded at the same time as the conferral of the student’s Rice degree, along with a formal notation on their academic transcript.

The courses listed below satisfy the requirements for this certificate. In certain instances, courses not on this official list may be substituted upon approval of the certificate’s academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the certificate’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<td><strong>Total Credit Hours Required for the Certificate in Language and Intercultural Communication - Japanese</strong> 12</td>
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**Certificate Requirements**

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<thead>
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<th>Code</th>
<th>Title</th>
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<td><strong>Required Courses in Target Language</strong></td>
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<td>Select 2 courses from Japanese course offerings (JAPA) at the 300-level or above</td>
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<td></td>
<td><strong>Experiential Learning</strong></td>
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</tr>
<tr>
<td></td>
<td>Complete at least 6 of the required 12 credit hours through an approved study abroad program 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Outcomes Assessment</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Complete an oral exam and a 500-word essay written in the target language 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total Credit Hours</strong></td>
<td>12</td>
</tr>
</tbody>
</table>

**Footnotes and Additional Information**

1 JAPA 222, AP/OTH Credit Japanese Language, will not fulfill this requirement.
2 Rice faculty-led study abroad programs are preferred for meeting the experiential learning component, but in cases when there are no Rice faculty-led programs offered, students should consult with the Certificate advisor for alternative options that include academic content and goals that are similar to the Rice faculty-led programs.
3 In order to meet the Outcomes Assessment requirement for the Certificate, students will complete an examination consisting of oral and written assessments in the target language. After completing the Certificate requirements and as a result of the assessment, students are placed at their level of proficiency following the Common European Framework of Reference for Languages (CEFR). The CEFR level reached will be noted in an official letter from CLIC, as well as via a notation on the student’s official Rice academic transcript.

**Policies for the Certificate in Language and Intercultural Communication - Japanese**

**Language Placement Testing**

Students are required to take a Language Placement Test to ensure that they are placed in the appropriate course in their target language. Placement tests are administered online prior to and during both fall and spring registration.

**Program Restrictions and Exclusions**

Students pursuing the certificate in Language and Intercultural Communication should be aware of the following program restriction:

• As noted in Majors, Minors, and Certificates (p. 11), students may declare their intent to pursue a university certificate only after they have first declared a major.

**Transfer Credit**

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

**Program Transfer Credit Guidelines**

Students pursuing the certificate in Language and Intercultural Communication should be aware of the following program-specific transfer credit guidelines:

• The Center for Languages and Intercultural Communication (CLIC) will determine equivalency for foreign language classes taken at other colleges or universities and approve them for transfer credit.
• Students wanting Rice equivalent credit should obtain approval in writing from CLIC before taking language courses outside of Rice.
• Students who study abroad should have their transfer credits pre-approved by CLIC before they commit to a study-abroad program.
• Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.
• When requesting Rice equivalent credit for foreign language acquisition courses, students should submit no less than the following to CLIC for approval:
  • the appropriate transfer credit request form from the Office of the Registrar.
  • a program description for courses taken abroad or catalog description for courses taken in the United States.
  • a course syllabus for the course they wish to take or have taken, or a web address of the program if one is available.
• CLIC does not award Rice equivalent course transfer credit for online courses or coursework taken at community colleges, online universities, ‘for-profit’ universities, or two-year colleges.
• Students should be aware that the approval process takes about one week and should plan accordingly.

**Distribution Credit Information**

The determination of distribution eligibility is done as part of the new course creation process (https://registrar.rice.edu/facstaff/)

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Rice University 507
As of part of an annual roll call (https://registrar.rice.edu/facstaff/distribution_credit/) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean's Offices of each of the academic schools.

Faculty and leadership in the academic schools are responsible for ensuring that the courses identified as distribution-eligible meet the criteria as set in the General Announcements (p. 26). Students are responsible for ensuring that they meet graduation requirements (p. 26) by completing coursework designated as distribution at the time of course registration.

Distribution courses from the Center for Languages and Intercultural Communication (CLIC) are broad in theme and scope. Students in these courses will develop increased intercultural and interactional competence, which includes a critical understanding of the sociolinguistic and sociocultural aspects shared by the community of users of the target language. These courses encourage students to probe the modes of knowledge and inquiry characteristic of the humanities. A central component of these courses is the development of students' critical thinking and analytical abilities. This is accomplished through the analysis of spoken and written interactions which allows students to understand linguistic forms, uses of vocabulary, varieties of intonation, social situations and their effects on language use, and language behavior in different situations. The ultimate goals are to question students' own sociolinguistic and sociocultural norms and give them the tools to appropriately engage with the target language communities. These courses will also provide students with the essential knowledge and tools for thinking critically about history and culture, and for understanding the centrality of such capacity to informed participation in social, political, and professional life since it is precisely through understanding the language of history and culture that students can understand these.

**Additional Information**

For additional information, please see the Center for Languages and Intercultural Communication website: https://clic.rice.edu/.

**Opportunities for the Certificate in Language and Intercultural Communication - Japanese**

**Academic Honors**

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or distinctions.

**Scholarships**

The Center for Languages and Intercultural Communication invests in students participating in CLIC-sponsored study abroad programs by occasionally offering scholarships to offset the cost of tuition. When funding is available, the scholarships are offered in the spring semester for study abroad programs taking place the following summer.

**Additional Information**

For additional information, please see the Center for Languages and Intercultural Communication website: https://clic.rice.edu/.
Summary

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Certificate Requirements

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<th>Code</th>
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<th>Credit Hours</th>
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</thead>
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<tr>
<td></td>
<td>Required Courses in Target Language</td>
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<tr>
<td></td>
<td>Select 2 courses from Korean course offerings (KORE) at the 200-level or above</td>
<td>6</td>
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<tr>
<td></td>
<td>Select 2 courses from Korean course offerings (KORE) at the 300-level or above</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Experiential Learning</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Complete at least 6 of the required 12 credit hours through an approved study abroad program</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Outcomes Assessment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Complete an oral exam and a 500-word essay written in the target language</td>
<td></td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1 Rice faculty-led study abroad programs are preferred for meeting the experiential learning component, but in cases when there are no Rice faculty-led programs offered, students should consult with the Certificate advisor for alternative options that include academic content and goals that are similar to the Rice faculty-led programs.

2 In order meet the Outcomes Assessment requirement for the Certificate, students will complete an examination consisting of oral and written assessments in the target language. After completing the Certificate requirements and as a result of the assessment, students are placed at their level of proficiency following the Common European Framework of Reference for Languages (CEFR). The CEFR level reached will be noted in an official letter from CLIC, as well as via a notation on the student’s official Rice academic transcript.

Policies for the Certificate in Language and Intercultural Communication - Korean

Language Placement Testing

Students are required to take a Language Placement Test to ensure that they are placed in the appropriate course in their target language. Placement tests are administered online prior to and during both fall and spring registration.

Program Restrictions and Exclusions

Students pursuing the certificate in Language and Intercultural Communication should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 11), students may declare their intent to pursue a university certificate only after they have first declared a major.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines

Students pursuing the certificate in Language and Intercultural Communication should be aware of the following program-specific transfer credit guidelines:

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- Students who study abroad should have their transfer credits pre-approved by CLIC before they commit to a study-abroad program.
- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.
- When requesting Rice equivalent credit for foreign language acquisition courses, students should submit no less than the following to CLIC for approval:
  - the appropriate transfer credit request form from the Office of the Registrar.
  - a course syllabus for the course they wish to take or have taken, or a web address of the program if one is available.
- CLIC does not award Rice equivalent course transfer credit for online courses or coursework taken at community colleges, online universities, ‘for-profit’ universities, or two-year colleges.
- Students should be aware that the approval process takes about one week and should plan accordingly.

Distribution Credit Information

The determination of distribution eligibility is done as part of the new course creation process (https://registrar.rice.edu/facstaff/courseprocess/). As part of an annual roll call (https://registrar.rice.edu/facstaff/distribution_credit/) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean’s Offices of each of the academic schools.

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question students' own sociolinguistic and sociocultural norms and give them the tools to appropriately engage with the target language communities. These courses will also provide students with the essential knowledge and tools for thinking critically about history and culture, and for understanding the centrality of such capacity to informed participation in social, political, and professional life since it is precisely through understanding the language of history and culture that students can understand these.

**Additional Information**

For additional information, please see the Center for Languages and Intercultural Communication website: [https://clic.rice.edu/](https://clic.rice.edu/).

**Opportunities for the Certificate in Language and Intercultural Communication - Korean**

**Academic Honors**

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (*summa cum laude*, *magna cum laude*, and *cum laude*) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

**Scholarships**

The Center for Languages and Intercultural Communication invests in students participating in CLIC-sponsored study abroad programs by occasionally offering scholarships to offset the cost of tuition. When funding is available, the scholarships are offered in the spring semester for study abroad programs taking place the following summer.

**Additional Information**

For additional information, please see the Center for Languages and Intercultural Communication website: [https://clic.rice.edu/](https://clic.rice.edu/).

See [https://humanities.rice.edu/student-life](https://humanities.rice.edu/student-life/) for tables of fellowships, prizes, and internships/practica that may be relevant to this program.

**Certificate in Language and Intercultural Communication - Portuguese**

**Program Learning Outcomes for the Certificate in Language and Intercultural Communication**

Upon completing the certificate in Language and Intercultural Communication, students will be able to:

1. Speak in the target language with or to native speakers with enough fluency and minimal obstacles for both the student and the interlocutor, even in spontaneous situations.
2. Write in the target language in a clear, detailed, relatively complex, and context appropriate manner.
3. Understand key socio-cultural differences associated with the target language.

**Requirements for the Certificate in Language and Intercultural Communication - Portuguese**

Students pursuing the Certificate in Language and Intercultural Communication must complete:

- A minimum of 4 courses (12 credit hours) to satisfy certificate requirements.
- An Experiential Learning opportunity (at least 6 of the required 12 credit hours) through an approved study abroad program.
- An Outcomes Assessment to evaluate language proficiency.
- A minimum overall GPA of 2.00 in required coursework with a minimum grade of C (2.00 grade points) in each course.

This certificate is not a freestanding degree program; in addition to fulfilling the certificate requirements outlined below, candidates will be required to complete successfully the degree program to which they have been admitted in order to receive this certificate. Upon completion, the certificate is awarded at the same time as the conferral of the student's Rice degree, along with a formal notation on their academic transcript.

The courses listed below satisfy the requirements for this certificate. In certain instances, courses not on this official list may be substituted upon approval of the certificate's academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the certificate's [Official Certifier](https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

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**Certificate Requirements**

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<td>Required Courses in Target Language</td>
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<td></td>
<td>Select 2 courses from Portuguese course offerings (PORT) at the 200-level or above</td>
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<td></td>
<td>Select 2 courses from Portuguese course offerings (PORT) at the 300-level or above</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Experiential Learning</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Complete at least 6 of the required 12 credit hours through an approved study abroad program</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Outcomes Assessment</td>
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<tr>
<td></td>
<td>Complete an oral exam and a 500-word essay written in the target language</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>12</td>
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</table>
Footnotes and Additional Information

1 Students studying Portuguese or Spanish who take two 200-level courses offered by CLIC must take at least one 300-level course taught by the Department of Spanish, Portuguese, and Latin American Studies (SPLA). If they fulfill any of the 200-level course requirements with a 300-level course, they must register for a minimum of two 300-level courses offered by SPLA.

2 Rice faculty-led study abroad programs are preferred for meeting the experiential learning component, but in cases where there are no Rice faculty-led programs offered, students should consult with the Certificate advisor for alternative options that include academic content and goals that are similar to the Rice faculty-led programs.

3 In order to meet the Outcomes Assessment requirement for the Certificate, students will complete an examination consisting of oral and written assessments in the target language. After completing the Certificate requirements and as a result of the assessment, students are placed at their level of proficiency following the Common European Framework of Reference for Languages (CEFR). The CEFR level reached will be noted in an official letter from CLIC, as well as via a notation on the student’s official Rice academic transcript.

Policies for the Certificate in Language and Intercultural Communication - Portuguese

Language Placement Testing
Students are required to take a Language Placement Test to ensure that they are placed in the appropriate course in their target language. Placement tests are administered online prior to and during both fall and spring registration.

Program Restrictions and Exclusions
Students pursuing the certificate in Language and Intercultural Communication should be aware of the following program restriction:

• As noted in Majors, Minors, and Certificates (p. 11), students may declare their intent to pursue a university certificate only after they have first declared a major.

Transfer Credit
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Program Transfer Credit Guidelines
Students pursuing the certificate in Language and Intercultural Communication should be aware of the following program-specific transfer credit guidelines:

• The Center for Languages and Intercultural Communication (CLIC) will determine equivalency for foreign language classes taken at other colleges or universities and approve them for transfer credit.
• Students wanting Rice equivalent credit should obtain approval in writing from CLIC before taking language courses outside of Rice.
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• When requesting Rice equivalent credit for foreign language acquisition courses, students should submit no less than the following to CLIC for approval:
  • the appropriate transfer credit request form from the Office of the Registrar.
  • a program description for courses taken abroad or catalog description for courses taken in the United States.
  • a course syllabus for the course they wish to take or have taken, or a web address of the program if one is available.
• CLIC does not award Rice equivalent course transfer credit for online courses or coursework taken at community colleges, online universities, ‘for-profit’ universities, or two-year colleges.
• Students should be aware that the approval process takes about one week and should plan accordingly.

Distribution Credit Information
The determination of distribution eligibility is done as part of the new course creation process (https://registrar.rice.edu/facstaff/courseprocess/). As part of an annual roll call (https://registrar.rice.edu/facstaff/distribution_credit/) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean’s Offices of each of the academic schools.

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Additional Information
For additional information, please see the Center for Languages and Intercultural Communication website: https://clic.rice.edu/.
Opportunities for the Certificate in Language and Intercultural Communication - Russian

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Scholarships
The Center for Languages and Intercultural Communication invests in students participating in CLIC-sponsored study abroad programs by occasionally offering scholarships to offset the cost of tuition. When funding is available, the scholarships are offered in the spring semester for study abroad programs taking place the following summer.

Additional Information
For additional information, please see the Center for Languages and Intercultural Communication website: https://clic.rice.edu/

See https://humanities.rice.edu/student-life (https://humanities.rice.edu/student-life/ for tables of fellowships, prizes, and internships/practica that may be relevant to this program.

Certificate in Language and Intercultural Communication - Russian

Program Learning Outcomes for the Certificate in Language and Intercultural Communication

Upon completing the certificate in Language and Intercultural Communication, students will be able to:

1. Speak in the target language with or to native speakers with enough fluency and minimal obstacles for both the student and the interlocutor, even in spontaneous situations.
2. Write in the target language in a clear, detailed, relatively complex, and context appropriate manner.
3. Understand key socio-cultural differences associated with the target language.

Requirements for the Certificate in Language and Intercultural Communication - Russian

Students pursuing the Certificate in Language and Intercultural Communication must complete:

• A minimum of 4 courses (12 credit hours) to satisfy certificate requirements.
• An Experiential Learning opportunity (at least 6 of the required 12 credit hours) through an approved study abroad program.
• An Outcomes Assessment to evaluate language proficiency.
• A minimum overall GPA of 2.00 in required coursework with a minimum grade of C (2.00 grade points) in each course.

This certificate is not a freestanding degree program; in addition to fulfilling the certificate requirements outlined below, candidates will be required to complete successfully the degree program to which they have been admitted in order to receive this certificate. Upon completion, the certificate is awarded at the same time as the conferral of the student's Rice degree, along with a formal notation on their academic transcript.

The courses listed below satisfy the requirements for this certificate. In certain instances, courses not on this official list may be substituted upon approval of the certificate's academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the certificate's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/)). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
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<th>Code</th>
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<tr>
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Certificate Requirements

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<th>Code</th>
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<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>Required Courses in Target Language</td>
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<td></td>
<td>Select 2 courses from Russian course offerings (RUSS) at the 200-level or above</td>
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<td>Experiential Learning</td>
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<td></td>
<td>Complete at least 6 of the required 12 credit hours through an approved study abroad program</td>
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<tr>
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<td>Outcomes Assessment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Complete an oral exam and a 500-word essay written in the target language</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>12</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1. Rice faculty-led study abroad programs are preferred for meeting the experiential learning component, but in cases when there are no Rice faculty-led programs offered, students should consult with the Certificate advisor for alternative options that include academic content and goals that are similar to the Rice faculty-led programs.

2. In order meet the Outcomes Assessment requirement for the Certificate, students will complete an examination consisting of oral and written assessments in the target language. After completing the Certificate requirements and as a result of the assessment, students are placed at their level of proficiency following the Common European Framework of Reference for Languages (CEFR). The CEFR level reached will be noted in an official letter from CLIC, as well as via a notation on the student's official Rice academic transcript.
Policies for the Certificate in Language and Intercultural Communication - Russian

Language Placement Testing
Students are required to take a Language Placement Test to ensure that they are placed in the appropriate course in their target language. Placement tests are administered online prior to and during both fall and spring registration.

Program Restrictions and Exclusions
Students pursuing the certificate in Language and Intercultural Communication should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 11), students may declare their intent to pursue a university certificate only after they have first declared a major.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines
Students pursuing the certificate in Language and Intercultural Communication should be aware of the following program-specific transfer credit guidelines:

- The Center for Languages and Intercultural Communication (CLIC) will determine equivalency for foreign language classes taken at other colleges or universities and approve them for transfer credit.
- Students wanting Rice equivalent credit should obtain approval in writing from CLIC before taking language courses outside of Rice.
- Students who study abroad should have their transfer credits pre-approved by CLIC before they commit to a study-abroad program.
- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.
- When requesting Rice equivalent credit for foreign language acquisition courses, students should submit no less than the following to CLIC for approval:
  - the appropriate transfer credit request form from the Office of the Registrar.
  - a program description for courses taken abroad or catalog description for courses taken in the United States.
  - a course syllabus for the course they wish to take or have taken, or a web address of the program if one is available.
- CLIC does not award Rice equivalent course transfer credit for online courses or coursework taken at community colleges, online universities, ‘for-profit’ universities, or two-year colleges.
- Students should be aware that the approval process takes about one week and should plan accordingly.

Distribution Credit Information
The determination of distribution eligibility is done as part of the new course creation process (https://registrar.rice.edu/facstaff/distribution_credit/). As part of an annual roll call (https://registrar.rice.edu/facstaff/distribution_credit/) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean’s Offices of each of the academic schools.

Faculty and leadership in the academic schools are responsible for ensuring that the courses identified as distribution-eligible meet the criteria as set in the General Announcements (p. 26). Students are responsible for ensuring that they meet graduation requirements (p. 26) by completing coursework designated as distribution at the time of course registration.

Distribution courses from the Center for Languages and Intercultural Communication (CLIC) are broad in theme and scope. Students in these courses will develop increased intercultural and interactional competence, which includes a critical understanding of the sociolinguistic and sociocultural aspects shared by the community of users of the target language. These courses encourage students to probe the modes of knowledge and inquiry characteristic of the humanities. A central component of these courses is the development of students’ critical thinking and analytical abilities. This is accomplished through the analysis of spoken and written interactions which allows students to understand linguistic forms, uses of vocabulary, varieties of intonation, social situations and their effects on language use, and language behavior in different situations. The ultimate goals are to question students’ own sociolinguistic and sociocultural norms and give them the tools to appropriately engage with the target language communities. These courses will also provide students with the essential knowledge and tools for thinking critically about history and culture, and for understanding the centrality of such capacity to informed participation in social, political, and professional life since it is precisely through understanding the language of history and culture that students can understand these.

Additional Information
For additional information, please see the Center for Languages and Intercultural Communication website: https://clic.rice.edu/.

Opportunities for the Certificate in Language and Intercultural Communication - Russian

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Scholarships
The Center for Languages and Intercultural Communication invests in students participating in CLIC-sponsored study abroad programs by occasionally offering scholarships to offset the cost of tuition. When funding is available, the scholarships are offered in the spring semester for study abroad programs taking place the following summer.

Additional Information
For additional information, please see the Center for Languages and Intercultural Communication website: https://clic.rice.edu/.
Certificate in Language and Intercultural Communication - Spanish

Program Learning Outcomes for the Certificate in Language and Intercultural Communication

Upon completing the certificate in Language and Intercultural Communication, students will be able to:

1. Speak in the target language with or to native speakers with enough fluency and minimal obstacles for both the student and the interlocutor, even in spontaneous situations.
2. Write in the target language in a clear, detailed, relatively complex, and context appropriate manner.
3. Understand key socio-cultural differences associated with the target language.

Requirements for the Certificate in Language and Intercultural Communication - Spanish

Students pursuing the Certificate in Language and Intercultural Communication must complete:

- A minimum of 4 courses (12 credit hours) to satisfy certificate requirements.
- An Experiential Learning opportunity (at least 6 of the required 12 credit hours) through an approved study abroad program.
- An Outcomes Assessment to evaluate language proficiency.
- A minimum overall GPA of 2.00 in required coursework with a minimum grade of C (2.00 grade points) in each course.

This certificate is not a freestanding degree program; in addition to fulfilling the certificate requirements outlined below, candidates will be required to complete successfully the degree program to which they have been admitted in order to receive this certificate. Upon completion, the certificate is awarded at the same time as the conferral of the student's Rice degree, along with a formal notation on their academic transcript.

The courses listed below satisfy the requirements for this certificate. In certain instances, courses not on this official list may be substituted upon approval of the certificate's academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the certificate's Official Certifier [https://registrar.rice.edu/facstaff/dregeworks/officialcertifier/].) Students and their academic advisors should identify and clearly document the courses to be taken.

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Certificate Requirements

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<tbody>
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<td>Required Courses in Target Language</td>
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<tr>
<td></td>
<td>Select 2 courses from Spanish course offerings (SPAN) at the 200-level or above</td>
<td>6</td>
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<td></td>
<td>Select 2 courses from Spanish course offerings (SPAN) at the 300-level or above</td>
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<tr>
<td></td>
<td>Experiential Learning</td>
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<tr>
<td></td>
<td>Complete at least 6 of the required 12 credit hours through an approved study abroad program</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Outcomes Assessment</td>
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</tr>
<tr>
<td></td>
<td>Complete an oral exam and a 500-word essay written in the target language</td>
<td>4</td>
</tr>
</tbody>
</table>

Total Credit Hours 12

Footnotes and Additional Information

1 Students studying Portuguese or Spanish who take two 200-level courses offered by CLIC must take at least one 300-level course taught by the Department of Spanish, Portuguese, and Latin American Studies (SPLA). If they fulfill any of the 200-level course requirements with a 300-level course, they must register for a minimum of two 300-level courses offered by SPLA.
2 SPAN 222, AP/OTH Credit Spanish Language, will not fulfill this requirement.
3 Rice faculty-led study abroad programs are preferred for meeting the experiential learning component, but in cases when there are no Rice faculty-led programs offered, students should consult with the Certificate advisor for alternative options that include academic content and goals that are similar to the Rice faculty-led programs.
4 In order meet the Outcomes Assessment requirement for the Certificate, students will complete an examination consisting of oral and written assessments in the target language. After completing the Certificate requirements and as a result of the assessment, students are placed at their level of proficiency following the Common European Framework of Reference for Languages (CEFR). The CEFR level reached will be noted in an official letter from CLIC, as well as via a notation on the student's official Rice academic transcript.

Policies for the Certificate in Language and Intercultural Communication - Spanish

Language Placement Testing

Students are required to take a Language Placement Test to ensure that they are placed in the appropriate course in their target language. Placement tests are administered online prior to and during both fall and spring registration.
Program Restrictions and Exclusions

Students pursuing the certificate in Language and Intercultural Communication should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 11), students may declare their intent to pursue a university certificate only after they have first declared a major.

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines

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- CLIC does not award Rice equivalent course transfer credit for online courses or coursework taken at community colleges, online universities, 'for-profit' universities, or two-year colleges.
- Students should be aware that the approval process takes about one week and should plan accordingly.

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Additional Information

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Opportunities for the Certificate in Language and Intercultural Communication - Spanish

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Scholarships

The Center for Languages and Intercultural Communication invests in students participating in CLIC-sponsored study abroad programs by occasionally offering scholarships to offset the cost of tuition. When funding is available, the scholarships are offered in the spring semester for study abroad programs taking place the following summer.

Additional Information

For additional information, please see the Center for Languages and Intercultural Communication website: https://clic.rice.edu/

See https://humanities.rice.edu/student-life (https://humanities.rice.edu/student-life/) for tables of fellowships, prizes, and internships/practica that may be relevant to this program.

Latin American Studies

Contact Information

Latin American Studies

2019-2020 General Announcements
PDF Generated 1/29/2020
Latin American Studies is an interdisciplinary major designed to further understanding of the cultures, histories, and politics of Latin America as viewed from regional and global perspectives.

This major draws from courses and faculty from a wide range of departments and programs, including Anthropology, Architecture, Art History, English, French Studies, History, Spanish and Portuguese, and Political Science. This major provides a challenging context for students to develop core skills in interdisciplinarity, language, communication (written and oral), theory, research methodologies, and geography.

The BA degree with a major in Latin American Studies is a degree program in the department of Spanish, Portuguese and Latin American Studies (p. 822).

**Bachelor's Program**

- Bachelor of Arts (BA) Degree with a Major in Latin American Studies (p. 516)

Latin American Studies does not currently offer an academic program at the graduate level.

**Director**

José F. Aranda, Jr.

**Professors**

Krista Comer  
Luis Duno-Gottberg  
Farès El-Dahdah  
Beatriz González-Stephan  
Rosemary Hennessy  
Carlos Jiménez  
Mark P. Jones  
Alida C. Metcalf  
M. Rafael Salaberry  
Leslie A. Schwindt-Bayer  
Nicolas Shumway

**Associate Professors**

José F. Aranda, Jr.  
Alexander X. Byrd  
Gisela Heffes  
A. Cymene Howe  
Moramay López-Alonso  
Fabiola López-Durán

**Assistant Professor**

Sophie Esch

---

**Description and Code Legend**

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

**Course Catalog/Schedule**

- Course offerings/subject code for Latin American Studies: LASR

**Department Description and Code**

- Spanish, Portuguese and Latin American Studies: SPLA

**Undergraduate Degree Description and Code**

- Bachelor of Arts degree: BA

**Undergraduate Major Description and Code**

- Major in Latin American Studies: LASR

**CIP Code and Description**

1. LASR Major/Program: CIP Code/Title: 05.0107 - Latin American Studies

Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: [https://nces.ed.gov/ipeds/cipcode/](https://nces.ed.gov/ipeds/cipcode/)

**Bachelor of Arts (BA) Degree with a Major in Latin American Studies**

**Program Learning Outcomes for the BA Degree with a Major in Latin American Studies**

Upon completing the BA degree, students majoring in Latin American Studies will be able to:

1. Demonstrate the ability to speak and read fluently, and conduct research in a foreign language.
2. Interpret the historic, cultural, and political dynamics that comprise a specific region selected by the student for in-depth study.
3. Apply critical perspectives on legacies and ongoing forces that are local and global in scope from the field of Latin American Studies.
4. Define a research problem and analyze it from several different disciplinary fields, including appropriate theory, methodology, and concepts for the topic.

**Requirements for the BA Degree with a Major in Latin American Studies**

For general university requirements, see [Graduation Requirements](#) (p. 26). Students pursuing the BA degree with a major in Latin American Studies must complete:

- A minimum of 10 courses (30 credit hours) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 6 courses (18 credit hours) taken at the 300-level or above.
The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor, or where applicable, the department's Director of Undergraduate Studies. Course substitutions must be formally applied and entered into Degree Works by the major's Official Certifier (https://registrar.rice.edu/facstaff/degeworks/officialcertifier/). Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

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**Degree Requirements**

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<td>LASR 158 / SPOO 158</td>
<td>INTRODUCTION TO LATIN AMERICAN STUDIES ¹</td>
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<td><strong>Elective Requirements</strong></td>
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<td><strong>Capstone Requirement</strong></td>
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<td>LASR 491</td>
<td>LATIN AMERICAN STUDIES CAPSTONE ⁵</td>
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<td><strong>University Graduation Requirements (p. 26)</strong>  ⁷</td>
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<tr>
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</table>

**Footnotes and Additional Information**

¹ This course both introduces and structures the major. This course is taught in English, with discussion sections available in Spanish or Portuguese pending student interest.

² At least 2 courses (6 credit hours) must be in the humanities and at least 2 courses (6 credit hours) must be in the social sciences.

³ Students must spend at least one semester studying at a Rice-approved, semester-abroad program in which the primary language of instruction is Spanish, Portuguese, or under special circumstances French. Courses taken abroad may count toward completing the Latin American Studies major and toward meeting the distribution requirements. Study abroad courses cannot count for more than 4 courses (12 credit hours) toward the major. While the semester abroad is ideal, under very special circumstances, the advisor to the major can approve a 12-week summer program as the equivalent of a semester, provided the program allows students to complete at least 3 courses (9 credit hours).

⁴ Students must demonstrate language competence at three different stages:

- **Prior to study abroad** - students will be examined by Center for Languages and Intercultural Communication (CLIC) faculty trained in proficiency testing to ensure that the students have adequate language competence for studying abroad—adequate at this stage meaning at least Intermediate-High according to proficiency standards set by the American Council on the Teaching of Foreign Languages (ACTFL).

- **After study abroad** - students will be tested for proficiency at the Advanced-Low level, according to ACTFL Guidelines. Proficiency at the Advanced-Low level is desirable, but not required.

- **Writing the capstone research paper** - students must demonstrate to the satisfaction of the colloquium director their ability to do research in a foreign language.

⁵ The capstone is completed following the semester abroad. Students will enroll in LASR 491, which is taught by a faculty member from either Humanities or Social Sciences. As directed by this faculty member, students will write a research paper on a Latin American topic of their choice. During the course, students will be exposed to different research methodologies, theories appropriate to their field of study, and instruction on how best to incorporate research and sources that emerged from their study abroad. Interdisciplinary modes of research and writing will be a major feature of LASR 491. Students will be expected to highlight the interdisciplinary nature of their research in their completed paper. In addition, students enrolled in the capstone course will be expected to workshop their writing at different times during the semester. The completed research paper will be evaluated by the faculty member teaching LASR 491 and one other instructor appropriate to the topic. With the approval of the faculty member teaching LASR 491, this research paper may be written in English.

**Course List to Satisfy Requirements**

**Elective Requirements**

Students must complete a total of 8 courses (24 credit hours) from the following department approved electives, which will focus on a specific region, area, or country in Latin America. This area focus will shape each student's proposed course of study. Each course of study and an area focus must be approved by the advisor to the major. At least 2 courses (6 credit hours) must be in the humanities and at least 2 courses (6 credit hours) must be in the social sciences.

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<td>ANTH 290</td>
<td>HISTORY AND ETHNOGRAPHY</td>
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Bachelor of Arts (BA) Degree with a Major in Latin American Studies

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in Latin American Studies should be aware of the following departmental transfer credit guidelines:

- No more than 4 courses (12 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the major.

Policies for the BA Degree with a Major in Latin American Studies

ANTH 361  LATIN AMERICAN TOPICS
ANTH 392  KINGS, QUEENS, AND COMMONERS: THE ARCHAEOLOGY OF ANCIENT MESOAMERICA
ARCH 315 / HART 310  BRAZIL BUILT: THE CLINIC, THE TROPICAL, AND THE AESTHETIC
ARCH 323  SEMINAR IN ARCHITECTURE
ARCH 452 / HART 463  PRACTICING UTOPIA: ARCHITECTURE, EUGENICS AND THE MODERN LATIN CITY
ENGL 268  INTRODUCTION TO NATIVE AMERICAN LITERATURE
ENGL 369 / SWGS 329  THE AMERICAN WEST AND ITS OTHERS
ENGL 371 / SPPO 354 / SWGS 354  CHICANO/A LITERATURE
FREN 478 / ARCR 478  THE CARIBBEAN IN FRENCH
HART 265  A VISUAL CULTURE TRAVELOGUE: ART AND POLITICS IN MODERN LATIN AMERICA
HART 302  FROM THE SUBLIME TO THE SUSTAINABLE: ART, ARCHITECTURE AND NATURE
HART 375 / ARCH 375  LATIN-EUROPE/LATIN-AMERICA: THE AESTHETICS AND POLITICS OF MODERN CITIES
HART 465  LATIN AMERICAN BODIES: ON MODERNISM
HIST 188  THE ATLANTIC WORLD: ORIGINS TO THE AGE OF REVOLUTION
HIST 215  BLACKS IN THE AMERICAS
HIST 220  MEXICO: 1910 TO PRESENT
HIST 226  COLONIAL SPANISH AMERICA
HIST 227  LATIN AMERICAN CULTURAL TRADITIONS
HIST 228  MODERN LATIN AMERICA
HIST 239  NATIVE AMERICAN HISTORY: FROM EUROPEAN CONTACT TO THE ERA OF REMOVAL
HIST 328  POVERTY AND SOCIAL JUSTICE IN LATIN AMERICA
HIST 330  ATLANTIC SLAVE TRADE AND THE ORIGINS OF AFRO AMERICA
HIST 337  LATIN AMERICAN PERSPECTIVES
HIST 366 / ARCH 366  RIO DE JANEIRO: A SOCIAL AND ARCHITECTURAL HISTORY
HIST 420  MEXICAN HISTORY
HIST 421  RACE, EDUCATION AND SOCIETY IN THE URBAN SOUTH
HIST 478  TOPICS IN LATIN AMERICAN HISTORY
LASR 251 / HIST 251  CONTINUITIES AND CHANGES IN BRAZILIAN HISTORY
LING 419  MULTILINGUALISM
POLI 328  LATINO POLITICS IN THE UNITED STATES
POLI 330  MINORITY POLITICS
POLI 352  THE POLITICS AND CULTURE OF MEXICO
POLI 354  LATIN AMERICAN POLITICS
POLI 450  ELECTIONS IN THE AMERICAS
POLI 459  SEX, GENDER, AND POLITICAL REPRESENTATION IN LATIN AMERICA
SOCI 301  SOCIAL INEQUALITY
SOCI 309  RACE AND ETHNIC RELATIONS
SPPO 344  MAPPING LATIN AMERICAN CULTURE
SPPO 345  ART IN LATIN AMERICAN LITERATURE
SPPO 351  LITERATURES FROM THE SOUTHERN CONE
SPPO 353  CARIBBEAN LITERATURE
SPPO 364  SPANISH CREATIVE WRITING
SPPO 368  LATIN AMERICAN SHORT FICTION
SPPO 373  THE MEXICAN REVOLUTION IN LITERATURE, MUSIC AND VISUAL ARTS
SPPO 375 / FILM 339 / HART 304  A REVOLUTION FROM WITHIN: TRENDS IN CONTEMPORARY CUBAN CULTURE
SPPO 385 / SWGS 390  TRENDS IN HISPANIC CINEMA
SPPO 403  READINGS IN LATIN AMERICAN LIT
SPPO 410  THE CITY IN LATIN AMERICA
SPPO 411  LITERATURE AND THE ENVIRONMENT IN LATIN AMERICA
SPPO 412  BOOM-BOOM-CRACK: LATIN AMERICAN NOVEL
SPPO 415  BORDER NARRATIVES
SPPO 420  LATIN AMERICAN LITERATURE IN THE MOVIES
SPPO 422  LATIN AMERICAN CINEMA
SPPO 430 / SWGS 466  LATIN AMERICAN WOMEN’S CULTURE
SPPO 450  TWENTIETH CENTURY MEXICAN NOVEL
SPPO 452  WITNESSING, TRUTH & TRAUMA: TESTIMONIAL WRITING IN MEXICO & CENTRAL AMERICA

2019-2020 General Announcements
PDF Generated 1/29/2020
• Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

**Distribution Credit Information**

The determination of distribution eligibility is done as part of the new course creation process ([https://registrar.rice.edu/facstaff/courseprocess/](https://registrar.rice.edu/facstaff/courseprocess/)). As part of an annual roll call ([https://registrar.rice.edu/facstaff/distribution_credit/](https://registrar.rice.edu/facstaff/distribution_credit/)) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean's Offices of each of the academic schools.

Faculty and leadership in the academic schools are responsible for ensuring that the courses identified as distribution-eligible meet the criteria as set in the General Announcements (p. 26). Students are responsible for ensuring that they meet graduation requirements (p. 26) by completing coursework designated as distribution at the time of course registration.

Distribution courses from Spanish, Portuguese and Latin American Studies deal in questions of broad humanistic interest, including topics in history, literature, linguistics, culture, and art and film. They utilize methodologies characteristic of the Humanities, prompting students to probe a variety of components in the literary, cultural, and social life of Spanish and Portuguese-speaking communities.

**Additional Information**

For additional information, please see the Spanish, Portuguese and Latin American Studies website: [https://spanishandportuguese.rice.edu/](https://spanishandportuguese.rice.edu/).

**Opportunities for the BA Degree with a Major in Latin American Studies**

**Academic Honors**

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

**Additional Information**

For additional information, please see the Spanish, Portuguese and Latin American Studies website: [https://spanishandportuguese.rice.edu/](https://spanishandportuguese.rice.edu/).

See [https://humanities.rice.edu/student-life](https://humanities.rice.edu/student-life/) for tables of fellowships, prizes, and internships/practica that may be relevant to this major.

**Liberal Studies**

**Contact Information**

Liberal Studies
[https://glasscock.rice.edu/departments/graduate-liberal-studies](https://glasscock.rice.edu/departments/graduate-liberal-studies)

Anderson-Clarke Center
713-348-4767

Rebecca Sharp Sanchez
Administrative Program Director
rsharp@rice.edu

The Graduate Liberal Studies program at Rice University is designed for those who crave intellectual challenge at a world-class university. Two unique paths are available: the acclaimed Master of Liberal Studies (MLS) degree and the post-Masters Diploma in Liberal Studies (DLS).

Exploring liberal arts at a highly integrated level is not always possible in a career-focused undergraduate curriculum. MLS and DLS options are tailored toward working adults, retirees, and other non-traditional university students who wish to broaden their knowledge in fields they may not have studied in their earlier education. Courses are taught by distinguished Rice faculty and invited visiting faculty who maintain the high academic standards of Rice University.

Both paths are designed for those who love to learn new ideas, explore new worlds, and enjoy meeting others who are part of the same expedition. By examining timeless, timely human questions within the humanities, social sciences, and natural sciences, students satisfy their curiosity about the world through art, literature, science, politics, human nature, and history.

**Master of Liberal Studies (MLS)**

Since its inception in 2005, the Rice Master of Liberal Studies (MLS) program has attracted a wide spectrum of students. Medical doctors, attorneys, homemakers, recent college graduates, retirees, teachers, a range of business professionals, and others have been accepted into the program. Such diversity – in both age and profession – adds a level of broad-mindedness not typically found in the traditional classroom.

The MLS program seeks committed, energetic adult students with bachelor’s degrees from an accredited college or university, who have significant life experiences and who are able to communicate effectively.

MLS students must take only one course in his or her first semester, MLSC 600. All courses will require research papers; some may require tests or oral presentations. A thesis is not part of the degree program. The program can be completed in approximately four years if one class is completed every session. Students are allowed to take up to seven years to complete the degree.

**Diploma in Liberal Studies (DLS)**

Rice's Diploma in Liberal Studies (DLS) program complements and extends the educational goals of the Master of Liberal Studies (MLS) program. The DLS is a graduate-level diploma that is currently unique to Rice University.

Exploring liberal arts at a highly integrated level is not always possible in a career-focused undergraduate curriculum. As with MLS, the DLS program is tailored toward working adults, retirees, and other non-traditional university students who wish to broaden their knowledge in fields they may not have studied in their earlier education. Courses are taught by distinguished Rice faculty and invited visiting faculty who maintain the high academic standards of Rice University.

Designed primarily for those who have completed the MLS degree, the DLS allows these graduates to maximize and enhance their academic investment. However, the program also welcomes non-MLS students on a case-by-case basis that considers academic background and future goals. Well-prepared applicants who are accepted into the program can deepen their interdisciplinary knowledge while honing research
and writing skills, laying the foundation to improve critical publications, community service, doctoral studies, or career work.

Liberal Studies does not currently offer an academic program at the undergraduate level.

**Master’s Program**

- Master of Liberal Studies (MLS) Degree (p. 522)

**Post-Master’s Diploma Program**

- Diploma in Liberal Studies (DLS) (p. 520)

**Dean**

Robert G. Bruce

**Senior Associate Dean**

Jennifer Gigliotti-Labay

**Director**

Rebecca Sanchez

**Description and Code Legend**

*Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:*

**Course Catalog/Schedule**

- Course offerings/subject code: MLSC

**School Description and Code**

- School of Continuing Studies: SOCS

**Graduate Degree Description and Code**

- Master of Liberal Studies degree: MLS
- Diploma of Liberal Studies: DLS

**Graduate Degree Program Description and Code**

- Degree Program in Liberal Studies: LBST

**CIP Code and Description**

- LBST Major/Program: CIP Code/Title: 24.0101 - Liberal Arts and Sciences/Liberal Studies

1 Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total Credit Hours Required for the DLS Program 30</td>
</tr>
</tbody>
</table>

**Diploma Requirements**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MLSC 750</td>
<td>INTRODUCTION TO DIPLOMA RESEARCH 1</td>
<td>3</td>
</tr>
</tbody>
</table>

**Elective Requirements**

Select 7 elective courses from MLSC course offerings at the 500-level or above 2, 3

**Research Requirements**

- MLSC 798 DIPLOMA PROJECT I 3, 4 3
- MLSC 799 DIPLOMA PROJECT II 3, 4 3

**Total Credit Hours** 30
Footnotes and Additional Information

1. All students must take MLSC 750 in their first semester of study and successfully complete the course with a minimum grade of B (3.00 grade points), before taking any other DLS courses. Additionally, students may take only 1 course, MLSC 750 in their first semester of study. Afterwards, students may take up to 2 courses per semester.

2. Students may choose to take up to 6 credit hours of MLSC 797 Advanced Independent Readings to fulfill the Elective Requirements.

3. With respect to the two main disciplines chosen by the student for interdisciplinary work in completing the diploma project, a student must complete a minimum of 3 courses (9 credit hours) in each discipline (6 courses and 18 credit hours) before taking the two diploma project courses (MLSC 798 and MLSC 799). This is a minimum. Additional courses in the two chosen disciplines are recommended. A student may petition to have post-baccalaureate courses taken before entering the DLS program considered as a partial satisfaction of this requirement. An undergraduate degree in one of the disciplines could similarly serve as the basis of a petition.

4. Students must successfully complete all Core and Elective Requirements (content coursework) before taking the Research Requirements of MLSC 798 and MLSC 799. MLSC 798 and MLSC 799 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade. As S/U courses, they do not apply to the requirement of a minimum grade of B- (2.67 grade points) in each required course.

Other Information

As noted in the Requirements above, students in the Diploma in Liberal Studies program will complete 8 courses (24 credit hours) of Core and Elective Requirements (content coursework) from the Liberal Studies catalog of classes, beginning with MLSC 750 Introduction to Diploma Research. Upon completion of these 24 credit hours, the student will then take 6 credit hours of research coursework (MLSC 798 and MLSC 799) under the direction of three readers, a first, second, and third reader. (The first reader is referred to also as 'the advisor'.)

The diploma project will typically take the form of an interdisciplinary diploma thesis. Alternatively, the student may opt to write two interdisciplinary academic papers (starred papers) of publishable length and thesis quality.

The interdisciplinary journal of the Association of Graduate Liberal Studies Programs, Confluence, serves as an example of the academic research level required. Confluence is a peer-reviewed journal, publishing articles that reflect "the best scholarly and creative work produced by faculty, students and alumni of AGLSP member institutions," all of which programs offer graduate degrees in liberal studies, in some cases doctoral programs.

In order to complete the DLS program, students must defend their diploma thesis (or two starred papers) in a public diploma project defense and satisfactorily answer questions from their research advisor and readers and others in attendance. The three readers will then decide, with the first reader/advisor serving as chair of the discussion, whether the student has met all diploma project requirements, including passing the defense, with all three signing the appropriate papers if the decision is positive.

Policies for the Diploma in Liberal Studies

Department of Liberal Studies Graduate Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, Liberal Studies publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Liberal_Studies_Graduate_Handbook.pdf

Admission

Admission to the Diploma in Liberal Studies program requires a 3.50 GPA in successfully-concluded post-graduate degree work from either: 1) the Rice MLS program or 2) a liberal arts or liberal studies graduate degree program at an AGLSP member institution. Other post-graduate degrees may be considered (e.g., MA, MD, JD), but only along with evidence of significant academic work in areas relevant to a student's proposed interdisciplinary work in the Diploma program — for example, an interdisciplinary undergraduate major with relevance to the work proposed for the DLS program or an undergraduate double major in the two disciplines chosen for interdisciplinary work in the DLS. Applications will be accepted for Fall admission only and will be due on the March 15 prior. Completed applications will be forwarded to the Graduate Liberal Studies Faculty Steering Committee for review and admission decision. Admitted students will attend a new student orientation.

Leave of Absence

Continuous enrollment in the diploma program is required. Enrollment of at least 2 courses (6 credit hours) per academic year and enrollment in at least 2 semesters of the academic year is required unless granted an official leave of absence.

Time to Degree

Students are allowed to take up to 7 years to complete the diploma.

Additional Information

For additional information, please see the Liberal Studies website: https://glasscock.rice.edu/departments/graduate-liberal-studies/

Opportunities for the Diploma in Liberal Studies

Association of Graduate Liberal Studies National Honor Society

DLS graduates who earn a 3.75 GPA or higher and have demonstrated leadership in the classroom and in the greater community are eligible for nomination to the Association of Graduate Liberal Studies National Honor Society.

Additional Information

For additional information, please see the Liberal Studies website: https://glasscock.rice.edu/departments/graduate-liberal-studies/
Master of Liberal Studies (MLS) Degree

Program Learning Outcomes for the MLS Degree

Upon completing the MLS degree, students will be able to:

1. Appreciate major perspectives and methods of the liberal arts by demonstrating a broadened understanding of some basic concepts in the humanities, social sciences, and sciences.
2. Appreciate the connection of the liberal arts to their lives and the larger world.
3. Demonstrate a capacity for analytical thinking.
4. Demonstrate good writing skills.
5. Practice critical listening and good discussion and oral communication skills.
6. Demonstrate academic research methods.

Requirements for the MLS Degree

The MLS degree is a non-thesis master’s degree. For general university requirements, see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MLS degree must complete:

- A minimum of 11-12 courses (33-36 credit hours) to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 3.00 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

<table>
<thead>
<tr>
<th>Degree Requirements</th>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Requirements</td>
<td>MLSC 600</td>
<td>INTRODUCTION TO GRADUATE RESEARCH, ANALYSIS AND EXPOSITION</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Select 1 course from each of the following fields (see course lists below):</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Humanities</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Social Sciences</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Natural Science</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elective Requirements</td>
<td>Select 6 elective courses from MLSC course offerings at the 500-level or 600-level</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Capstone</td>
<td>Select 1 from the following:</td>
<td>3-6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MLSC 700</td>
<td>CAPSTONE I &amp; MLSC 701 and CAPSTONE II</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MLSC 701</td>
<td>CAPSTONE II</td>
<td></td>
</tr>
<tr>
<td>Total Credit Hours</td>
<td>33-36</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1. All students must take MLSC 600 in their first semester of study.
2. The core requirements are designed to acquaint first-year students with contrasting perspectives and methodological approaches that define academic inquiry in the three broad fields of humanities, social sciences, and natural science. Core courses must be completed before courses that satisfy the electives can be taken.
3. The six (6) electives beyond the core requirements may focus on just 1 field (humanities, social sciences, or natural science) or may be chosen more broadly.
4. The capstone coursework is designed to help students integrate their knowledge through writing an extended paper or completing a project to be presented to MLS faculty and students. Students may take 1 semester (MLSC 701) or 2 semesters (MLSC 700 and MLSC 701) to complete the capstone project.

Course Lists to Satisfy Requirements

<table>
<thead>
<tr>
<th>Core Requirements</th>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humanities</td>
<td>MLSC 501</td>
<td>THE SHAPING OF WESTERN THOUGHT</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MLSC 505</td>
<td>SHAKESPEARE AND FILM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MLSC 510</td>
<td>MUSIC AND OTHER ARTS: COLLABORATION AND FUSION</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MLSC 517</td>
<td>MODERN DRAMA ON FILM AND IN PERFORMANCE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MLSC 526</td>
<td>CONTEMPORARY MORAL ISSUES</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MLSC 533</td>
<td>SELF-DETERMINATION IN ARAB WORLD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MLSC 535</td>
<td>'PLEASE SIR, I WANT SOME MORE': DICKENS, OLIVER TWIST, POVERTY, AND SOCIAL JUSTICE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MLSC 536</td>
<td>TRADITIONAL CHINESE CULTURE AND ITS MODERN LEGACY</td>
<td></td>
</tr>
</tbody>
</table>
Policies for the MLS Degree

Department of Liberal Studies Graduate Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, Liberal Studies publishes a graduate program handbook, which can be found here: [https://gradhandbooks.rice.edu/2019_20/Liberal_Studies_Graduate_Handbook.pdf](https://gradhandbooks.rice.edu/2019_20/Liberal_Studies_Graduate_Handbook.pdf)

Admission

Admission to graduate study is open to qualified students holding a bachelor's degree (or equivalent) from an accredited university or college. A minimum GPA of 3.00 from the applicant's undergraduate work is expected. Additionally, a statement of purpose, resume, writing samples, letters of recommendation, and work experience will be evaluated as part of the admissions decision.

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program's advisor when considering transfer credit possibilities.
Additional Information
For additional information, please see the Liberal Studies website:
https://glasscock.rice.edu/departments/graduate-liberal-studies/

Opportunities for the MLS Degree
Association of Graduate Liberal Studies National Honor Society

MLS graduates who earn a 3.75 GPA or higher and have demonstrated leadership in the classroom and in the greater community are eligible for nomination to the Association of Graduate Liberal Studies National Honor Society.

Additional Information
For additional information, please see the Liberal Studies website:
https://glasscock.rice.edu/departments/graduate-liberal-studies/

Lifetime Physical Activity Program

Historically, Rice University has recognized that becoming physically educated is integral to one's overall education. Since the university was founded in 1912, the Lifetime Physical Activity Program has worked to create a multi-faceted learning experience that promotes the physical, social, and emotional benefits of physical activity. It is the mission of the Lifetime Physical Activity Program to teach both theoretical and practical components of a variety of exercise/performance activities such that they will bring enjoyment and demonstrate the importance of maintaining health and wellness throughout the course of a lifetime.

Specifically, the goals of the Lifetime Physical Activity Program are:

- To encourage a lifetime of fitness through the teaching of mechanical, physiological, and nutritional principles.
- To teach other pertinent knowledge such as historical and cultural foundations, rules, and strategy.
- To create an environment that fosters a sense of emotional satisfaction, physical accomplishment, and social interaction for its participants.
- To provide students with high-quality instruction specific to the course material so that they may learn skills that will improve the length and quality of their lives.
- To expose Rice University students to activities that are not necessarily mainstream in United States culture.

The Lifetime Physical Activity Program offers a variety of sport/exercise/performance activities. In the 40-plus sections that are offered each semester, many have a multi-sport focus (e.g., volleyball/basketball), allowing students to experience three or four activities during one year. A student may select an LPAP section that meets his/her scheduling needs and that offers activities that satisfy his/her interests. Some of the current activities offered include racquet sports (tennis, racquetball, badminton), fitness activities (aerobics, personal fitness, weight training), aquatic activities, dance (Latin, ballroom, modern, ballet, country western, Middle Eastern, classical Indian), martial arts, team sports (flag football, basketball, volleyball, soccer, softball), and other activities such as fencing, self-defense for women, golf, yoga, and nutrition.

Undergraduates must successfully complete one LPAP course (1 credit) in order to satisfy the graduation requirement. Students may use up to four LPAP courses (4 credits total) towards the total credits necessary for graduation. LPAP courses are not repeatable for credit.

Lifetime Physical Activity Program classes are strongly recommended for all first-year students, including transfers who have not taken equivalent courses elsewhere. Because LPAP courses are participation based and must be supervised by an instructor, students are required to adhere to a program-wide attendance policy.

For additional information regarding the Lifetime Physical Activity program, see the program's website: https://recreation.rice.edu/lpap/

The courses that can satisfy the Lifetime Physical Activity Program’s undergraduate graduation requirements can be found in Rice’s Course Catalog.

See the Courses tab for a link to the official course offerings.

The Lifetime Physical Activity Program does not currently offer courses at the graduate level.

Director
Dr. Elizabeth Slator

Instructors
Jim Baber
Jill Banta
John Barron
Jacqueline Bobet
Jennifer Buergermeister
Kris Cortez
Alex Faris
Lisa Hastings
Rathna Kumar
Chrissy Leach
D’Ondra McGee
Marcia Oliveira
Bryan Peck
Khaled Soliman
Chris Watkins
Chienli Wu
Ernie Wu

Description and Code Legend

Note: Internally the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
- Course offerings/subject code: LPCR, LPAP

Linguistics

Contact Information
Linguistics
https://linguistics.rice.edu/
212 Herring Hall
713-348-6010

Robert Englebretson
Department Chair
reng@rice.edu

Suzanne E. Kemmer
Director of Undergraduate Studies
The Rice Linguistics Department is the home of an active community of scholars with a wide range of interests. Broadly defined, the department adopts a functional, usage-based approach to language and linguistic theory. A number of recurrent themes emerge in faculty research and the degree programs offered: in-depth investigation of languages, coupled with the search for cross-linguistic generalization; the effects of semantics, language-in-use, sociocultural factors, and other functional influences that motivate and constrain linguistic form; grounding of theories in solid empirical data of many sorts; an interest in the relation between language and mind; and interest in discourse and social/communicative interaction more generally. These interests lead to intensive research activity in empirically well-supported theoretical and descriptive linguistics:

- cognitive/functional linguistics
- typology and language universals
- field studies in American Indian, Australian, Austronesian, African, and other languages
- sociolinguistics
- discourse studies
- phonetics and speech processing
- laboratory phonology
- language change and grammaticization

**Bachelor’s Program**

- Bachelor of Arts (BA) Degree with a Major in Linguistics. (p. 525)

**Master’s Program**

- Master of Arts (MA) Degree in the field of Linguistics*

**Doctoral Program**

- Doctor of Philosophy (PhD) Degree in the field of Linguistics (p. 527)

*Although students are not normally admitted to a Master of Arts (MA) degree program, graduate students may earn the MA as they work towards the PhD.

**Chair**

Robert Englebretson

**Professors**

Michel Achard
Masayoshi Shibatani

**Associate Professors**

Robert Englebretson
Suzanne E. Kemmer
Nancy A. Niedzielski

**Professors Emeriti**

James E. Copeland
Philip W. Davis
Sydney M. Lamb

**Lecturer**

Jonathan Manker

**Description and Code Legend**

*Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

**Course Catalog/Schedule**

- Course offerings/subject code: LING

**Department Description and Code**

- Linguistics: LING

**Undergraduate Degree Description and Code**

- Bachelor of Arts degree: BA

**Undergraduate Major Description and Code**

- Major in Linguistics: LING

**Graduate Degree Descriptions and Codes**

- Master of Arts degree: MA
- Doctor of Philosophy degree: PhD

**Graduate Degree Program Description and Code**

- Degree Program in Linguistics: LING

**CIP Code and Description**

- LING Major/Program: CIP Code/Title: 16.0102 - Linguistics

1 Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

**Bachelor of Arts (BA) Degree with a Major in Linguistics**

**Program Learning Outcomes for the BA Degree with a Major in Linguistics**

Upon completing the BA degree with a major in Linguistics, students will be able to:

1. Demonstrate the ability to perform independent research about languages and their speakers, including the ability to ethically complete field work, collect data, analyze data, utilize laboratory and computing technologies, draw meaningful conclusions from data, and convey research results effectively orally and in writing.
2. Identify and define the main approaches for researching language structure and use at all levels (sounds, words, grammar, meaning, social/cultural interaction), as well as be able to evaluate critically and apply the primary concepts, vocabularies, methods and theories in their own work.
3. Appreciate the diversity of language and the ways in which it changes over time. They will be able to analyze the diversity of sounds and grammar in the world's languages. They will also understand the diversity of regionally-, socially-, and ethnically-defined varieties within a single language. Students will be able to explain why this
diversity is relevant to everyday life and how it is crucial to fields both inside and outside of linguistics.

4. Understand language in its relation to cognition, identity formation, culture, and society, and the systematic relationships among them.

5. Understand the systematic relationships between language structure and language use, and how these in turn relate to cognition, culture, identity, and society.

Requirements for the BA Degree with a Major in Linguistics

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Linguistics must complete:

- A minimum of 12 courses (36 credit hours) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 9 courses (27 credit hours) taken at the 300-level or above.

Because human language is a multifaceted object of study, linguistics is, by its nature an interdisciplinary field. The undergraduate major provides both an in-depth grounding in the field as well as a cross-disciplinary breadth. Students beginning the linguistics major should take LING 200, which is a prerequisite for many upper-level courses in the department. All majors are required to take at least 9 courses (27 credit hours) in linguistics at the 300-level or above, including 5 core courses as specified below.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier.) Students and their academic advisors should identify and clearly document the courses to be taken.

<table>
<thead>
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<tr>
<td>LING 200</td>
<td>INTRODUCTION TO THE SCIENTIFIC STUDY OF LANGUAGE</td>
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</tr>
<tr>
<td>LING 300</td>
<td>LINGUISTIC ANALYSIS</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 300</td>
<td>LINGUISTIC ANALYSIS</td>
<td>3</td>
</tr>
<tr>
<td>LING 301</td>
<td>PHONETICS</td>
<td>3</td>
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<tr>
<td>ANTH 301</td>
<td>PHONETICS</td>
<td>3</td>
</tr>
<tr>
<td>LING 400</td>
<td>LINGUISTIC ANALYSIS II</td>
<td>3</td>
</tr>
</tbody>
</table>

Language Requirement

Select 2 courses in a foreign language:

- for European languages, 2 courses at the 200-level or above
- for non-European languages, 2 courses at the 100-level or above

Elective Requirements

Select 4 elective courses from departmental (LING) course offerings at the 300-level or above

Total Credit Hours Required for the Major in Linguistics 36

Additional Credit Hours to Complete BA Degree Requirements 24

University Graduation Requirements (p. 26) * 60

Total Credit Hours 120

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

1 In addition to the required Prerequisite, Core Requirements, and Elective Requirements, competency in one language other than English is required. This requirement may be satisfied by taking 2 courses in a European Language at the 200-level or above (or equivalent) or by taking 2 courses in a Non-European Language at the 100-level or above.

European Languages:
- French (FREN)
- German (GERM)
- Greek (GREE)
- Italian (ITAL)
- Latin (LATI)
- Portuguese (PORT)
- Russian (RUSS)
- Spanish (SPAN)

Non-European Languages:
- Arabic (ARAB)
- Chinese (CHIN)
- Hebrew (HEBR)
- Hindi (HIND)
- Japanese (JAPA)
- Korean (KORE)
- Tibetan (TIBT)

2 The Linguistics major requires, in addition to 5 Core courses, at least 4 advanced Linguistics (LING) Elective Requirements at the 300-level or above. In addition to the LING 499 Research Seminar, one additional Research Seminar can be selected as an elective. No more than 1 independent study course (such as LING 480) may be counted toward the major requirements.

Policies for the BA Degree with a Major in Linguistics

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional
restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

**Departmental Transfer Credit Guidelines**

Students pursuing the major in Linguistics should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

**Additional Information**

For additional information, please see the Linguistics website: https://linguistics.rice.edu/

**Opportunities for the BA Degree with a Major in Linguistics**

**Academic Honors**

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

**Departmental Guidelines for Distinction in Research and Creative Work**

To earn the Distinction in Research and Creative Work, in Linguistics, students must have done one of the following:

- Written a senior honors thesis in the department that is based on original research and/or scholarship, and is judged to be exceptional; or
- Written a sole-authored scholarly paper that was (or will be) presented at a scholarly conference; or
- Made a significant individual contribution to linguistic research, including research that has been published or presented in a public venue, and highlights the contributions that linguistics can make to other academic, scientific, community, or societal spheres.

By the end of the 14th week of the Spring semester, students applying should submit electronically to Robert Englebretson (department chair) at reng@rice.edu a portfolio consisting of:

1. A two-page description of how their research effort meets the requirements of Distinction. This two-page document should also place the student's original contribution in broader scholarly linguistics research.
2. If a paper or thesis has been written to qualify, students should also submit the paper.
3. An application form including the endorsement of a faculty member available from the department office.

The application should have the subject: Distinction in Research and Creative Work in Linguistics, should be submitted by the end of the 14th week of the Spring semester, and should be complete (all forms, copies, and documents should be submitted electronically).

**Departmental Honors Program in Linguistics**

The Linguistics Honors Program provides selected undergraduate majors with the opportunity to conduct supervised research. Majors planning to pursue graduate training in Linguistics or a related field are strongly encouraged to apply, as well as others who wish to add the experience of an intensive, individualized research project to their undergraduate education.

Application to the Honors Program should be made in person to the undergraduate major advisor before the end of the student's junior year. In support of the application, the student should prepare a brief description of the proposed project signed by the faculty member who is to supervise the work (the project supervisor). Acceptance into the program is by agreement of the linguistics faculty. On acceptance, the student will enroll in LING 482, with the supervising faculty member named as instructor.

The Honors Program framework is designed to facilitate the development of a mentoring relationship between student and faculty member. Students are thus expected to meet regularly with their project supervisor regarding their progress; the supervisor is responsible for providing research guidance and general support.

With the appropriate completion of major requirements and the honors project or thesis, the student will graduate with departmental honors.

**Additional Information**

For additional information, please see the Linguistics website: https://linguistics.rice.edu/

**Doctor of Philosophy (PhD) Degree in the field of Linguistics**

**Program Learning Outcomes for the PhD Degree in the field of Linguistics**

*At present, the Linguistics Department is not accepting new students into the graduate program.*

**Requirements for the MA and PhD Degrees in the field of Linguistics**

*At present, the Linguistics Department is not accepting new students into the graduate program.*

**MA Degree Program**

The MA degree is a non-thesis masters degree. For general university requirements, please see Non-Thesis Master's Degree (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Although students are not normally admitted to study for an MA, graduate students may earn the MA after obtaining approval of their candidacy for the PhD. After all the requirements necessary to advance to candidacy have been met, the student may apply for a candidacy master's degree.

**Summary**

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2019-2020 General Announcements

PDF Generated 1/29/2020
Requirements for the PhD Degree in the field of Linguistics

PhD Degree Program

For graduation requirements, see Graduate Degrees (p. 49). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). The doctoral linguistics program at Rice emphasizes the study of language use and functional/cognitive approaches to linguistic theory. Rice faculty engage in a broad range of research specializations, all of which play an important role for in-depth graduate training. These interrelated areas include cognitive linguistics, language change, sociolinguistics, discourse analysis, language documentation and description, phonetics, laboratory phonology, and typology. Other faculty research interests include phonological theory, acoustic phonetics, speech sciences and technology, syntax, language revitalization, neurolinguistics, and forensic linguistics. The program only admits students planning to study for the PhD degree full-time. Undergraduate preparation ideally should include language study and coursework in linguistics or disciplines related to linguistics, such as anthropology, applied linguistics, speech and hearing sciences, psychology, sociology, or studies of particular languages, although an advanced degree is not required. Students will earn a master’s degree upon advancement to candidacy. Students admitted to the program are generally offered financial support in the form of tuition scholarships and/or stipends for living expenses.

During the first year of residence, each entering student works closely with the graduate advisor to choose a plan of study congruent with the demands of the program and the student’s interests. Emphasis throughout the program is on a close working relationship with faculty. Students should select areas of specialization that fit well with faculty research interests and activities.

Students will, in general, take five years to progress through the degree program. With no prior linguistics background, coursework in the first three years will include:

- one problem-solving course in linguistic analysis (LING 500) to be taken in the first year of study
- two courses in the area of phonetics/phonology (LING 501 and LING 511)
- two courses in the area of syntactic/semantic analysis (LING 504 and LING 515)
- the two-course sequence in field methods (LING 407 and LING 408) to be taken normally in the second year of study
- two seminars in the department usually to be taken in the second and/or third year of study
- five additional elective courses, including two courses in other subfields of linguistics

Prior preparation in linguistics will be assessed with regard to its equivalence to particular Rice courses. Graduate students are required to register for at least 12 credit hours per semester before advancing to candidacy. The department requires a minimum semester GPA of 3.00 to avoid probationary status. Students are expected to serve as teaching assistants for one course per year for four of the five years during the time they are receiving departmental support, and this service is included in the normal course load.

Before advancing to candidacy, students must prepare two in-depth research papers. Each paper must represent a different area in the field of linguistics (as determined by the linguistics faculty); a separate committee of two members of the faculty reads and referees each paper. The committees are chosen by the student and approved by the student’s faculty mentor. The first publishable paper must be approved no later than the end of the fifth semester. Students who fail to meet this deadline will be dismissed from the program. The second publishable paper must be approved by the beginning of the eighth semester. In addition, one of the papers must be presented in the departmental colloquium, and it is expected that students submit their work for presentation at relevant professional meetings and publish their work in venues such as conference proceedings and/or journals when possible.

Finally, students must fulfill the departmental language requirement of competency in at least one language other than English. See the department web page and Linguistics Graduate Student Handbook for specific details.

In the course of the first three years in the program, the student should work toward establishing a close working relationship with various members of the faculty such that multiple faculty members are familiar with the student’s work. During the first year, the graduate advisor serves as the student’s advisor, but after the first year, the student selects a faculty mentor to provide more personalized advising in addition to the general advice of the graduate advisor. After the student’s second paper is accepted, a thesis advisor is selected and a doctoral committee is formed, by mutual agreement of the student and the anticipated committee members. During the fourth year, students present to their committee members a third research paper, called the thesis prospectus, consisting of a substantial thesis proposal and a comprehensive bibliography. It may be based on a grant proposal to an external funding agency, particularly in the case of proposed fieldwork. Upon completion of the prospectus, students will submit an oral qualifying exam to be administered by the thesis committee. The exam will consist of two parts, a general exam demonstrating the student’s knowledge of the field and a thesis prospectus hearing. Upon completion of this qualifying examination, the student will advance to candidacy.

Following advancement to candidacy, the student works full time toward the completion of the thesis. The student is expected to consult regularly with the committee members during the data collection and writing process. Upon completion of a complete and acceptable draft of the thesis, the student will then, in consultation with all members of the thesis committee, schedule a public defense of the work. When the final version of the thesis is accepted by the doctoral committee and filed with the university, and all other requirements are certified as fulfilled, the degree is then granted.

For more in-depth information about the linguistics graduate program requirements, consult the official Linguistics Graduate Student Handbook and the departmental web page at linguistics.rice.edu (http://linguistics.rice.edu/).

Summary

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2019-2020 General Announcements

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Policies for the PhD Degree in the field of Linguistics

At present, the Linguistics Department is not accepting new students into the graduate program.

Department of Linguistics Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Linguistics publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Linguistics_Graduate_Handbook.pdf

Additional Information

For additional information, please see the Linguistics website: https://linguistics.rice.edu/

Opportunities for the PhD Degree in the field of Linguistics

At present, the Linguistics Department is not accepting new students into the graduate program.

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Additional Information

For additional information, please see the Linguistics website: https://linguistics.rice.edu/

Managerial Studies

Contact Information

Managerial Studies
https://mana.rice.edu/
272 Baker Hall
713-348-3362

Mallesh Pai
Program Director
mallesh.pai@rice.edu

Managerial Studies is an interdepartmental, nonprofessional program designed to provide undergraduates with an understanding of the environment in which businesses and other organizations exist today and of some of the tools employed by management in the commitment of its financial and human resources.

All students pursuing the managerial studies major must also complete at least one of the established departmental or interdepartmental majors, other than an area major. The managerial studies major is not the equivalent of an undergraduate business major at other universities.

Bachelor's Program

- Bachelor of Arts (BA) Degree with a Major in Managerial Studies
  (p. 529)

Managerial Studies does not currently offer an academic program at the graduate level.

Program Director

Mallesh Pai
Requirements for the BA Degree with a Major in Managerial Studies

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Managerial Studies must complete:

- A minimum of 10 courses (30-32 credit hours, depending on course selection) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 5 courses (15 credit hours) taken at the 300-level or above.
- The requirements for a second departmental or interdepartmental major.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

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### Degree Requirements

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<td><strong>Core Requirements</strong></td>
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<td>BUSI 305</td>
<td>FINANCIAL ACCOUNTING</td>
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<td>ECON 100</td>
<td>PRINCIPLES OF ECONOMICS</td>
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<td>Select 1 course from the following:</td>
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<tr>
<td>BUSI 343</td>
<td>FINANCIAL MANAGEMENT</td>
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<tr>
<td>CEVE 322 / ENGI 303</td>
<td>ENGINEERING ECONOMICS</td>
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<tr>
<td>ECON 343</td>
<td>CORPORATE FINANCE</td>
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<td>Select 1 course from the following:</td>
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<tr>
<td>MANA 404</td>
<td>MANAGEMENT COMMUNICATIONS IN A CONSULTING SIMULATION</td>
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<tr>
<td>SOSC 444</td>
<td>CONSULTING PRACTICUM</td>
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<tr>
<td>SOSC 445</td>
<td>FINANCE AND BANKING PRACTICUM</td>
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<td>Select 1 course from the following:</td>
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<tr>
<td>BUSI 310</td>
<td>LEADING PEOPLE IN ORGANIZATIONS</td>
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<td>PSYC 231</td>
<td>INDUSTRIAL AND ORGANIZATIONAL PSYCHOLOGY</td>
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<td><strong>Elective Requirements</strong></td>
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<td>Core Statistics Elective</td>
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<td>SOSC 302</td>
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<td>STAT 305</td>
<td>INTRODUCTION TO STATISTICS FOR BIOSCIENCES</td>
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<tr>
<td>STAT 310 / ECON 307</td>
<td>PROBABILITY AND STATISTICS</td>
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<tr>
<td>STAT 315 / DSCI 301</td>
<td>PROBABILITY AND STATISTICS FOR DATA SCIENCE</td>
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<td>Advanced Methods Elective</td>
<td>Select 1 course from the following:</td>
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<td>CAAM 378</td>
<td>INTRODUCTION TO OPERATIONS RESEARCH AND OPTIMIZATION</td>
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<td>ECON 310 / STAT 376</td>
<td>ECONOMETRICS</td>
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<td>STAT 385</td>
<td>METHODS OF DATA ANALYSIS AND SYSTEM OPTIMIZATION</td>
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<td>STAT 405</td>
<td>R FOR DATA SCIENCE</td>
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<td>STAT 410</td>
<td>LINEAR REGRESSION</td>
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<td>STAT 421</td>
<td>APPLIED TIME SERIES AND FORECASTING</td>
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<td>STAT 486</td>
<td>MARKET MODELS</td>
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External Course Electives

Select 3 courses from the following, with at least 1 course from Group A and 1 course from Group B:

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<tr>
<td>ECON 355</td>
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<td>ECON 422</td>
<td>INTERNATIONAL ECONOMICS AND FINANCE</td>
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<td>ECON 435</td>
<td>INDUSTRIAL ORGANIZATION</td>
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<td>ECON 437 / ENST 437</td>
<td>ENERGY ECONOMICS</td>
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<td>ECON 445</td>
<td>MANAGERIAL ECONOMICS</td>
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<td>ECON 449</td>
<td>PRINCIPLES OF FINANCIAL ENGINEERING</td>
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<td>PSYC 431</td>
<td>ADVANCED INDUSTRIAL/ORGANIZATIONAL PSYCHOLOGY SEMINAR</td>
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<td>PSYC 436</td>
<td>ADVANCED ORGANIZATIONAL PSYCHOLOGY</td>
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<tr>
<td>SOCI 436</td>
<td>RESEARCH SEMINAR: THE HOUSTON AREA SURVEY</td>
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Group A: Management, Markets, and Finance

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<tr>
<td>ECON 355</td>
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<td>ECON 422</td>
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<td>ECON 435</td>
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<td>SOCI 436</td>
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Group B: Government, Regulation, and Policy

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<td>POLI 336</td>
<td>POLITICS OF REGULATION</td>
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<td>POLI 337</td>
<td>PUBLIC POLICY</td>
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<td>POLI 338 / SOSC 301</td>
<td>POLICY ANALYSIS</td>
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<td>SOSC 464 / BUSI 464 / GLHT 464</td>
<td>SOCIAL ENTREPRENEURSHIP</td>
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Total Credit Hours Required for the Major in Managerial Studies: 30-32

Additional Credit Hours to Complete BA Degree Requirements: 28-30

University Graduation Requirements (p. 26): 60

Total Credit Hours: 120
Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

Policies for the BA Degree with a Major in Managerial Studies

Program Restrictions and Exclusions

Students pursuing the major in Managerial Studies should be aware of the following program restriction:

- Students pursuing the major in Managerial Studies must complete the requirements of a second departmental or interdepartmental major.

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines

Students pursuing the major in Managerial Studies should be aware of the following program-specific transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.
- For transfer credit requests for subjects outside of the program's subject code (i.e. ECON courses required for the major in Managerial Studies), students seeking transfer credit should contact the appropriate department for approval, and not the Director of Managerial Studies.

Additional Information

For additional information, please see the Managerial Studies website: https://mana.rice.edu/

Opportunities for the BA Degree with a Major in Managerial Studies

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Additional Information

For additional information, please see the Managerial Studies website: https://mana.rice.edu/

Materials Science and NanoEngineering

Contact Information

Materials Science and NanoEngineering
https://msne.rice.edu/
E200E George R. Brown Hall
713-348-3698
Pulickel M. Ajayan
Department Chair
ajayan@rice.edu

Materials engineering is concerned with the processing, structure, properties, and performance of diverse materials which include metals and their alloys, semiconductors, ceramics, glass, polymers, composites, and nanomaterials. The materials engineer applies principles of math, physics and chemistry to design, produce, characterize, and utilize materials essential to modern society. Examples range in size and properties from the nanometer-thick atomic layers which form transistors on integrated circuit chips to the single-crystal superalloy blades used in turbine engines to the metallic alloys used in transcontinental pipelines and power lines. The Materials Science and NanoEngineering curriculum provides students with the requisite skills and educational background to contribute to the solution of many materials and nanoengineering problems, allows graduates to work in a fascinating field, and makes it possible to become a leader in one of the most challenging areas of technology.

The department's graduate degree programs include a non-thesis professional master's degree as well as research degrees which include a thesis. These programs, in their comprehensive educational and research activities, collaborate with other departments at Rice and other institutions and industry in Houston, including those in the Texas Medical Center. Collaborations are also extended to universities in the United States, Europe, Asia, North and South America. International collaborations include joint research activities as well as faculty and student visitor exchanges.

Graduate studies in the department may lead to specialization in one of several areas, including Advanced Manufacturing, Biomaterials, Carbon Nanomaterial Composites, Computational Materials Science, Material Modeling and Theories, Electron Microscopy and in situ Methods, Electronic Materials, Energy Conversion and Storage, Low Dimensional Materials, Mechanical Properties and Nanomechanics, Metallurgy and Metals Processing, Nanotechnology, Optical Materials, Photonics and Nanomaterials, Surfaces and Interfaces, Coatings and Thin Films, and Ultralight-Weight Ultrahigh-Strength Multifunctional Materials. For details about these faculty research areas, please go to the MSNE website (https://msne.rice.edu/).

A coordinated MBA/MMSNE degrees program is also offered in conjunction with the Jesse H. Jones Graduate School of Business.

Bachelor's Programs

- Bachelor of Arts (BA) Degree with a Major in Materials Science and NanoEngineering (p. 533)
• Bachelor of Science in Materials Science and NanoEngineering (BSMSNE) Degree (p. 534)

Master's Programs
• Master of Materials Science and NanoEngineering (MMSNE) Degree (p. 539)
• Master of Science (MS) Degree in the field of Materials Science and NanoEngineering (p. 542)

Doctoral Program
• Doctor of Philosophy (PhD) Degree in the field of Materials Science and NanoEngineering (p. 538)

Coordinated Programs
• Master of Materials Science and NanoEngineering (MMSNE) Degree / Master of Business Administration (MBA) Degree (p. 541)

Chair
Pulickel M. Ajayan

Associate Chair
Jun Lou

Professors
Enrique V. Barrera
Edwin L. Thomas
Boris I. Yakobson

Assistant Professors
Zachary Cordero
Eilaf Egap
Ming Tang
Hanyu Zhu

Professor Emeritus
Rex B. McLellan

Research Professor
Robert Vajati

Associate Research Professors
Wade Adams
Alberto Pimpinelli

Assistant Research Professors
Evgeni Penev
Hua Guo

Professor in the Practice
Peter Loos

Lecturer
Randy John

Joint Appointments
Pedro J.J. Alvarez
Gang Bao
Yildiz Bayazitoglu
Sibani Lisa Biswal
Naomi J. Halas
Matthew Jones
Junichiro Kono
Qilin Li
Antonios G. Mikos
Aditya D. Mohite
Satish Nagarajah
Douglas Natelson
Peter Nordlander
Matteo Pasquali
Gustavo E. Scuseria
Pol D. Spanos
James M. Tour
Rafael Verduzco
R. Bruce Weisman
Peter G. Wolynes
Michael S. Wong

Adjunct Professors
Sivaram Arepalli
Lijie Ci
Feng Ding
Ahmad Kabbani
Sergio D. Kapusta
Valery N. Khabsasheku
Ajit Roy
Glauro Goulart Silva
Abhishek Kumar Singh
Venkataraman Swaminathan

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: MSNE

Department Description and Code
• Materials Science and NanoEngineering: MSNE

Undergraduate Degree Descriptions and Codes
• Bachelor of Arts degree: BA
• Bachelor of Science in Materials Science and NanoEngineering degree: BSMSNE

Undergraduate Major Code and Description
• Major in Materials Science and NanoEngineering: MSNE

Graduate Degree Descriptions and Codes
• Master of Materials Science and NanoEngineering degree: MMSNE
• Master of Science degree: MS
• Doctor of Philosophy degree: PhD
Graduate Degree Program Description and Code

- Degree Program in Materials Science and NanoEngineering: MSNE

CIP Code and Description

- MSNE Major/Program: CIP Code/Title: 15.1601 - Nanotechnology

Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Bachelor of Arts (BA) Degree with a Major in Materials Science and NanoEngineering

Program Learning Outcomes for the BA Degree with a Major in Materials Science and Nanoengineering

Upon completing the BA degree with a major in Materials Science and Nanoengineering, students will demonstrate:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences.
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
6. An ability to acquire an apply new knowledge as needed, using appropriate learning strategies.

Requirements for the BA Degree with a Major in Materials Science and NanoEngineering

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Materials Science and NanoEngineering must complete:

- A minimum of 20 or 22 courses, depending on course selection, (59 credit hours) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 9 courses (28 credit hours) taken at the 300-level or above.

The BA program in Materials Science and NanoEngineering is highly flexible, involves less technical content than the BS, and allows students greater freedom to pursue areas of interest outside of engineering.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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Degree Requirements

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<td>MSNE 302</td>
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<td>MSNE 304</td>
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<tr>
<td>MSNE 401</td>
<td>THERMODYNAMICS IN MATERIALS SCIENCE</td>
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</table>
PHYSICAL PROPERTIES OF SOLIDS

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 26). Some departments have department-specific Honors awards or designations.

Fifth-Year Master’s Degree Option for Rice Undergraduate Students

Rice undergraduate students have an option to pursue the Master of Materials Science and NanoEngineering (MMSNE) degree by adding an additional fifth year to their four undergraduate years of science and engineering studies.

Advanced Rice undergraduate students in good academic standing may apply to the MMSNE degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master’s degree program. A plan of study will need to be approved by the student’s undergraduate advisor and the MMSNE program director.

As part of this option and opportunity, Rice undergraduate students:

- must complete the requirements for a bachelor’s degree and the master’s degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
- should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
- more information on this Undergraduate - Graduate Concurrent Enrollment opportunity, including specific information on the registration process can be found here (p. 17).

Research Opportunities

Many MSNE majors participate in undergraduate research; some even start during their freshman year. To get involved, speak to a MSNE undergraduate advisor or directly to a MSNE faculty member.

Additional Information

For additional information, please see the Materials Science and Nanoengineering website: https://msne.rice.edu/

Bachelor of Science in Materials Science and NanoEngineering (BSMSNE) Degree

Program Learning Outcomes (Student Outcomes) for the BSMSNE Degree

Upon completing the BSMSNE degree, students will be able to demonstrate:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences.
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must
consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Program Educational Objectives for the BSMSNE Degree

The Bachelor of Science in Materials Science and NanoEngineering (BSMSNE) degree prepares graduates to succeed in professional careers by equipping them with the expertise sought by top graduate schools and corporations. Recognizing that graduates may embark on diverse educational and career paths, the Program Educational Objectives (PEOs) that graduates will achieve within a few years of obtaining their Bachelor of Science in Materials Science and NanoEngineering (BSMSNE) degree from Rice University are:

1. Graduates will demonstrate technical proficiency and professional achievement in their work which may include scientific inquiry as well as problem-solving, process optimization, and/or design in materials engineering and related fields.
2. Graduates will be accomplished at communicating and working collaboratively in diverse work environments.
3. Graduates seeking post-baccalaureate education will achieve appropriate levels of success in admission to and progression through those programs. Graduates entering professional careers will achieve appropriate career progression and success.

Requirements for the BSMSNE Degree

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BSMSNE degree must complete:

- A minimum of 33-35 courses (92-95 credit hours), depending on course selection, to satisfy major requirements.
- A minimum of 132-135 credit hours, depending on course selection, to satisfy degree requirements.
- A minimum of 16 courses (43 credit hours) taken at the 300-level or above.

Students seeking the BSMSNE must complete a minimum of 92 credit hours in general math and science, core, and specialization elective courses within the total minimum requirement of 132 credit hours.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<td>Total Credit Hours Required for the BSMSNE Degree</td>
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Degree Requirements

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<td>CAAM 335</td>
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<td>or CAAM 334</td>
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<td>or MATH 355</td>
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Core Requirements

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<td>INTRODUCTION TO NANOENGINEERING</td>
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<td>MATERIALS SELECTION AND DESIGN</td>
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Bachelor of Science in Materials Science and NanoEngineering (BSMSNE) Degree

**MSNE 401** THERMODYNAMICS IN MATERIALS SCIENCE 3
**MSNE 402** MECH PROPERTIES OF MATERIALS 3
**MSNE 406** PHYSICAL PROPERTIES OF SOLIDS 3
**MSNE 407** CAPSTONE DESIGN PROJECT I 4
**MSNE 408** CAPSTONE DESIGN PROJECT II 3
**MSNE 411** METALLOGRAPHY AND PHASE RELATIONS 3
**MSNE 415** CERAMICS AND GLASSES 3
**MSNE 435** CRYSTALLOGRAPHY & DIFFRAC-TION 3
**MSNE 437** CRYSTALLOGRAPHY & DIFFRAC-LAB 1
**MSNE 450** MATERIALS SCIENCE SEMINAR 1
**MSNE 451** MATERIALS SCIENCE SEMINAR 1

**Elective Requirements**

Select 1 elective course from the Engineering Cluster (see course list below) 3-4
Select 1 elective course from the Math and Science Cluster (see course list below) 3-4
Select 1 elective course from the Technical Cluster or select additional Engineering Cluster courses (see course lists below) 3-4

**Total Credit Hours Required for the Major in Materials Science and NanoEngineering** 92-95

**University Graduation Requirements (p. 26)** 40

**Total Credit Hours** 132-135

**Footnotes and Additional Information**

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 MECH 202 is a required Engineering prerequisite to other Core Requirements and must be taken first.

**Course Lists to Satisfy Requirements**

**Elective Requirements**

To fulfill the remaining Materials Science and NanoEngineering major requirements for the BSMSNE degree, students must complete a total of 3 additional courses (a minimum of 9-12 credit hours, depending on course selection). 1 course (3-4 credit hours, depending on course selection) must come from the Engineering Cluster, 1 course (3-4 credit hours, depending on course selection) must come from the Math and Science Cluster. The remaining course (3-4 credit hours, depending on course selection) must come from the Technical Cluster or from additional Engineering Cluster coursework.

**Engineering Cluster (no MSNE courses)**

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<td>ELEC 261</td>
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**Math and Science Cluster (no MSNE or Engineering courses)**

Select at least 1 course from the following: 3-4

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<td>DIFFERENTIAL EQUATIONS IN SCIENCE AND ENGINEERING</td>
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<td>INTRODUCTION TO OPERATIONS RESEARCH AND OPTIMIZATION</td>
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<td>CAAM 415</td>
<td>THEORETICAL NEUROSCIENCE: FROM CELLS TO LEARNING SYSTEMS</td>
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<td>MATH 435</td>
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<tr>
<td>CAAM 453</td>
<td>NUMERICAL ANALYSIS I</td>
</tr>
<tr>
<td>CAAM 501</td>
<td>ANALYSIS I</td>
</tr>
<tr>
<td>CAAM 519</td>
<td>COMPUTATIONAL SCIENCE I</td>
</tr>
<tr>
<td>CHEM 211</td>
<td>ORGANIC CHEMISTRY I</td>
</tr>
<tr>
<td>CHEM 213</td>
<td>and ORGANIC CHEMISTRY DISCUSSION</td>
</tr>
<tr>
<td>CHEM 212</td>
<td>ORGANIC CHEMISTRY II</td>
</tr>
<tr>
<td>CHEM 214</td>
<td>and ORGANIC CHEM DISCUSSION II</td>
</tr>
<tr>
<td>CHEM 301</td>
<td>PHYSICAL CHEMISTRY I</td>
</tr>
<tr>
<td>CHEM 302</td>
<td>PHYSICAL CHEMISTRY II</td>
</tr>
<tr>
<td>CHEM 330</td>
<td>ANALYTICAL CHEMISTRY</td>
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<tr>
<td>CHEM 360</td>
<td>INORGANIC CHEMISTRY</td>
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</table>

**Total Credit Hours** 3-4

2019-2020 General Announcements
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**ESCI 307 / CEVE 307 / ENST 307**
ENERGY AND THE ENVIRONMENT

**ESCI 321**
EARTH SYSTEM EVOLUTION AND CYCLES

**MATH 302**
ELEMENTS OF ANALYSIS

**MATH 354**
HONORS LINEAR ALGEBRA

**MATH 355**
LINEAR ALGEBRA

**PHYS 201**
WAVES, LIGHT, AND HEAT

**PHYS 202**
MODERN PHYSICS

**PHYS 301**
INTERMEDIATE MECHANICS

**PHYS 302**
INTERMEDIATE ELECTRODYNAMICS

**PHYS 355**
INTRODUCTION TO BIOLOGICAL PHYSICS

**STAT 280**
ELEMENTARY APPLIED STATISTICS

**STAT 305**
INTRODUCTION TO STATISTICS FOR BIOSCIENCES

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### Technical Cluster (MSNE or Engineering courses) ¹

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select 1 course from the following (or select additional coursework from the Engineering Cluster):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSNE 365 / ELEC 365</td>
<td>NANOMATERIALS FOR ENERGY</td>
<td>3</td>
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<tr>
<td>MSNE 409</td>
<td>PHYSICAL METALLURGY</td>
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<td>MSNE 433</td>
<td>COMPUTATIONAL MATERIALS MODELING</td>
<td></td>
</tr>
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<td>MSNE 505</td>
<td>MICROSTRUCTURE AND NANOSTRUCTURE EVOLUTION</td>
<td></td>
</tr>
<tr>
<td>MSNE 523</td>
<td>PROPERTIES, SYNTHESIS AND DESIGN OF COMPOSITE MATERIALS</td>
<td></td>
</tr>
<tr>
<td>MSNE 538 / CEVE 538</td>
<td>COMPUTATIONAL NANOSCIENCE FOR GREEN INFRASTRUCTURE</td>
<td></td>
</tr>
<tr>
<td>MSNE 545 / ELEC 545</td>
<td>THIN FILMS</td>
<td></td>
</tr>
<tr>
<td>MSNE 555</td>
<td>MATERIALS IN NATURE AND BIO-MIMETIC STRATEGIES</td>
<td></td>
</tr>
<tr>
<td>MSNE 560 / CHBE 560</td>
<td>COLLOIDAL AND INTERFACIAL PHENOMENA</td>
<td></td>
</tr>
<tr>
<td>MSNE 569</td>
<td>SCIENCE AND APPLICATIONS OF CORROSION SCIENCE AND ENGINEERING</td>
<td></td>
</tr>
<tr>
<td>MSNE 580 / CHEM 580</td>
<td>MICROSCOPY METHODS IN MATERIALS SCIENCE</td>
<td></td>
</tr>
<tr>
<td>MSNE 581 / MECH 581</td>
<td>MICRO AND NANO HEAT TRANSPORT METHODOLOGIES AND DESIGN</td>
<td></td>
</tr>
<tr>
<td>MSNE 593 / CHBE 593</td>
<td>INTRODUCTION TO POLYMER PHYSICS AND ENGINEERING</td>
<td></td>
</tr>
<tr>
<td>MSNE 594 / CHBE 594</td>
<td>PROPERTIES OF POLYMERS</td>
<td></td>
</tr>
<tr>
<td>MSNE 650</td>
<td>NANOMATERIALS AND NANOMECHANICS</td>
<td></td>
</tr>
</tbody>
</table>

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### Footnotes and Additional Information

¹ The Technical Cluster requirement also includes the Engineering Cluster listed above.

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### Policies for the BSMSNE Degree

#### Transfer Credit

For Rice University’s policy regarding transfer credit, see [Transfer Credit](#). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [https://oaa.rice.edu](https://oaa.rice.edu). Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

#### Departmental Transfer Credit Guidelines

Students pursuing the BSMSNE degree should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

### Additional Information

For additional information, please see the Materials Science and NanoEngineering website: [https://msne.rice.edu/](https://msne.rice.edu/)

### Opportunities for the BSMSNE Degree

#### Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see [Latin Honors](#) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

#### Fifth-Year Master’s Degree Option for Rice Undergraduate Students

Rice undergraduate students have an option to pursue the Master of Materials Science and NanoEngineering (MMSNE) degree by adding an additional fifth year to their four undergraduate years of science and engineering studies.

Advanced Rice undergraduate students in good academic standing may apply to the MMSNE degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master’s degree program. A plan of study will need to be approved by the student’s undergraduate advisor and the MMSNE program director.

As part of this option and opportunity, Rice undergraduate students:

- must complete the requirements for a bachelor’s degree and the master’s degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
- should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
- more information on this [Undergraduate - Graduate Concurrent Enrollment](#) opportunity; including specific information on the registration process can be found here (p. 17).

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Research Opportunities
Many MSNE majors participate in undergraduate research; some even start during their freshman year. To get involved, speak to a MSNE undergraduate advisor or directly to a MSNE faculty member.

Additional Information
For additional information, please see the Materials Science and NanoEngineering website: https://msne.rice.edu/

Doctor of Philosophy (PhD) Degree in the field of Materials Science and NanoEngineering

Program Learning Outcomes for the PhD Degree in the field of Materials Science and NanoEngineering

Upon completing the PhD degree in the field of Materials Science and NanoEngineering, students will be able to:

1. Demonstrate an advanced command of Materials Science and NanoEngineering field work.
2. Conduct independent research that demonstrates advanced mastery of a subfield within Materials Science or NanoEngineering.
3. Communicate scientific ideas effectively in writing and when speaking.

Requirements for the PhD Degree in the field of Materials Science and NanoEngineering

Full-time students seeking the PhD degree are expected to complete all the requirements for the degree within five calendar years following entrance into the program. Continuation in the program beyond this time limit will require special approval of the department.

For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the PhD degree program in Materials Science and NanoEngineering must complete:

- A minimum of 90 credit hours advanced relevant study, of which at least 18 credit hours must be completed through coursework.

The programs leading to the MS and PhD degrees are open to students who have demonstrated outstanding performance in their undergraduate studies. The granting of a graduate research degree presupposes academic work of superior quality and a demonstrated ability to do original research.

Course requirements for the research degrees vary depending on the extent of individual undergraduate preparation as well as each student’s performance in graduate courses and on qualifying examinations. For both the MS and PhD degrees, students must present a thesis that comprises an original contribution to knowledge and defend it in a public oral examination.

Students are expected to earn letter grades of at least B- (2.67 grade points) in all courses taken, and maintain a minimum overall GPA of 3.00.

If a student’s GPA is below 3.00, the student will be placed on departmental probation, and if the student’s semester GPA is below 3.00 for two consecutive semesters, his/her performance will be reviewed by the Graduate Committee in consultation with the Department Chair, and the student may be dismissed from the program.

Each graduate student is expected to render research and/or instructional assistance to the department not to exceed 10 hours per week. Graduate student work assignments will be made by the advisor at the beginning of each semester.

All PhD students must attend at least 75% of the MSNE seminars per semester. For details, please see the degree requirements on the MSNE website (https://msne.rice.edu/).

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>Total Credit Hours Required for the PhD Degree in the field of Materials Science and NanoEngineering</td>
<td>90</td>
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Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSNE 502</td>
<td>MECH PROPERTIES OF MATERIALS</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 503</td>
<td>THERMODYNAMICS IN MATERIALS SCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 506</td>
<td>PHYSICAL PROPERTIES OF SOLIDS</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 535 /</td>
<td>CRYSTALLOGRAPHY &amp; DIFFRACTION</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 535</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elective Requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select 2 courses as Electives from departmental (MSNE) course offerings at the 500-level or above</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Non-Coursework</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSNE 500</td>
<td>MATERIALS SCIENCE SEMINAR</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 501</td>
<td>GRADUATE STUDENT SEMINAR</td>
<td>1</td>
</tr>
<tr>
<td>MSNE 800</td>
<td>RESEARCH AND THESIS</td>
<td>9</td>
</tr>
<tr>
<td>Additional Requirements as Defined by Department</td>
<td>72</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>Total Credit Hours</td>
<td>90</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1 Students may complete courses that satisfy the Electives requirement from other departmental course offerings upon approval from their advisors or one member of the Departmental Graduate Committee.

2 Credit received for MSNE 500, MSNE 501, and MSNE 800 will not be counted toward coursework, but will count toward the total credit hours required for the degree.

3 Students must attend at least 10 of the 13 MSNE 500 seminars per semester for the duration of their study

4 Students must attend at least 9 of the 13 MSNE 501 seminars per semester for the duration of their study
Program Learning Outcomes for the MMSNE Degree

Upon completing the MMSNE degree, students will be able to:

1. Acquire broad, advanced knowledge within either Materials Science or NanoEngineering, which is also in-depth in one major sub-discipline of the field.
2. Conduct research at an advanced level in at least one area of Materials Science and Nanoengineering.
3. Communicate scientific ideas effectively in writing and when speaking.

Requirements for the MMSNE Degree in Materials Science and NanoEngineering

The MMSNE degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MMSNE degree must complete:

- A minimum of 10 courses (30 credit hours) to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University.
- The requirements for one area of specialization. The MMSNE degree program offers two areas of specialization:
  - Materials Science, or
  - NanoEngineering.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 3.00 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree with a minimum grade of B- (2.67 grade points) in each course.

The MMSNE degree program is open to students who have shown academic excellence in their undergraduate studies. This non-thesis degree option is designed for engineers who have attained a bachelor’s degree and are looking to further their careers in industry. They combine engineering coursework with professional development and communications. A list of required and suggested courses are available on the MSNE website (https://msne.rice.edu/). Students should develop a specific plan of study based on their particular interests and discussions with their advisor.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Additional Information

For additional details and information, please see the degree requirements on the MSNE website (https://msne.rice.edu/).

Policies for the PhD Degree in the field of Materials Science and NanoEngineering

Department of Materials Science and NanoEngineering Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Materials Science and NanoEngineering publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019-20/Material_Science_Nano_Engineering_Graduate_Handbook.pdf

Additional Information

For additional information, please see the Materials Science and Nanoengineering website: https://msne.rice.edu/

opportunities for the PhD Degree in the field of Materials Science and NanoEngineering

Additional Information

For additional information, please see the Materials Science and Nanoengineering website: https://msne.rice.edu/

Master of Materials Science and NanoEngineering (MMSNE) Degree
## Master of Materials Science and NanoEngineering (MMSNE) Degree

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MMSNE Degree</td>
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### Degree Requirements

#### Core Requirements

Select 3 courses from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>MSNE 502</td>
<td>MECH PROPERTIES OF MATERIALS</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 503</td>
<td>THERMODYNAMICS IN MATERIALS SCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 505</td>
<td>MICROSTRUCTURE AND NANOSTRUCTURE EVOLUTION</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 506</td>
<td>PHYSICAL PROPERTIES OF SOLIDS</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 509</td>
<td>PHYSICAL METALLURGY</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 517</td>
<td>ELECTRONIC, OPTICAL AND MAGNETIC PROPERTIES OF POLYMERS</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 535 / PHYS 535</td>
<td>CRYSTALLOGRAPHY &amp; DIFRACTION</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Technical Electives

Select 9 credit hours from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>MSNE 510</td>
<td>SCALING CONCEPTS IN 2D MATERIALS AND POLYMER PHYSICS</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 511</td>
<td>METALLOGRAPHY AND PHASE RELATIONS</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 516 / CHBE 516</td>
<td>STRUCTURE AND PROPERTIES OF POLYMERS AND SOFT MATERIALS</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 523</td>
<td>PROPERTIES, SYNTHESIS AND DESIGN OF COMPOSITE MATERIALS</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 533</td>
<td>COMPUTATIONAL MATERIALS MODELING</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 545 / ELEC 545</td>
<td>THIN FILMS</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 555</td>
<td>MATERIALS IN NATURE AND BIO-MIMETIC STRATEGIES</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 569</td>
<td>SCIENCE AND APPLICATIONS OF CORROSION SCIENCE AND ENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 580 / CHEM 580</td>
<td>MICROSCOPY METHODS IN MATERIALS AND SCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 613</td>
<td>SPECIAL TOPICS I</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 614</td>
<td>SPECIAL TOPICS II</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 615</td>
<td>SPECIAL TOPICS III</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 650</td>
<td>NANOMATERIALS AND NANOMECHANICS</td>
<td>3</td>
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</table>

#### Research Project

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>MSNE 621</td>
<td>M.M.S. RESEARCH PROJECT I</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 622</td>
<td>M.M.S. RESEARCH PROJECT II</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Professional Development

Select at least 1 course from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>ENGI 501</td>
<td>WORKPLACE COMMUNICATION FOR PROFESSIONAL MASTER'S STUDENTS IN ENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td>ENGI 510</td>
<td>TECHNICAL AND MANAGERIAL COMMUNICATIONS</td>
<td>3</td>
</tr>
<tr>
<td>ENGI 515</td>
<td>LEADING TEAMS AND INNOVATION</td>
<td>3</td>
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</tbody>
</table>

### Elective Requirements

Select 3 credit hours of remaining coursework from approved electives at the 500-level or above to reach 30 total credit hours

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGI 528 / CEVE 528</td>
<td>ENGINEERING ECONOMICS</td>
<td>3</td>
</tr>
<tr>
<td>ENGI 529 / CEVE 529</td>
<td>ETHICS AND ENGINEERING LEADERSHIP</td>
<td>3</td>
</tr>
<tr>
<td>ENGI 542</td>
<td>PROFESSIONAL COMMUNICATION FOR ENGINEERING LEADERS</td>
<td>3</td>
</tr>
<tr>
<td>ENGI 610 / NSCI 610</td>
<td>MANAGEMENT FOR SCIENCE AND ENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td>ENGI 615</td>
<td>LEADERSHIP COACHING FOR ENGINEERS</td>
<td>3</td>
</tr>
<tr>
<td>NSCI 511</td>
<td>SCIENCE POLICY, AND ETHICS</td>
<td>3</td>
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</tbody>
</table>

### Footnotes and Additional Information

1. If MSNE 502, MSNE 503, MSNE 505, MSNE 506, MSNE 509, MSNE 517, and/or MSNE 535/PHYS 535 are not taken to satisfy the Core Requirements, they can be taken as Technical Electives.
2. MSNE 500 and MSNE 501 are not considered Technical Electives.
3. Students can repeat MSNE 622 or work with their advisor to receive approval for courses according to their interests and field of study.

### Policies for the MMSNE Degree

#### Department of Materials Science and NanoEngineering Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Materials Science and NanoEngineering publishes a graduate program handbook, which can be found here: [https://gradhandbooks.rice.edu/2019_20/Material_Science_Nano_Engineering_Graduate_Handbook.pdf](https://gradhandbooks.rice.edu/2019_20/Material_Science_Nano_Engineering_Graduate_Handbook.pdf)

### Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

### Academic Standards

Students are expected to earn letter grades of at least B- (2.67 grade points) in all courses taken, and maintain a minimum overall GPA of 3.00 to graduate. If a student’s semester GPA is below 3.00, the student will be placed on departmental probation, and if the student’s semester GPA is below 3.00 for two consecutive semesters, hi/her performance will be reviewed by the Graduate Committee in consultation with the Department hair, and the student may be dismissed from the program.

### Additional Information

For additional information, please see the Materials Science and Nanoengineering website: [https://msne.rice.edu/](https://msne.rice.edu/)

### Opportunities for the MMSNE Degree

**Fifth-Year Master's Degree Option for Rice Undergraduate Students**

Rice undergraduate students have an option to pursue the Master of Materials Science and NanoEngineering (MMSNE) degree by adding an
additional fifth year to their four undergraduate years of science and engineering studies.

Advanced Rice undergraduate students in good academic standing may apply to the MMSNE degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master’s degree program. A plan of study will need to be approved by the student's undergraduate advisor and the MMSNE program director.

As part of this option and opportunity, Rice undergraduate students:

• must complete the requirements for a bachelor’s degree and the master’s degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
• should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
• more information on this Undergraduate - Graduate Concurrent Enrollment opportunity, including specific information on the registration process can be found here (p. 17).

Additional Information
For additional information, please see the Materials Science and Nanoengineering website: https://msne.rice.edu/

Master of Materials Science and NanoEngineering (MMSNE) Degree / Master of Business Administration (MBA) Degree

Program Learning Outcomes for the MMSNE Degree
Upon completing the MMSNE degree, students will be able to:

1. Acquire broad, advanced knowledge within either Materials Science or NanoEngineering, which is also in-depth in one major sub-discipline of the field.
2. Conduct research at an advanced level in at least one area of Materials Science and Nanoengineering.
3. Communicate scientific ideas effectively in writing and when speaking.

Program Learning Outcomes for the MBA Degree
Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MMSNE/MBA Coordinated Degrees Program
Students may earn a coordinated MBA degree and a non-thesis Master of Engineering degree from the George R. Brown School of Engineering in the following fields:

• Chemical Engineering (MChE)
• Computational and Applied Mathematics (MCAAM)
• Computer Science (MCS)
• Industrial Engineering (MIE)
• Materials Science and Nanoengineering (MMSNE)
• Mechanical Engineering (MME)
• Statistics (MStat)

For the coordinated MBA/Master of Engineering degrees, students must complete:

• A minimum of 69 credit hours in approved coursework*, including:
  • A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the Master of Engineering degree requirements
  • A minimum of 24 credit hours in the corresponding engineering discipline
  • A minimum of 6 credit hours in elective requirements*
  • A minimum of 45 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the MBA degree requirements
  • A minimum of 45 credit hours of business coursework
  • All MBA core requirements, the global field experience, custom core requirements, and coordinated elective requirements

• *Note: A maximum of 6 credit hours of the Master of Engineering degree elective requirements may be selected from business course offerings (MGMP, MGMT, or MICO) and used to fulfill the requirements for both the MBA and the Master of Engineering degrees.

Students plan their course schedules in consultation with the George R. Brown School of Engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department. Coordinated degrees candidates can fulfill requirements for both degrees within 2 academic years.

For general university requirements, see Graduate Degrees (p. 49). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Candidates in the MBA/Master of Engineering coordinated degrees program must complete all requirements as listed for both degrees, and must apply and be accepted in both degree programs.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/degeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.
Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Coordinated Master of Engineering Degree</td>
<td>Minimum of 30</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the Coordinated MBA Degree</td>
<td>Minimum of 45</td>
</tr>
</tbody>
</table>

Coordinated MMSNE Degree Requirements

Students in the coordinated MBA/MMSNE degrees program must complete the Core Requirements, Technical Electives, Research Project, and Professional Development of the MMSNE degree program (p. 539) and Coordinated MMSNE Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MMSNE Core Requirements</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>MMSNE Technical Electives</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>MMSNE Research Project</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MMSNE Professional Development</td>
<td>3-6</td>
</tr>
<tr>
<td></td>
<td>Coordinated MMSNE Elective Requirements</td>
<td>3-6</td>
</tr>
<tr>
<td></td>
<td>Select a maximum of 6 credit hours from approved course offerings (MGMP, MGMT, or MICO) from the Jones Graduate School of Business at the 500-level or above</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>30</td>
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</tbody>
</table>

Coordinated MBA Degree Requirements

Students in the coordinated MBA/Master of Engineering degrees program or in the coordinated MBA/Master of Science degree from the Professional Science Master’s (PSM) degrees program must complete the Core Requirements, Global Field Experience, and Custom Core Requirements of the full-time MBA degree program (p. 214) and the Coordinated MBA Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Full-time MBA Core Requirements</td>
<td>25.5</td>
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<tr>
<td></td>
<td>Full-time MBA Global Field Experience Requirement</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>Full-time MBA Custom Core Courses</td>
<td>3-6</td>
</tr>
<tr>
<td></td>
<td>Coordinated MBA Elective Requirements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours.</td>
<td>12-15</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>45</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1 To fulfill the remaining requirements for the coordinated MBA degree program, students must complete an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours. (MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.) The second year of the program is dedicated entirely to MBA elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. MBA electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.

Policies for the MMSNE/MBA Coordinated Degrees Program

Additional Information

For additional information on these two degrees:

1. Please see the Materials Science and Nanoengineering website: https://msne.rice.edu/
2. Please see the Jones Graduate School of Business website: https://business.rice.edu/

Opportunities for the MMSNE/MBA Coordinated Degrees Program

Additional Information

For additional information on these two degrees:

1. Please see the Materials Science and Nanoengineering website: https://msne.rice.edu/
2. Please see the Jones Graduate School of Business website: https://business.rice.edu/

Master of Science (MS) Degree in the field of Materials Science and NanoEngineering

Program Learning Outcomes for the MS Degree in the field of Materials Science and NanoEngineering

Upon completing the MS degree in the field of Materials Science and NanoEngineering, students will be able to:

1. Demonstrate an advanced command of Materials Science and NanoEngineering field work.
2. Conduct independent research that demonstrates advanced mastery of a subfield within Materials Science or NanoEngineering.
3. Communicate scientific ideas effectively in writing and when speaking.

Requirements for the MS Degree in the field of Materials Science and NanoEngineering

The MS degree is a thesis master’s degree. For general university requirements, please see Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MS degree in the field of Materials Science and NanoEngineering must complete:

- A minimum of 30 credit hours of study, of which at least 18 credit hours must be completed through coursework.

Full-time students seeking the MS degree are expected to complete all the requirements for the degree within 2 calendar years into the program. Continuation in the program beyond this time limit will require special approval of the department.
The programs leading to the MS and PhD degrees are open to students who have demonstrated outstanding performance in their undergraduate studies. The granting of a graduate research degree presupposes academic work of superior quality and a demonstrated ability to do original research.

For general university requirements, see Graduate Degrees (p. 49). Course requirements for the research degrees vary depending on the extent of individual undergraduate preparation as well as each student's performance in graduate courses and on qualifying examinations. For both the MS and PhD degrees, students must present a thesis that comprises an original contribution to knowledge and defend it in a public oral examination.

Students are expected to earn letter grades of at least B- (2.67 grade points) in all courses taken, and maintain a minimum overall GPA of 3.00 to graduate. If a student's semester GPA is below 3.00, the student will be placed on departmental probation, and if the student’s semester GPA is below 3.00 for two consecutive semesters, his/her performance will be reviewed by the Graduate Committee in consultation with the Department Chair, and the student may be dismissed from the program.

Each graduate student is expected to render research and/or instructional assistance to the department not to exceed 10 hours per week. Graduate student work assignments will be made by the advisor at the beginning of each semester.

All PhD students must attend at least 75% of the MSNE seminars per semester, and MS students must attend at least 50% of the MSNE seminars per semester. For details, please see the degree requirements on the MSNE website (https://msne.rice.edu/).

Graduate students pursuing a thesis degree program will be subject to a preliminary evaluation of their candidacy for the highest degree program they intend to pursue. The evaluation will be conducted by the end of the second semester of enrollment in the graduate program in the MSNE department.

Each candidate for the MS degree must complete a thesis demonstrating ability in research of a fundamental nature (analytical or experimental). It is expected that the research will be of sufficient importance and quality that positive results would lead to publication. Upon completion of the thesis, each candidate for the MS degree must pass a final public oral examination. The examination will be conducted by a committee consisting of at least three members. Two, including the advisor, must be MSNE faculty members, and one must be a faculty member from another department.

Candidates for the MS degree are required to provide teaching assistance to the department as a teaching assistant or grader for at least 2 semesters, but no more than 3 semesters.

For details, please see the degree requirements on the MSNE website (https://msne.rice.edu/).

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>MSNE 502</td>
<td>MECH PROPERTIES OF MATERIALS</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 503</td>
<td>THERMODYNAMICS IN MATERIALS SCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 506</td>
<td>PHYSICAL PROPERTIES OF SOLIDS</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 535 / PHYS 535</td>
<td>CRYSTALLOGRAPHY &amp; DIFFRACTION</td>
<td>3</td>
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</table>

Degree Requirements

Core Requirements

<table>
<thead>
<tr>
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<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSNE 500</td>
<td>MECH PROPERTIES OF MATERIALS</td>
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<tr>
<td>MSNE 503</td>
<td>THERMODYNAMICS IN MATERIALS SCIENCE</td>
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</tr>
<tr>
<td>MSNE 506</td>
<td>PHYSICAL PROPERTIES OF SOLIDS</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 535 / PHYS 535</td>
<td>CRYSTALLOGRAPHY &amp; DIFFRACTION</td>
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Elective Requirements

Select 2 courses from departmental (MSNE) course offerings at the 500-level or above

<table>
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<tr>
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<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MSNE 500</td>
<td>MATERIALS SCIENCE SEMINAR</td>
<td>1</td>
</tr>
<tr>
<td>MSNE 501</td>
<td>GRADUATE STUDENT SEMINAR</td>
<td>1</td>
</tr>
<tr>
<td>MSNE 800</td>
<td>RESEARCH AND THESIS</td>
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Additional Requirements as Defined by Department

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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSNE 500</td>
<td>MATERIALS SCIENCE SEMINAR</td>
<td>1</td>
</tr>
<tr>
<td>MSNE 501</td>
<td>GRADUATE STUDENT SEMINAR</td>
<td>1</td>
</tr>
<tr>
<td>MSNE 800</td>
<td>RESEARCH AND THESIS</td>
<td>9</td>
</tr>
</tbody>
</table>

Total Credit Hours

30

Footnotes and Additional Information

1 Students may complete courses that satisfy the Electives requirement from other departmental course offerings upon approval from their advisors or one member of the Departmental Graduate Committee.

2 Credit received for MSNE 500, MSNE 501, and MSNE 800 will not be counted toward coursework, but will count toward the total credit hours required for the degree.

3 Students must attend at least 6 of the 13 MSNE 500 seminars per semester for the duration of their study.

4 Students must attend at least 6 of the 13 MSNE 501 seminars per semester for the duration of their study.

5 Students must register for a minimum of 9 credit hours of MSNE 800 per semester. This course is taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade. As a S/U course, it does not apply to the requirement of a minimum grade of B- (2.67 grade points) in each required course. For more information, see the Grades section of the MSNE Graduate Student Handbook on the Policies tab.

Policies for the MS Degree in the field of Materials Science and NanoEngineering

Department of Materials Science and NanoEngineering Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Materials Science and NanoEngineering publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Material_Science_Nano_Engineering_Graduate_Handbook.pdf

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program's advisor when considering transfer credit possibilities.
Mathematical Economic Analysis

Contact Information
Economics
https://economics.rice.edu/
266 Baker Building
713-348-3563

Kenneth Wolpin
Department Chair
Kenneth.I.Wolpin@rice.edu

George Zodrow
Director of Undergraduate Studies
zodrow@rice.edu

Mathematical Economic Analysis (MTEC) is a major offered by the Economics Department. The MTEC major provides a specialized 16-course program that includes most of the courses required for the regular (ECON) major, but also requires additional preparation in mathematics and statistics, several relatively technical economics electives, and a capstone course.

The MTEC major is recommended for students who intend to pursue graduate work in economics or plan to obtain a position in business or government that requires extensive analytical and quantitative skills.

Bachelor’s Program
• Bachelor of Arts (BA) Degree with a Major in Mathematical Economic Analysis. (p. 545)

Mathematical Economic Analysis does not currently offer an academic program at the graduate level.

Chair, Department of Economics
George Zodrow

Director of Undergraduate Studies
Mahmoud A. El-Gamal

Professors
Kerry E. Back
Richard Thomas Boylan
Bryan W. Brown
James N. Brown
Flávio Cunha

Associate Professors
Marc Peter Dudey
Mallesh Pai

Assistant Professors
Rossella Calvi
Yinghua He
Yunmi Kong

Professors Emeriti
Dagobert Brito
John B. Bryant
Donald L. Huddle
Peter Mieszkowski
Ronald Soligo

Lecturers
Maria Bejan
Michele Biavati
Amelie Carlton
James P. DeNicco

Adjunct Professors
David R. Lairson
John Michael Swint

Adjunct Associate Professors
Charles E. Begley
Russell Green

Adjunct Assistant Professors
John Diamond
Kenneth Medlock

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: ECON

Department Description and Code
• Economics: ECON

Undergraduate Degree Description and Code
• Bachelor of Arts degree: BA
Undergraduate Major Description and Code

- Major in Mathematical Economic Analysis: MTEC

CIP Code and Description

- MTEC Major/Program: CIP Code/Title: 45.0603 - Econometrics and Quantitative Economics

Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Bachelor of Arts (BA) Degree with a Major in Mathematical Economic Analysis

Program Learning Outcomes for the BA Degree with a Major in Mathematical Economic Analysis

Upon completing the BA degree with a major in Mathematical Economic Analysis, students will have:

1. Learned various mathematical skills, including the elements of multiple variable calculus, linear algebra, and optimization techniques, and other mathematical methods utilized in technical economic analyses.

2. Learned various statistical and econometric skills, including a thorough knowledge of both theoretical and applied econometrics.

3. Learned the core principles of microeconomics, including supply and demand, utility maximization by consumers and profit maximization by firms, and equilibrium market structures, as well as technical treatments of advanced topics in microeconomics, especially economic applications of game theory.

4. Learned the core principles of macroeconomics, including the macroeconomic effects of monetary and fiscal policy, the nature of the business cycle, and the determinants of growth, and learn alternative approaches to analyzing the performance of the macroeconomy.

5. Learned how the basic economic principles that have been absorbed in the core courses are utilized in the economic analyses of critical policy issues in a wide variety of applied subject areas.

Additionally, students completing the two-semester departmental honors program will have:

1. Learned how to conduct economic research, beginning with framing of a research idea and progressing to a critical review and evaluation of the relevant literature, the construction of an economic model to analyze the issue under consideration, the identification of testable hypotheses, the collection of data and econometric testing of their hypotheses, the presentation of preliminary and final results, and the preparation of a research paper that presents those results.

Requirements for the BA Degree with a Major in Mathematical Economic Analysis

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Mathematical Economic Analysis must complete:

- A minimum of 16 or 17 courses (52 or 56 credit hours), depending on course selection, to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 8 courses (26 credit hours) taken at the 300-level or above.
- A maximum of 5 courses (15 credit hours) from study abroad or transfer credit after matriculation at Rice may be applied towards specific major requirements. For additional departmental guidelines regarding transfer credit, see the Policies tab.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Mathematical Economic Analysis</td>
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</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Mathematical Economic Analysis</td>
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Degree Requirements

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<th>Title</th>
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Core Requirements

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<tr>
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<tr>
<td>or MATH 105</td>
<td>AP/OTH CREDIT IN CALCULUS I</td>
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<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
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<td>or MATH 106</td>
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<td>MATH 212</td>
<td>MULTIVARIABLE CALCULUS</td>
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</tr>
<tr>
<td>MATH 221 &amp; MATH 222</td>
<td>HONORS CALCULUS III and HONORS CALCULUS IV</td>
<td></td>
</tr>
<tr>
<td>Select 1 course from the following:</td>
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<td>3-4</td>
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<tr>
<td>ECON 307 / STAT 310</td>
<td>PROBABILITY AND STATISTICS</td>
<td></td>
</tr>
<tr>
<td>or STAT 315 PROBABILITY AND STATISTICS FOR DATA SCIENCE DSCI 301</td>
<td></td>
<td></td>
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Economics and Econometrics

<table>
<thead>
<tr>
<th>Code</th>
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</thead>
<tbody>
<tr>
<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I</td>
<td>3</td>
</tr>
<tr>
<td>or MATH 105</td>
<td>AP/OTH CREDIT IN CALCULUS I</td>
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<tr>
<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
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<tr>
<td>or MATH 106</td>
<td>AP/OTH CREDIT IN CALCULUS II</td>
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<tr>
<td>Select 1 from the following:</td>
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<tr>
<td>ECON 307 / STAT 310</td>
<td>PROBABILITY AND STATISTICS</td>
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<tr>
<td>or STAT 315 PROBABILITY AND STATISTICS FOR DATA SCIENCE DSCI 301</td>
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</tbody>
</table>

ECON 100 | PRINCIPLES OF ECONOMICS | 3            |
| ECON 200 | MICROECONOMICS | 4            |
| ECON 203 | MACROECONOMICS | 3            |
Bachelor of Arts (BA) Degree with a Major in Mathematical Economic Analysis

Policies for the BA Degree with a Major in Mathematical Economic Analysis

Program Restrictions and Exclusions

Students pursuing the BA degree with a major in Mathematical Economics Analysis should be aware of the following program restriction:

- Students pursuing the major in Mathematical Economics Analysis may not additionally declare the major in Economics.

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in Mathematical Economics Analysis should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.
- No more than 5 courses (15 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards specific major requirements after matriculation at Rice as follows:
  - No more than 2 courses (6 credit hours) of transfer credit may apply towards the mathematics and statistics core requirements
  - No more than 3 courses (9 credit hours) of transfer credit may apply towards the economics/econometrics core requirements and the elective requirements combined

Please Note: Additional transfer courses may count toward meeting university graduation requirements, but not toward fulfillment of requirements for the major. Credits awarded to transfer students for courses taken prior to matriculation at Rice are not counted against the departmental limit on transfer courses, but all students must complete more than half of their upper-level major coursework (300-level and 400-level courses) at Rice.

Additional Information

For additional information, please see the Economics website: https://economics.rice.edu/

Opportunities for the BA Degree with a Major in Mathematical Economic Analysis

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

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<table>
<thead>
<tr>
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<th>Credits</th>
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<tr>
<td>ECON 209</td>
<td>APPLIED ECONOMETRICS</td>
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<td>ECON 305</td>
<td>GAME THEORY AND OTHER MICRO TOPICS</td>
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<td></td>
<td>FOR MTEC MAJORS</td>
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<td>ECON 308</td>
<td>MATHEMATICAL ECONOMICS</td>
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<td>ECONOMETRICS</td>
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<tr>
<td>STAT 376</td>
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<td>ECON 496</td>
<td>RESEARCH IN ECONOMIC THEORY</td>
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<tr>
<td>or ECON 497</td>
<td>RESEARCH IN ECONOMETRICS</td>
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</table>

Elective Requirements 1, 2, 3

Select 1 course from the following:

ECON 210  BEHAVIORAL ECONOMICS
ECON 239  LAW AND ECONOMICS
ECON 498  HONORS PROGRAM IN ECONOMICS-I

Select 3 courses from ECON 410-ECON 495 and ECON 498.

Total Credit Hours Required for the Major in Mathematical Economic Analysis: 52-56

Additional Credit Hours to Complete BA Degree Requirements: 4-8

University Graduation Requirements (p. 26): 60

Total Credit Hours: 120

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 After matriculation: In some cases, transfer credit may be awarded by the economics department for courses completed at other schools after the student has matriculated at Rice. Students may present a maximum of 2 such transfer courses in fulfilling the mathematics and statistics core requirements, and a maximum of 3 such transfer courses in fulfilling the economics/econometrics core requirements and elective requirements combined. (Additional transfer courses may count toward meeting university graduation requirements, but not toward fulfillment of requirements for the major.)

Before matriculation: Credits awarded to transfer students for courses taken prior to matriculation at Rice are not counted against the departmental limit on transfer courses, but all students must complete more than half of their upper-level major coursework (300-level and 400-level courses) at Rice.

2 Students who have received credit for ECON 111 and ECON 113 and have made a grade of B- or better in MATH 102 (taken at Rice University) may substitute any Economics major elective for ECON 100. Students must notify the department’s Director of Undergraduate Studies if they wish to exercise this option.

3 As specified in their course descriptions, the following courses do not satisfy the Electives requirement for the major in Mathematical Economic Analysis: ECON 101, ECON 103, ECON 111, ECON 113, ECON 260, ECON 265, ECON 270, ECON 275, ECON 499. In addition, BUSI 343 may be substituted for ECON 343, and STAT 449 may be substituted for ECON 449.
Requirements for Departmental Honors
1. To earn departmental honors in economics, students must earn a grade of B+ (3.33 grade points) or better in each semester of the department’s two-semester honors program, ECON 498 and ECON 499.
2. The honors program is available to both ECON and MTEC majors.
3. To be admitted to the honors program, students:
   a. must have a GPA of 3.67 or better in all courses taken toward fulfilling their departmental major requirements at the beginning of the academic year in which they enter the honors program;
   b. must have completed all of the core requirements for their major;
   c. must have completed the 400-level course or courses most closely related to their area of research, and
   d. must be accepted to the honors program by the professor supervising the program.
4. For additional information, consult the Economics Department Honors Program at https://economics.rice.edu/undergraduate-program/honors-program.

Additional Information
For additional information, please see the Economics website: https://economics.rice.edu/

Mathematics

Contact Information
Mathematics
https://math.rice.edu/
220 Herman Brown Hall
713-348-4829

Alan Reid
Department Chair
alan.reid@rice.edu

Mathematics lies at the foundation of many disciplines in the sciences, engineering fields, and the social sciences, and this influence is growing as these subjects become increasingly quantitative. Recognizing this important role in the wide variety of directions available to our degree recipients, the program in mathematics provides undergraduates with a spectrum of choices. These range from nontheoretical treatments of calculus and courses in combinatorics, elementary number theory, and projective geometry to a broad variety of sophisticated mathematics, including real and complex analysis, differential geometry, abstract algebra, algebraic and geometric topology, algebraic geometry, dynamics, and partial differential equations.

Faculty research interests range from differential geometry, ergodic theory, group representations, partial differential equations, and probability to real analysis, mathematical physics, complex variables, algebraic geometry, number theory, combinatorics, geometric topology, algebraic topology, and dynamics.

Bachelor's Programs
- Bachelor of Arts (BA) Degree with a Major in Mathematics (p. 548)
- Bachelor of Science (BS) Degree with a Major in Mathematics (p. 549)

Minor
- Minor in Mathematics (p. 552)

Master's Program
- Master of Arts (MA) Degree in the field of Mathematics*

Doctoral Program
- Doctor of Philosophy (PhD) Degree in the field of Mathematics (p. 551)
* Although students are not normally admitted to a Master of Arts (MA) degree program, graduate students may earn the MA as they work towards the PhD.

Chair
Alan Reid

Professors
Michael Boshernitzan
David Damanik
Robert M. Hardt
Shelly L. Harvey
B. Frank Jones, Jr.
Alan Reid
Stephen W. Semmes
Anthony Varilly-Alvarado
Michael Wolf

Associate Professors
Zhiyong Gao
Milivoje Lukic

Assistant Professors
Gregory Chambers
Ronen Mukamel
Joanna Nelson

Professors Emeriti
Robin Forman
F. Reese Harvey
John Hempel
John C. Polking
Raymond O. Wells, Jr.

Associate Teaching Professor
Stephen Wang

Research Professor
Michael Field
Bachelor of Arts (BA) Degree with a Major in Mathematics

Instructors
Gokalp Alpan
Jennifer Berg
Anastassia Etropolski
Daniel Hast
Allison Miller
Betul Orcan Ekmekci
Selim Sukhtaiev
Andrea Tamburelli
William Worden

Joint Appointment
Maarten V. de Hoop

Adjunct Faculty
Ray Johnson

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: MATH

Department Description and Code
• Mathematics: MATH

Undergraduate Degree Descriptions and Codes
• Bachelor of Arts degree: BA
• Bachelor of Science degree: BS

Undergraduate Major Description and Code
• Major in Mathematics (attached to both the BA and BS Degrees): MATH

Undergraduate Minor Description and Code
• Minor in Mathematics: MATM

Graduate Degree Descriptions and Codes
• Master of Arts degree: MA
• Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code
• Degree Program in Mathematics: MATH

CIP Code and Description
1. MATH Major/Program: CIP Code/Title: 27.0101 - Mathematics, General
2. MATM Minor: CIP Code/Title: 27.0101 - Mathematics, General

1 Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Program Learning Outcomes for the BA Degree with a Major in Mathematics
Upon completing the BA degree with a major in Mathematics, students will be able to:

1. Achieve both practical and theoretical fluency in calculus and linear algebra.
2. Acquire a background at the undergraduate level in a wide variety of central areas of mathematics.
3. Be acquainted with formal mathematical reasoning, including proofs.

Requirements for the BA Degree with a Major in Mathematics
For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Mathematics must complete:

• A minimum of 12 courses (36 credit hours) to satisfy major requirements.
• A minimum of 120 credit hours to satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
• A minimum of 8 courses (24 credit hours) taken at the 300-level or above.

Students who are pursuing 2 majors (i.e., are double majors) are eligible for a course substitution exception in the Elective Requirements. Double majors may substitute approved mathematics-related courses for up to 3 courses (9 credit hours) of the 8 courses (24 credit hours) required at the 300-level or above. Double majors who later drop the other major are required to meet the requirements listed for single majors.

Students receive advanced placement (AP) credit by achieving a score of 4 or 5 on the AP AB-level test or by achieving a score of 4 or 5 on the BC-level test. The credit is articulated as MATH 105 or MATH 105 and MATH 106. Declared MATH majors who have had calculus but have not taken the AP test may petition the department for a waiver of the calculus requirements. Entering students should enroll in the most advanced course commensurate with their background; advice is available from the mathematics faculty during Orientation Week and at other times.

The chair of the MATH department’s undergraduate committee may modify requirements to meet the needs of specific advanced students. If a course is repeatable for credit, the course may only be repeated once.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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### Degree Requirements

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<td>Core Requirements</td>
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<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I</td>
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<tr>
<td>or MATH 105</td>
<td>AP/OTH CREDIT IN CALCULUS I</td>
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<tr>
<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
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<tr>
<td>or MATH 106</td>
<td>AP/OTH CREDIT IN CALCULUS II</td>
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<td>Select 1 from the following:</td>
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<td>MATH 211 &amp; MATH 212</td>
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<td></td>
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<tr>
<td>and LINEAR ALGEBRA</td>
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<td></td>
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<td>and MULTIVARIABLE CALCULUS</td>
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<td>and LINEAR ALGEBRA</td>
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<td>and HONORS CALCULUS IV</td>
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<td>and MULTIVARIABLE CALCULUS</td>
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<td>and HONORS CALCULUS IV</td>
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<td>Select 8 elective courses from departmental (MATH) course offerings at the 300-level or above.</td>
<td>24</td>
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Total Credit Hours Required for the Major in Mathematics: 36

Additional Credit Hours to Complete BA Degree Requirements: 24

University Graduation Requirements: 60

Total Credit Hours: 120

---

**Footnotes and Additional Information**

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 The Elective Requirements for the double major are the same as the single major except that students may substitute approved mathematics-related courses for up to 3 courses (9 credit hours) of the 8 courses (24 credit hours) required at the 300-level or above. At most, students can take 1 course (3 credit hours) for any given course number to use toward the major. Additionally, at most 3 credit hours from courses numbered MATH 490 through MATH 499 (research and supervised reading courses) can count towards major requirements.

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**Policies for the BA Degree with a Major in Mathematics**

### Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: [https://oaa.rice.edu](https://oaa.rice.edu). Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

### Departmental Transfer Credit Guidelines

Students pursuing the major in Mathematics should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

### Additional Information

For additional information, please see the Mathematics website: [https://math.rice.edu/](https://math.rice.edu/)

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### Opportunities for the BA Degree with a Major in Mathematics

#### Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

For additional information, please see the Mathematics website: [https://math.rice.edu/](https://math.rice.edu/)

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### Bachelor of Science (BS) Degree with a Major in Mathematics

#### Program Learning Outcomes for the BS Degree with a Major in Mathematics

Upon completing the BS degree with a major in Mathematics, students will be able to:

1. Achieve both practical and theoretical fluency in calculus and linear algebra.
2. Acquire a broad background at the undergraduate level in all the major areas of mathematics, including analysis, algebra, and geometry.
3. Learn to read and write proofs.

#### Requirements for the BS Degree with a Major in Mathematics

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BS degree with a major in Mathematics must complete:

- A minimum of 14-17 courses (42-51 credit hours), depending on course selection, to satisfy the major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 11 courses (33 credit hours) taken at the 300-level or above.
Students receive advanced placement (AP) credit by achieving a score of 4 or 5 on the AP AB-level test or by achieving a score of 4 or 5 on the BC-level test. The credit is articulated as MATH 105 or MATH 105 and MATH 106. Declared MATH majors who have had calculus but have not taken the AP test may petition the department for a waiver of the calculus requirements. Entering students should enroll in the most advanced course commensurate with their background; advice is available from the mathematics faculty during Orientation Week and at other times.

The chair of the MATH department’s undergraduate committee may modify requirements to meet the needs of specific advanced students. If a MATH course is repeatable for credit, the course may only be repeated once.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier [https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/].) Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

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<tr>
<td></td>
<td>Total Credit Hours Required for the BS Degree with a Major in Mathematics</td>
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</table>

### Degree Requirements

#### Core Requirements

**Single Variable Calculus**

- MATH 101: SINGLE VARIABLE CALCULUS I or MATH 105: AP/OTH CREDIT IN CALCULUS I (3 credits)
- MATH 102: SINGLE VARIABLE CALCULUS II or MATH 106: AP/OTH CREDIT IN CALCULUS II (3 credits)

**Differential Equations**

- Select 1 course from the following: (3 credits)
  - MATH 211: ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA
  - MATH 220: HONORS ORDINARY DIFFERENTIAL EQUATIONS
  - MATH 381: INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS
  - MATH 423 / CAAM 423: PARTIAL DIFFERENTIAL EQUATIONS I

**Multivariable Calculus**

- Select 1 from the following: (3-6 credits)
  - MATH 212: MULTIVARIABLE CALCULUS
  - MATH 221: HONORS CALCULUS III & MATH 222: and HONORS CALCULUS IV

**Linear Algebra**

- Select 1 course from the following: (3 credits)
  - MATH 221: HONORS CALCULUS III
  - MATH 354: HONORS LINEAR ALGEBRA

### Elective Requirements

Students must complete a minimum of 33 credit hours from departmental (MATH) course offerings at the 300-level or above.

- **Total Credit Hours Required for the Major in Mathematics**: 42-51
- **Total Credit Hours Required for the BS Degree with a Major in Mathematics**: 120
- **Additional Credit Hours to Complete BS Degree Requirements**: 9-18
- **University Graduation Requirements (p. 26)**: 60

### Policies for the BS Degree with a Major in Mathematics

#### Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [https://oaa.rice.edu](https://oaa.rice.edu). Students are encouraged to meet with their
For additional information, please see the Mathematics website: https://math.rice.edu/

Opportunities for the BS Degree with a Major in Mathematics

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Additional Information

For additional information, please see the Mathematics website: https://math.rice.edu/

Doctor of Philosophy (PhD) Degree in the field of Mathematics

Program Learning Outcomes for the MA and PhD Degrees in the field of Mathematics

Upon completing the MA and PhD degrees in the field of Mathematics, students will be able to:

1. Apply abstract structures from algebra, analysis, and topology to analyze and solve both concrete problems and conceptual questions.
2. Learn fundamental mathematics independently, outside the structure of a regular course.
3. Present mathematical results and reasoning in a compelling way to an audience of mathematicians.
4. Use the mathematical literature and databases to find theorems, constructions, or counterexamples.
5. Write clear and convincing proofs of one’s own original mathematical results.

Requirements for the MA and PhD Degrees in the field of Mathematics

Admission to graduate study in mathematics is granted to a limited number of students who have indicated an ability for advanced and original work. Normally, students take one or two years after the BA degree to obtain an MA degree, and they take four or five years to obtain a PhD. An MA is not a prerequisite for the PhD. For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55).

A number of graduate scholarships and fellowships are available, awarded on the basis of merit. As part of the graduate education in mathematics, students also engage in teaching or other instructional duties, generally for no more than six hours a week.

For courses carrying dual undergraduate and graduate numbers, (e.g., MATH 463/MATH 563), the 500-level version is intended to prepare students for advanced work in mathematics. In particular, written assignments should be prepared to high professional standards. Mathematics graduate students should enroll in the 500-level version.

MA Degree Program

The MA degree can be either a thesis or a non-thesis master’s degree depending on the option the student pursues. For general university requirements for thesis master’s degrees, please see Thesis Master’s Degrees (p. 68). For general university requirements for non-thesis master’s degrees, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55).

Doctoral students may petition for these once they have satisfied all university and departmental requirements.

Student pursuing the MA degree in the field of Mathematics must complete:

- Complete with a grade of B (3.00 grade points) or better a course of study approved by the department. (Students may transfer credits from another university only with the approval of both the department and the University Graduate Council.)
- Perform satisfactorily on the general examinations in algebra, analysis, and topology or prepare and present an oral defense of an original thesis acceptable to the department

Summary

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<th>Code</th>
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<th>Credit Hours</th>
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<td>Total Credit Hours Required for the MA Degree in the field of Mathematics</td>
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</table>

Requirements for the PhD Degree in the field of Mathematics

PhD Degree Program

For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the PhD degree in the field of Mathematics must:

- Complete with a grade of B (3.00 grade points) or better a course of study approved by the department (students may transfer credits from another university only with the approval of both the department and the University Graduate Council)
- Perform satisfactorily on qualifying examinations (see below)
- Perform satisfactorily on examinations in one approved foreign language (French, German, or Russian)
- Write an original thesis acceptable to the department
- Perform satisfactorily on a final oral examination on the thesis
Minor in Mathematics

Program Learning Outcomes for the Minor in Mathematics

Upon completing the minor in Mathematics, students will have:

1. Achieved practical fluency in calculus and linear algebra.
2. Acquired a background at the undergraduate level in a small variety of central areas of mathematics.
3. Become acquainted with formal mathematical reasoning, including proofs.

Requirements for the Minor in Mathematics

Students pursuing the minor in Mathematics must complete:

- A minimum of 6 courses (18 credit hours) to satisfy minor requirements.
- A minimum of 4 courses (12 credit hours) taken at the 300-level or above.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the minor’s Official Certifier (https://registrar.rice.edu/faqstaff/degreeworks/officialcertifier/)). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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Minor Requirements

Core Requirements

1, 2, 3

Analysis

Select 1 from the following:

- MATH 302 ELEMENTS OF ANALYSIS
- MATH 321 INTRODUCTION TO ANALYSIS I
- MATH 331 HONORS ANALYSIS
- MATH 381 INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS
- MATH 382 COMPUTATIONAL COMPLEX ANALYSIS

Discrete Mathematics and Algebra

- MATH 306 ELEMENTS OF ABSTRACT ALGEBRA
- MATH 356 ABSTRACT ALGEBRA I
- MATH 365 NUMBER THEORY
- MATH 368 TOPICS IN COMBINATORICS

Linear Algebra

Select 1 from the following:

- MATH 221 HONORS CALCULUS III
- MATH 354 HONORS LINEAR ALGEBRA
Opportunities for the Minor in Mathematics

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Additional Information
For additional information, please see the Mathematics website: https://math.rice.edu/

Mechanical Engineering

Contact Information
Mechanical Engineering  
https://mech.rice.edu/  
101 Mechanical Engineering Building  
713-348-4906  
Laura Schaefer  
Department Chair  
laura.schaefer@rice.edu

Undergraduate studies in mechanical engineering can lead to careers that focus on a diverse set of areas, including aerospace engineering, biomedical systems, computational fluid dynamics, computational mechanics, fluids-thermal science, mechanical design, mechanics, robotics, systems dynamics and controls.

The graduate program offers professional degrees in mechanical engineering, which permits specialization in the areas previously mentioned. Graduate students also may pursue research degrees. The graduate program, in its comprehensive educational and research activities, collaborates with other departments at Rice and other institutions in Houston, including those in the Texas Medical Center. Collaborations also are extended to universities in the United States, Europe, Japan, and South America. International collaborations include joint research activities and faculty and student visitor exchanges.

A coordinated MBA/MME degrees program is also offered in conjunction with the Jesse H. Jones Graduate School of Business.

Bachelor's Programs
- Bachelor of Arts (BA) Degree with a Major in Mechanical Engineering (p. 554)
- Bachelor of Science in Mechanical Engineering (BSME) Degree (p. 556)

Master's Programs
- Master of Mechanical Engineering (MME) Degree (p. 560)
- Master of Science (MS) Degree in the field of Mechanical Engineering (p. 563)
Doctoral Program

- Doctor of Philosophy (PhD) Degree in the field of Mechanical Engineering (p. 559)

Coordinated Programs

- Master of Mechanical Engineering (MME) Degree / Master of Business Administration (MBA) Degree (p. 562)

Chair

Laura Schaefer

Professors

John Edward Akin
Yildiz Bayazitoglu
Benjamin J. Fregly
Fathi Ghorbel
C. Fred Higgs, III
Andrew J. Meade
Marcia K. O’Malley
Pol D. Spanos
Tayfun E. Tezduyar

Assistant Professors

Matthew Brake
Pedram Hassanzadeh
Daniel Preston
Geoffrey Wehmeyer

Professor Emeritus

Chao-Cheng Wang

Assistant Teaching Professor

Eleazar Marquez

Professor in the Practice

Patrick Rodi

Lecturers

Leroy Chiao
Matthew Elliott

Professors, Joint Appointments

Reginald DesRoches
Lydia Kavraki
Satish Nagarajaiah

Associate Professors, Joint Appointments

Ilinca Staniciulescu

Adjunct Professors

Aladin Boriek
James Dabney
Thomas J. R. Hughes

Adjunct Associate Professors

Kenji Takizawa
David Woffinden

Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule

- Course offerings/subject code: MECH

Department Description and Code

- Mechanical Engineering: MECH

Undergraduate Degree Descriptions and Codes

- Bachelor of Arts degree: BA
- Bachelor of Science degree: BSME

Undergraduate Major Description and Code

- Major in Mechanical Engineering (attached to both the BA and BSME Degrees): MECH

Undergraduate Major Areas of Specialization Descriptions and Attribute Codes*

- Area of Specialization in Computational Engineering (BSME degree only): MECE
- Area of Specialization in Mechanics/Dynamics (BSME degree only): MEMD
- Area of Specialization in Thermal Fluids (BSME degree only): METF
- Area of Specialization in Breadth in Mechanical Engineering (BSME degree only): MEBR

Please Note: Areas of Specialization are department/program-specific and are not formally recognized academic credentials. Unlike Major Concentrations, Areas of Specialization do not appear on the student's official academic transcript, etc.

Graduate Degree Descriptions and Codes

- Master of Mechanical Engineering degree: MME
- Master of Science degree: MS
- Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code

- Degree Program in Mechanical Engineering: MECH

CIP Code and Description¹

- MECH Major/Program: CIP Code/Title: 14.1901 - Mechanical Engineering

¹ Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Bachelor of Arts (BA) Degree with a Major in Mechanical Engineering
Program Learning Outcomes for the BA Degree with a Major in Mechanical Engineering

Upon completing the BA degree with a major in Mechanical Engineering, students will be able to demonstrate:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences.
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
6. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Requirements for the BA Degree with a Major in Mechanical Engineering

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Mechanical Engineering must complete:

- A minimum of 23 courses (64 credit hours) to satisfy major requirements.
- A minimum of 124 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 9 courses (28 credit hours) taken at the 300-level or above.

The BA degree with a major in Mechanical Engineering is highly flexible, involves less technical content than the BSME degree, and allows students greater freedom to pursue areas of interest outside of engineering. The BA degree with a major in Mechanical Engineering is not accredited by the Engineering Accreditation Commission of ABET.

Lists of courses, including general university requirements and the usual order in which students take them, are available from the department. The BA degree with a major in Mechanical Engineering mirrors the BSME degree in the freshman and sophomore years, with the exception that the laboratory courses are not required. Specific major requirements are completed in the junior and senior years.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/dregeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<td>124</td>
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</table>

Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tr>
<td>Basic Math and Science Courses (Prerequisites)</td>
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<td>CHEM 121</td>
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<td>PHYS 101 &amp; PHYS 103</td>
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Required Courses for Mechanical Engineering

Computational and Applied Mathematics

<table>
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<tr>
<td>CAAM 210</td>
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<td>or MECH 210</td>
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<td>CAAM 335</td>
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<td>or MATH 354</td>
<td>HONORS LINEAR ALGEBRA</td>
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<td>CAAM 336</td>
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Mechanical Engineering Courses

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<td>RIGID BODY DYNAMICS</td>
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<td>MECH 315</td>
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<td>MECH 343</td>
<td>MODELING OF DYNAMIC SYSTEMS</td>
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<td>MECHANICAL ELEMENTS</td>
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<td>MECH 371</td>
<td>FLUID MECHANICS I</td>
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<td>MECH 420 / ELEC 436</td>
<td>FUNDAMENTALS OF CONTROL SYSTEMS</td>
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<tr>
<td>MECH 481</td>
<td>HEAT TRANSFER</td>
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</table>

Total Credit Hours Required for the Major in Mechanical Engineering

<table>
<thead>
<tr>
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<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Mechanical Engineering</td>
<td>64</td>
</tr>
</tbody>
</table>
Policies for the BA Degree with a Major in Mechanical Engineering

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the major in Mechanical Engineering should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information
For additional information, please see the Mechanical Engineering website: https://mech.rice.edu/

Opportunities for the BA Degree with a Major in Mechanical Engineering

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Fifth-Year Master’s Degree Option for Rice Undergraduate Students
Rice students have an option to pursue the Master of Mechanical Engineering (MME) degree by adding an additional fifth year to their four undergraduate years of science and engineering studies.

Advanced Rice undergraduate students in good academic standing may apply to the MME degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master’s degree program. A plan of study will need to be approved by the student’s undergraduate advisor and the MME program director.

As part of this option and opportunity, Rice undergraduate students:

- must complete the requirements for a bachelor's degree and the master's degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
- should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
- more information on this Undergraduate · Graduate Concurrent Enrollment opportunity, including specific information on the registration process can be found here (p. 17).

Additional Information
For additional information, please see the Mechanical Engineering website: https://mech.rice.edu/

Bachelor of Science in Mechanical Engineering (BSME) Degree

The program leading to the BSME degree is accredited by the Engineering Accreditation Commission (EAC) of ABET, https://www.abet.org (https://www.abet.org/).

Program Learning Outcomes (Student Outcomes) for the BSME Degree
Upon completing the BSME degree, students will be able to demonstrate:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences.
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Program Educational Objectives for the BSME Degree
Within 3 to 5 years of graduation, Bachelor of Science in Mechanical Engineering (BSME) degree alumni from Rice will be exceptional engineers who are:
1. Successful and on track to become leaders in the global workforce; and/or
2. Students in top-rated post-graduate programs.

Requirements for the BSME Degree

For general university requirements, see Graduation Requirements (p. 26).
Students pursuing the BSME degree must complete:

- A minimum of 33 courses (87 credit hours) to satisfy major requirements.
- A minimum of 127 credit hours to satisfy degree requirements.
- A minimum of 21 courses (50 credit hours) taken at the 300-level or above.
- The requirements for one area of specialization (see below for areas of specialization). When students declare the major (p. 11) in Mechanical Engineering (associated with the BSME degree), students must additionally identify and declare one of four areas of specialization, either in:
  - Computational Engineering (p. 558): covers the tools need to simulate and study a range of systems, both fluidic and solid, and to make predictions about behavior and performance of those systems; or
  - Mechanics/Dynamics (p. 558): provides a background in the fundamentals of solid interactions and control systems, and is highly relevant in areas such as robotics, solid mechanics, and tissue mechanics; or
  - Thermal Fluids (p. 558): integrates topics from thermodynamics, fluids, and heat transfer to study renewable and conventional energy systems, aerospace/aeronautics, and surface interactions; or
  - Breadth in Mechanical Engineering (p. 558): encompasses concepts from across the areas of specialization to prepare students for working in cross-cutting fields.

Because of the common core requirements, it is possible for students to change their area of specialization at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (registrar@rice.edu).

The BSME degree prepares students for the professional practice of engineering. The degree program’s goals and objectives are available on the departmental website. Lists of representative undergraduate courses and the usual order in which they are taken are available from the department.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
</tr>
</thead>
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<td>or CHEM 111</td>
<td>AP/OTH CREDIT IN GENERAL CHEMISTRY I</td>
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<td>CHEM 123</td>
<td>GENERAL CHEMISTRY LABORATORY I</td>
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<td>or CHEM 113</td>
<td>AP/OTH CREDIT IN GENERAL CHEMISTRY LAB I</td>
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<td>CAAM 335</td>
<td>MATRIX ANALYSIS</td>
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<td>or MATH 354</td>
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<td>or MATH 355</td>
<td>LINEAR ALGEBRA</td>
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<td>CAAM 336</td>
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<td>CAPSTONE DESIGN PROJECT I</td>
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<td>MECH 408</td>
<td>CAPSTONE DESIGN PROJECT II</td>
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<td>MECH 331</td>
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<td>MECH 332</td>
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<td>FLUID MECHANICS I</td>
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<tr>
<td>MECH 481</td>
<td>HEAT TRANSFER</td>
<td>3</td>
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</tbody>
</table>

Elective Requirements

Limited Elective
Bachelor of Science in Mechanical Engineering (BSME) Degree

Select 1 course from the following departmental course offerings at the 300-level or above: CAAM, DSCI, MATH, STAT.

Technical Electives

Select 1 from the following Areas of Specialization (see Areas of Specialization below):

- Computational Engineering
- Mechanics/Dynamics
- Thermal Fluids
- Breadth in Mechanical Engineering

Total Credit Hours Required for the Major in Mechanical Engineering

University Graduation Requirements (p. 26) *

Total Credit Hours

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 During their senior year, mechanical engineering students in the BSME program complete these courses in design application while completing a major design project.

2 Students must complete a total of 3 technical electives (9 credit hours) in one area of specialization: Computational Engineering, Mechanics/Dynamics, Thermal Fluids, or Breadth in Mechanical Engineering.

Areas of Specialization

Students must complete the requirements as listed for one of the following areas of specialization for the BSME degree program. A minimum of 3 courses (minimum of 9 credit hours) must be taken in the area of specialization.

Area of Specialization: Computational Engineering

To fulfill the BSME degree requirements, students pursuing the Computational Engineering area of specialization must complete:

- 1 course (3 credit hours) from the area of specialization Core Requirement
- 2 courses (6 credit hours) from the area of specialization Elective Requirements

<table>
<thead>
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<td>MECH 417</td>
<td>FINITE ELEMENT ANALYSIS</td>
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<tr>
<td>or MECH 454</td>
<td>COMPUTATIONAL FLUID MECHANICS</td>
<td></td>
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</tbody>
</table>

Elective Requirements

Select 2 from the following:

- MECH 417 FINITE ELEMENT ANALYSIS
- MECH 427 COMPUTATIONAL STRUCTURAL MECHANICS AND FEM
- MECH 454 COMPUTATIONAL FLUID MECHANICS
- MECH 474 ADVANCED COMPUTATIONAL MECHANICS
- MECH 505 NUMERICAL METHODS FOR ENGINEERS
- MECH 555 COMPUTATIONAL FLUID-STRUCTURE INTERACTION

Total Credit Hours

Footnotes and Additional Information

1 MECH 417 or MECH 454 may fulfill the area of specialization Elective Requirements if they are not selected as the area of specialization Core Requirement.

Area of Specialization: Mechanics/Dynamics

To fulfill the BSME degree requirements, students pursuing the Mechanics/Dynamics area of specialization must complete:

- 1 course (3 credit hours) from the area of specialization Core Requirement
- 2 courses (6 credit hours) from the area of specialization Elective Requirements

<table>
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<tbody>
<tr>
<td>MECH 412</td>
<td>VIBRATIONS</td>
<td>3</td>
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</table>

Elective Requirements

Select 2 from the following:

- MECH 400 ADVANCED MECHANICS OF MATERIALS
- MECH 411 DYNAMICS AND CONTROL OF MECHANICAL SYSTEMS
- MECH 417 FINITE ELEMENT ANALYSIS
- MECH 427 COMPUTATIONAL STRUCTURAL MECHANICS AND FEM
- MECH 435 INTRODUCTION TO ENERGY-EFFICIENT MECHATRONICS
- MECH 450 ALGORITHMIC ROBOTICS
- MECH 488 DESIGN OF MECHATRONIC SYSTEMS
- MECH 497 NEUROMUSCULOSKELETAL MODELING AND SIMULATION
- MECH 498 INTRODUCTION TO ROBOTICS
- MECH 596 INTRODUCTION TO FLIGHT MECHANICS

Total Credit Hours

Area of Specialization: Thermal Fluids

To fulfill the BSME degree requirements, students pursuing the Thermal Fluids area of specialization must complete:

- 1 course (3 credit hours) from the area of specialization Core Requirement
- 2 courses (6 credit hours) from the area of specialization Elective Requirements

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<tr>
<td>MECH 454</td>
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<tr>
<td>or MECH 472</td>
<td>THERMAL SYSTEMS DESIGN</td>
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</table>

Elective Requirements

Select 2 from the following:

- MECH 417 FINITE ELEMENT ANALYSIS
- MECH 454 COMPUTATIONAL FLUID MECHANICS
- MECH 472 THERMAL SYSTEMS DESIGN

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PDF Generated 1/29/2020
MECH 482 CONVECTIVE HEAT TRANSFER
MECH 484 MICROSCOPIC THERMODYNAMICS AND TRANSPORT
MECH 555 COMPUTATIONAL FLUID-STRUCTURE INTERACTION
MECH 560 TRIBOLOGY: THE STUDY OF FRICTION, LUBRICATION, AND WEAR
MECH 575 INTRODUCTION TO HYDRODYNAMIC STABILITY
MECH 590 AEROSPACE PROPULSION
MECH 591 GAS DYNAMICS
MECH 594 INTRODUCTION TO AERONAUTICS

Total Credit Hours 9

Footnotes and Additional Information
1 MECH 454 or MECH 472 may fulfill the area of specialization Elective Requirements if they are not selected as the area of specialization Core Requirement.

Area of Specialization: Breadth in Mechanical Engineering
To fulfill the BSME degree requirements, students pursuing the Breadth in Mechanical Engineering area of specialization must complete:

• 3 courses (9 credit hours) from the area of specialization Elective Requirements

Code Title Credit Hours

Elective Requirements
Select 3 from the following: 9

MECH 412 VIBRATIONS
MECH 417 FINITE ELEMENT ANALYSIS
MECH 454 COMPUTATIONAL FLUID MECHANICS
MECH 472 THERMAL SYSTEMS DESIGN

Total Credit Hours 9

Opportunities for the BSME Degree

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Fifth-Year Master's Degree Option for Rice Undergraduate Students
Rice students have an option to pursue the Master of Mechanical Engineering (MME) degree by adding an additional fifth year to their four undergraduate years of science and engineering studies.

Advanced Rice undergraduate students in good academic standing may apply to the MME degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master's degree program. A plan of study will need to be approved by the student's undergraduate advisor and the MME program director.

As part of this option and opportunity, Rice undergraduate students:

• must complete the requirements for a bachelor's degree and the master's degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
• should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
• more information on this Undergraduate - Graduate Concurrent Enrollment opportunity, including specific information on the registration process can be found here (p. 17).

Additional Information
For additional information, please see the Mechanical Engineering website: https://mech.rice.edu/

Doctor of Philosophy (PhD) Degree in the field of Mechanical Engineering

Program Learning Outcomes for the PhD Degree in the field of Mechanical Engineering
Upon completing the PhD Degree in the field of Mechanical Engineering, students will be able to:

1. Demonstrate command of advanced topics in mechanical engineering.
2. Apply technical skills and conduct research that demonstrates advanced mastery of a subfield within mechanical engineering.
3. Communicate scientific ideas effectively in writing and when speaking.
Requirements for the PhD Degree in the field of Mechanical Engineering

For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students seeking the PhD degree are expected to complete all the requirements for the degree within five calendar years following entrance into the program. Continuation in the program beyond this time limit will require special approval of the department.

All entering graduate students pursuing a PhD degree will be subject to a Qualifying Exam. The Qualifying Exam will be conducted by the end of the third semester of enrollment in the graduate program in the Mechanical Engineering department.

By the end of the ninth semester of enrollment in the graduate program in the Mechanical Engineering department, the student must pass a Candidacy evaluation.

Each candidate for the PhD degree must complete a thesis that constitutes an original contribution to scientific knowledge (analytical, numerical or experimental). It is expected that the research will be of sufficient importance and quality that positive results would lead to publications. On completion of the thesis, each candidate for the PhD degree must pass a final public oral examination. The examination will be conducted by a committee consisting of at least four members. Three, including the committee chair, must be members of the department. One member must be from another department within the university.

The minimum semester hours of coursework (a one-semester course is usually three semester hours credit) required are tabulated below as a function of the degree held on entrance into the program. In all cases, a student's course of study is formulated in consultation with the thesis director and must be approved by the department.

Course requirements for the research degrees vary depending on the extent of individual undergraduate preparation as well as each student's performance in graduate courses and on qualifying examinations. For both the MS and PhD degrees, students must present a thesis that comprises an original contribution to knowledge and defend it in a public oral examination.

As part of their degree requirements, graduate students are expected to provide instructional assistance to the department not to exceed 10 hours per week. The department chair will assign graduate student work at the beginning of each semester.

All graduate students (except students in the MME degree program (p. 560)) must attend at least 75 percent of the Mechanical Engineering seminars. For details, please see the degree requirements on the Mechanical Engineering website (http://mech.rice.edu/).

Summary

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<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
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</tbody>
</table>

Footnotes and Additional Information

1 A minimum of 30 credit hours at the 500-level or above is required to earn the PhD degree. Depending on the student's previously earned degree at the time of entrance into the PhD program, additional credit hours of research coursework may be permitted in lieu of a portion of the coursework as approved by the department to reach 90 total credit hours as follows:

- **Students entering with an MS degree:**
  - 18 credit hours of coursework
  - 72 credit hours of research coursework

- **Students entering with a BS degree:**
  - 36 credit hours of coursework
  - 54 credit hours of research coursework

- **Students entering with a 5-year BS degree:**
  - 30 credit hours of coursework
  - 60 credit hours of research coursework

- **Students entering with a BA degree (or other bachelor's degree):**
  - 42 credit hours of coursework
  - 48 credit hours of research coursework

Policies for the PhD Degree in the field of Mechanical Engineering

Department of Mechanical Engineering Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Mechanical Engineering publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Mechanical_Engineering_Graduate_Handbook.pdf

Additional Information

For additional information, please see the Mechanical Engineering website: https://mech.rice.edu/

Opportunities for the PhD Degree in the field of Mechanical Engineering

Additional Information

For additional information, please see the Mechanical Engineering website: https://mech.rice.edu/

Master of Mechanical Engineering (MME) Degree

Program Learning Outcomes for the MME Degree

Upon completing the MME degree, students will be able to:

1. Demonstrate an advanced command of Mechanical Engineering fieldwork.
2. Communicate scientific ideas effectively in writing and when speaking.
Requirements for the MME Degree

The MME degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MME degree must complete:

- A minimum of 10 courses (30 credit hours) to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University.
- A minimum of 18 credit hours from departmental (MECH) course offerings.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 3.00 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree.

The professional master’s degree in Mechanical Engineering (MME) is a non-thesis degree program intended for students who have completed a 4-year bachelor’s program in engineering and wish to join the workforce as practicing professionals, rather than pursuing a research oriented or academic career. It offers preparation in advanced engineering topics as practicing professionals, rather than pursuing a research oriented or academic career. It offers preparation in advanced engineering topics in order to enhance an engineer’s technical qualifications and increases competitiveness in the job market.

The MME program is open to students who have shown academic excellence in their undergraduate studies. Students who have a BS or BA degree in any field of engineering or related study may apply, although some may need to fulfill prerequisites or take remedial courses to earn the MME degree. Students may enroll on a full or part-time basis.

Lists of required and suggested courses are available from the department. Students should develop a specific plan of study based on their particular interests and discussions with their advisor.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>30</td>
</tr>
</tbody>
</table>

Total Credit Hours Required for the MME Degree

**Degree Requirements**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
</table>

**Core Requirements**

Select 6 courses from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>18</td>
</tr>
</tbody>
</table>

**Elective Requirements**

Select 4 courses from approved departmental (MECH) course offerings at the 500-level or above.  

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
</table>

Total Credit Hours 30

**Footnotes and Additional Information**

1 With approval by the advisor and the department, some of which could be from outside the department. None of the remaining required 12 credit hours can be from Independent-Study (MECH 611 or MECH 612) courses. A minimum of 30 credit hours at the 500-level or above is required to earn the MME degree. Regardless of the student’s previously earned undergraduate degree at the time of entrance into the graduate program, no credit hours of research coursework may be permitted in lieu of the required coursework outlined above.

Students entering with a BS degree:

- 30 credit hours of coursework

Students entering with a BA degree (or other bachelor’s degree):

- 30 credit hours of coursework

**Policies for the MME Degree**

**Department of Mechanical Engineering Graduate Program Handbook**

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Mechanical Engineering publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Mechanical_Engineering_Graduate_Handbook.pdf

**Transfer Credit**

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions
on transfer credit. Students are encouraged to meet with their academic program's advisor when considering transfer credit possibilities.

Additional Information
For additional information, please see the Mechanical Engineering website: https://mech.rice.edu/

Opportunities for the MME Degree
Fifth-Year Master's Degree Option for Rice Undergraduate Students
Rice students have an option to pursue the Master of Mechanical Engineering (MME) degree by adding an additional fifth year to their four undergraduate years of science and engineering studies.

Advanced Rice undergraduate students in good academic standing may apply to the MME degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master's degree program. A plan of study will need to be approved by the student's undergraduate advisor and the MME program director.

As part of this option and opportunity, Rice undergraduate students:

- must complete the requirements for a bachelor's degree and the master's degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
- should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
- more information on this Undergraduate - Graduate Concurrent Enrollment opportunity, including specific information on the registration process can be found here (p. 17).

Additional Information
For additional information, please see the Mechanical Engineering website: https://mech.rice.edu/

Master of Mechanical Engineering (MME) Degree / Master of Business Administration (MBA) Degree

Program Learning Outcomes for the MME Degree
Upon completing the MME degree, students will be able to:

1. Demonstrate an advanced command of Mechanical Engineering fieldwork.
2. Communicate scientific ideas effectively in writing and when speaking.

Program Learning Outcomes for the MBA Degree
Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MME/MBA Coordinated Degrees Program
Students may earn a coordinated MBA degree and a non-thesis Master of Engineering degree from the George R. Brown School of Engineering in the following fields:

- Chemical Engineering (MChE)
- Computational and Applied Mathematics (MCAAM)
- Computer Science (MCS)
- Industrial Engineering (MIE)
- Materials Science and Nanoengineering (MMSNE)
- Mechanical Engineering (MME)
- Statistics (MStat)

For the coordinated MBA/Master of Engineering degrees, students must complete:

- A minimum of 69 credit hours in approved coursework*, including:
  - A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the Master of Engineering degree requirements
  - A minimum of 24 credit hours in the corresponding engineering discipline
  - A minimum of 6 credit hours in elective requirements*
  - A minimum of 45 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the MBA degree requirements
  - A minimum of 45 credit hours of business coursework
  - All MBA core requirements, the global field experience, custom core requirements, and coordinated elective requirements

*Note: A maximum of 6 credit hours of the Master of Engineering degree elective requirements may be selected from business course offerings (MGMP, MGMT, or MICO) and used to fulfill the requirements for both the MBA and the Master of Engineering degrees.

Students plan their course schedules in consultation with the George R. Brown School of Engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department. Coordinated degrees candidates can fulfill requirements for both degrees within 2 academic years.

For general university requirements, see Graduate Degrees (p. 49). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Candidates in the MBA/Master of Engineering coordinated degrees program must complete all requirements as listed for both degrees, and must apply and be accepted in both degree programs.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or
where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Coordinated Master of Engineering Degree</td>
<td>Minimum of 30</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the Coordinated MBA Degree</td>
<td>Minimum of 45</td>
</tr>
</tbody>
</table>

### Coordinated MME Degree Requirements

Students in the coordinated MBA/MME degrees program must complete the Core Requirements of the MME degree program (p. 560) and Coordinated MME Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MME Core Requirements</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Coordinated MME Elective Requirements</td>
<td>12</td>
</tr>
</tbody>
</table>

Select a minimum of 6 credit hours from approved departmental (MECH) course offerings at the 500-level or above

Select a maximum of 6 credit hours from approved course offerings (MGMP, MGMT, or MICO) from the Jones Graduate School of Business at the 500-level or above

Total Credit Hours 30

### Coordinated MBA Degree Requirements

Students in the coordinated MBA/Master of Engineering degrees program or in the coordinated MBA/Master of Science degree from the Professional Science Master’s (PSM) degrees program must complete the Core Requirements, Global Field Experience, and Custom Core Requirements of the full-time MBA degree program (p. 214) and the Coordinated MBA Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Full-time MBA Core Requirements</td>
<td>25.5</td>
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<tr>
<td></td>
<td>Full-time MBA Global Field Experience Requirement</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>Full-time MBA Custom Core Courses</td>
<td>3-6</td>
</tr>
<tr>
<td></td>
<td>Coordinated MBA Elective Requirements</td>
<td>12-15</td>
</tr>
</tbody>
</table>

Select an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours.

Total Credit Hours 45

### Footnotes and Additional Information

1. To fulfill the remaining requirements for the coordinated MBA degree program, students must complete an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours. (MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.) The second year of the program is dedicated entirely to MBA elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. MBA electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.

### Policies for the MME/MBA Coordinated Degrees Program

**Additional Information**

For additional information on these two degrees:

1. Please see the Mechanical Engineering website: https://mech.rice.edu/
2. Please see the Jones Graduate School of Business website: https://business.rice.edu/

### Opportunities for the MME/MBA Coordinated Degrees Program

**Additional Information**

For additional information on these two degrees:

1. Please see the Mechanical Engineering website: https://mech.rice.edu/
2. Please see the Jones Graduate School of Business website: https://business.rice.edu/

### Master of Science (MS) Degree in the field of Mechanical Engineering

**Program Learning Outcomes for the MS Degree in the field of Mechanical Engineering**

Upon completing the MS Degree in the field of Mechanical Engineering, students will be able to:

1. Apply the technical skills required by industrial and governmental organizations to solve mechanical engineering problems at an advanced level.
2. Conduct research that demonstrates advanced mastery of a subfield within mechanical engineering.
3. Communicate scientific ideas effectively in writing and when speaking.

### Requirements for the MS Degree in the field of Mechanical Engineering

The MS degree is a thesis master’s degree. For general university requirements, please see Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs,
please see All Graduate Students (p. 55). Students seeking the MS degree are expected to complete all the requirements for the degree within two calendar years following entrance into the program. Continuation in the program beyond this time limit will require special approval of the department.

All entering graduate students pursuing a thesis degree program will be subject to a preliminary candidacy evaluation for the highest degree program they intend to pursue. The evaluation will be conducted by the end of the second semester of enrollment in the graduate program in the Mechanical Engineering department.

Each candidate for the MS degree must complete a thesis demonstrating ability in research of a fundamental nature (analytical, numerical, or experimental). It is expected that the research will be of sufficient importance and quality that positive results would lead to publications. A committee consisting of at least three members will conduct the examination. Two, including the committee chair, must be members of the department.

The minimum semester hours of coursework (a one-semester course is usually three semester hours credit) required for the MS degree is tabulated below as a function of the degree held on entrance into the program. Research and thesis hours, as well as seminar hours, do not count towards these course requirements but do count toward the minimum requirement that a student complete 30 credit hours at the 500 level or above. In all cases, a student's specific course of study is formulated in consultation with the departmental advisor (thesis director) and must be approved by the department.

Course requirements for the research degrees vary depending on the extent of individual undergraduate preparation as well as each student’s performance in graduate courses and on qualifying examinations. For both the MS and PhD degrees, students must present a thesis that comprises an original contribution to knowledge and defend it in a public oral examination.

As part of their degree requirements, graduate students are expected to provide instructional assistance to the department not to exceed 10 hours per week. The department chair will assign graduate student work at the beginning of each semester.

All graduate students (except students in the MME degree program (p. 560)) must attend at least 75 percent of the Mechanical Engineering seminars. For additional information and details, please see the degree requirements on the Mechanical Engineering website (http://mech.rice.edu/).

Footnotes and Additional Information

A minimum of 30 credit hours at the 500-level or above is required to earn the MS degree. Depending on the student’s previously earned undergraduate degree at the time of entrance into the graduate program, additional credit hours of research coursework may be permitted in lieu of a portion of the coursework as approved by the department to reach 30 total credit hours as follows:

Students entering with a BS degree:
• 18 credit hours of coursework
• 12 credit hours of research coursework

Students entering with a 5-year BS degree:
• 12 credit hours of coursework
• 18 credit hours of research coursework

Students entering with a BA degree (or other bachelor’s degree):
• 24 credit hours of coursework
• 6 credit hours of research coursework

Policies for the MS Degree in the field of Mechanical Engineering

Department of Mechanical Engineering Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Mechanical Engineering publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Mechanical_Engineering_Graduate_Handbook.pdf

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

Additional Information

For additional information, please see the Mechanical Engineering website: https://mech.rice.edu/

Opportunities for the MS Degree in the field of Mechanical Engineering

Additional Information

For additional information, please see the Mechanical Engineering website: https://mech.rice.edu/

Medical Humanities

Contact Information

Medical Humanities
https://hrc.rice.edu/medicalhumanities/
116 Humanities Building
713-348-4548

Kirsten Ostherr
Program Director
kostherr@rice.edu
Medical Humanities is an interdisciplinary field that examines medicine through humanistic disciplines such as history, ethics, religion, literature, cultural anthropology, media studies, and the visual and dramatic arts. Students in the minor will learn about medical systems and practices using methodologies such as close reading, cultural comparison, historical contextualization, creative expression, and critical thinking. The field is committed to interpretive and qualitative work that explores the human dimensions of experiences of health and illness, for doctors and for patients.

**Minor**

- Minor in Medical Humanities (p. 565)

Medical Humanities does not currently offer an academic program at the graduate level.

**Director and Advisor**

Kirsten Ostherr

**Professors**

Marcia Brennan  
James D. Faubion  
Eugenia Georges  
Bridget K. Gorman  
Vivian Ho  
Rachel Tolbert Kimbro  
Anne C. Klein  
Kirsten Ostherr  
Rebecca Richards-Kortum

**Associate Professors**

Deborah A. Harter  
Moramay López-Alonso

**Assistant Professors**

Niki Clements  
Lan Li  
Zoë Wool  
Vida Yao

**Lecturers**

Beverly Mitchell  
John Mulligan

**Adjunct Lecturer**

Melissa Bailar

**Steering Committee**

Marcia Brennan  
Eugenia Georges  
Lan Li  
Moramay López-Alonso  
Kirsten Ostherr  
Rebecca Richards-Kortum  
Zoë Wool  
Vida Yao

**Description and Code Legend**

*Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:*

**Course Catalog/Schedule**

- Course offerings/subject codes: MDHM

**Program Description and Code**

- Medical Humanities: MDHM

**Undergraduate Minor Description and Code**

- Minor in Medical Humanities: MDHM

**CIP Code and Description**

- MDHM Minor: CIP Code/Title: 30.2701 - Human Biology

1 Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

**Minor in Medical Humanities**

**Program Learning Outcomes for the Minor in Medical Humanities**

Upon completing the minor in Medical Humanities, students will be able to:

1. Describe the historical, literary, artistic, and ethical domains of medical humanities scholarship.
2. Analyze and evaluate complex texts relating to the social and cultural aspects of medicine through close reading and critical interpretation of arguments, metaphors, and images.
3. Explain how health disparities and disability shape the healthcare experience for patients.
4. Conduct independent research and communicate their own arguments about medical humanities in research papers, class presentations, and discussions.

**Requirements for the Minor in Medical Humanities**

Students pursuing the minor in Medical Humanities must complete:

- A minimum of 6-7 courses (18-21 credit hours), depending on course selection, to satisfy minor requirements.
- A minimum of 3 courses (9 credit hours) taken at the 300-level or above.
- A maximum of 2 courses (6 credit hours) from study abroad or transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab.

The courses used in the Medical Humanities program examine the social, cultural, ethical, and aesthetic dimensions of medicine in contemporary and historical contexts, and are open to all undergraduate students at Rice from all backgrounds.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied...
and entered into Degree Works by the minor’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
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<th>Credit Hours</th>
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<tbody>
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<td>Total Credit Hours Required for the Minor in Medical Humanities</td>
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### Minor Requirements

#### Core Requirement

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<tbody>
<tr>
<td>MDHM 201</td>
<td>INTRODUCTION TO MEDICAL HUMANITIES</td>
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</table>

#### Elective Requirements

Select 4 courses from the Electives list below: 12

Select 1 from the following: 3-6

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>ENGL 386 / FILM 381</td>
<td>MEDICAL MEDIA ARTS LAB</td>
<td>2</td>
</tr>
<tr>
<td>MDHM 402 &amp; MDHM 403</td>
<td>HEALTH, HUMANISM AND SOCIETY SCHOLARS MEDICAL HUMANITIES PRACTICUM 1 (1 YR SEQUENCE) and HEALTH, HUMANISM AND SOCIETY SCHOLARS MEDICAL HUMANITIES PRACTICUM 2 (1 YR SEQUENCE)</td>
<td>3</td>
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<tr>
<td>MDHM 430</td>
<td>HEALTH, HUMANISM AND SOCIETY SCHOLARS MEDICAL HUMANITIES PRACTICUM (ONE SEMESTER)</td>
<td>3</td>
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</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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</tr>
</thead>
<tbody>
<tr>
<td>ANTH 382</td>
<td>BODY, TECHNOLOGY, AND ENHANCEMENT</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 477</td>
<td>SPECIAL TOPICS</td>
<td>3</td>
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<tr>
<td>Art History</td>
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<tr>
<td>HART 396</td>
<td>MEDICAL HUMANITIES VISUAL CULTURE</td>
<td>3</td>
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<tr>
<td>Asian Studies</td>
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<tr>
<td>ASIA 338</td>
<td>BIOETHICS AND INDIAN TRADITIONS</td>
<td>3</td>
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<td>ASIA 339</td>
<td>CONSCIOUSNESS FROM INDIAN TRADITIONS TO MODERN SCIENCE</td>
<td>3</td>
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<tr>
<td>Biochemistry and Cell Biology</td>
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<tr>
<td>BIOC 447</td>
<td>EXPERIMENTAL BIOLOGY AND THE FUTURE OF MEDICINE</td>
<td>3</td>
</tr>
<tr>
<td>English</td>
<td></td>
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<tr>
<td>ENGL 245 / HURC 245</td>
<td>INTERDISCIPLINARY APPROACHES</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 272</td>
<td>LITERATURE AND MEDICINE</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 273 / SWGS 273</td>
<td>MEDICINE AND MEDIA</td>
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<td>ENGL 278</td>
<td>MEDICINE IN THE AGE OF NETWORKED INTELLIGENCE</td>
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<td>ENGL 386 / FILM 381</td>
<td>MEDICAL MEDIA ARTS LAB</td>
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<td>Health Sciences</td>
<td></td>
<td>3</td>
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<td>HEAL 360</td>
<td>VIOLENCE IN AMERICA: A PUBLIC HEALTH PERSPECTIVE</td>
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<td>HEAL 380</td>
<td>DISPARITIES IN HEALTH IN AMERICA</td>
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<tr>
<td>History</td>
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<td>HIST 208</td>
<td>RACE AND MEDICINE IN AMERICAN HISTORY</td>
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<td>HIST 312</td>
<td>BIOMEDICAL APPROACH TO HISTORY</td>
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<tr>
<td>Humanities Research Center</td>
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<tr>
<td>HURC 213</td>
<td>THE DOCTOR IS ON</td>
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<tr>
<td>HURC 306</td>
<td>HEALTH AND HUMANITIES MASTER CLASS</td>
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<tr>
<td>HURC 307</td>
<td>CRITICAL HUMANITIES - HEALTH AND BODY</td>
<td>3</td>
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<tr>
<td>HURC 361 / RELI 361</td>
<td>THE HUMANITIES OF CARE &amp; END OF LIFE</td>
<td>3</td>
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<tr>
<td>Philosophy</td>
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<td>PHIL 314</td>
<td>THE PHILOSOPHY OF MEDICINE</td>
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<td>PHIL 336</td>
<td>TOPICS IN MEDICAL ETHICS</td>
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<tr>
<td>Program in Writing and Communication</td>
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<tr>
<td>COMM 415</td>
<td>MEDICAL COMMUNICATION</td>
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<tr>
<td>Religion</td>
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<tr>
<td>RELI 333</td>
<td>KNOWING BODY/GLOWING MIND: BUDDHIST ARTS OF CONTEMPLATION AND ANALYSIS</td>
<td>3</td>
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<tr>
<td>RELI 335</td>
<td>MEDICINE AND THE MUSEUM: CLINICAL AESTHETICS AND THE MUSEUM OF FINE ARTS, HOUSTON</td>
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<tr>
<td>RELI 344</td>
<td>SEMINAR ON THE END OF LIFE</td>
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<td>RELI 350 / MDEM 350</td>
<td>DEMONS, MENTAL ILLNESS AND MEDICINE</td>
<td>3</td>
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<tr>
<td>RELI 361 / HURC 361</td>
<td>THE HUMANITIES OF CARE &amp; END OF LIFE</td>
<td>3</td>
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<tr>
<td>RELI 362</td>
<td>RELIGION AND SCIENCE</td>
<td>3</td>
</tr>
</tbody>
</table>

1. Students must complete the core course before they complete the practicum. The core course and the practicum may not be taken concurrently.
2. Students may take ENGL 386/FILM 381 as either an elective or the practicum, but it will not count toward both requirements.

### Elective Requirements

To fulfill the elective requirements for the Medical Humanities minor, students must complete a total of 4 courses (12 credit hours) from the following Rice departmental course offerings. Students must fulfill the elective requirements by completing coursework from at least 2 different subject codes (i.e., ANTH, ENGL, etc.), and must take a minimum of 2 courses (6 credit hours) at the 300-level or above.

<table>
<thead>
<tr>
<th>Code</th>
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<tr>
<td>ANTH 342</td>
<td>ETHNOGRAPHIES OF CARE</td>
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<td>ANTH 354 / SWGS 353</td>
<td>ILLNESS, DISABILITY, AND THE GENDERED BODY</td>
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<td>ANTH 381</td>
<td>MEDICAL ANTHROPOLOGY</td>
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<td>ANTH 382</td>
<td>BODY, TECHNOLOGY, AND ENHANCEMENT</td>
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<td>ANTH 477</td>
<td>SPECIAL TOPICS</td>
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<td>HART 396</td>
<td>MEDICAL HUMANITIES VISUAL CULTURE</td>
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<td>ASIA 338</td>
<td>BIOETHICS AND INDIAN TRADITIONS</td>
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<td>ASIA 339</td>
<td>CONSCIOUSNESS FROM INDIAN TRADITIONS TO MODERN SCIENCE</td>
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<td>EXPERIMENTAL BIOLOGY AND THE FUTURE OF MEDICINE</td>
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<td>ENGL 245 / HURC 245</td>
<td>INTERDISCIPLINARY APPROACHES</td>
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<td>ENGL 272</td>
<td>LITERATURE AND MEDICINE</td>
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<tr>
<td>ENGL 273 / SWGS 273</td>
<td>MEDICINE AND MEDIA</td>
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<td>ENGL 278</td>
<td>MEDICINE IN THE AGE OF NETWORKED INTELLIGENCE</td>
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<td>HEAL 360</td>
<td>VIOLENCE IN AMERICA: A PUBLIC HEALTH PERSPECTIVE</td>
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<td>HEAL 380</td>
<td>DISPARITIES IN HEALTH IN AMERICA</td>
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<td>HIST 208</td>
<td>RACE AND MEDICINE IN AMERICAN HISTORY</td>
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<td>HIST 312</td>
<td>BIOMEDICAL APPROACH TO HISTORY</td>
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<td>HURC 213</td>
<td>THE DOCTOR IS ON</td>
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<tr>
<td>HURC 306</td>
<td>HEALTH AND HUMANITIES MASTER CLASS</td>
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<td>HURC 307</td>
<td>CRITICAL HUMANITIES - HEALTH AND BODY</td>
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<td>HURC 361 / RELI 361</td>
<td>THE HUMANITIES OF CARE &amp; END OF LIFE</td>
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<td>PHIL 314</td>
<td>THE PHILOSOPHY OF MEDICINE</td>
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<td>PHIL 336</td>
<td>TOPICS IN MEDICAL ETHICS</td>
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<td>COMM 415</td>
<td>MEDICAL COMMUNICATION</td>
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<td>RELI 333</td>
<td>KNOWING BODY/GLOWING MIND: BUDDHIST ARTS OF CONTEMPLATION AND ANALYSIS</td>
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<td>RELI 335</td>
<td>MEDICINE AND THE MUSEUM: CLINICAL AESTHETICS AND THE MUSEUM OF FINE ARTS, HOUSTON</td>
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<td>RELI 344</td>
<td>SEMINAR ON THE END OF LIFE</td>
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<td>RELI 350 / MDEM 350</td>
<td>DEMONS, MENTAL ILLNESS AND MEDICINE</td>
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<td>RELI 361 / HURC 361</td>
<td>THE HUMANITIES OF CARE &amp; END OF LIFE</td>
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<td>RELI 362</td>
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Sociology

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<td>SOCI 345</td>
<td>MEDICAL SOCIOLOGY</td>
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<td>SOCI 377</td>
<td>HEALTH DISPARITIES IN THE UNITED STATES</td>
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<td>SOCI 422</td>
<td>SOCIAL AUTOPSIES: HOW SOCIETY KILLS US</td>
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<td>SOCI 465 /</td>
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<td>SWGS 465</td>
<td>GENDER AND HEALTH</td>
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Spanish and Portuguese

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<tr>
<td>SPPO 370</td>
<td>DISABLED BODIES: ILLNESS AND LITERATURE IN LATIN AMERICA</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1. ANTH 477 is a special topics course, and not all sections are eligible to be applied towards the minor requirements as an Elective course. Please see a minor advisor for more information.

2. Students may take ENGL 386/FILM 381 as either an elective or the practicum, but it will not count toward both requirements.

Policies for the Minor in Medical Humanities

Program Restrictions and Exclusions

Students pursuing the minor in Medical Humanities should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 11), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines

Students pursuing the minor in Medical Humanities should be aware of the following program-specific transfer credit guidelines:

- No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing may apply towards the minor.
- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.
- Transfer credit coursework received via the articulation of AP, IB or A-level credit will not be considered towards minor requirements.
- Transfer credit from online-only courses cannot be used to count towards the minor.

Distribution Credit Information

The determination of distribution eligibility is done as part of the new course creation process (https://registrar.rice.edu/facstaff/courseprocess/). As part of an annual roll call (https://registrar.rice.edu/facstaff/distribution_credit/) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean's Offices of each of the academic schools.

Faculty and leadership in the academic schools are responsible for ensuring that the courses identified as distribution-eligible meet the criteria as set in the General Announcements (p. 26). Students are responsible for ensuring that they meet graduation requirements (p. 26) by completing coursework designated as distribution at the time of course registration.

Distribution courses from the Humanities Research Center (HRC) address emergent and interdisciplinary fields of knowledge that typically do not have a home in a traditional department. These courses introduce non-humanistic students to humanistic methods and areas of study, as well as advance the abilities of humanities majors to make connections among disciplines.

Additional Information

For additional information, please see the Medical Humanities website: https://hrc.rice.edu/medicalhumanities/minor (https://hrc.rice.edu/medicalhumanities/minor/).

Opportunities for the Minor in Medical Humanities

Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Distinction in Research and Creative Work

Students completing the minor in Medical Humanities are eligible to apply for the university honor Distinction in Research and Creative Work (p. 48). If awarded, Distinction will be noted on the student’s transcript upon graduation and on commencement materials. All applications for Distinction will be judged by a committee of faculty affiliated with the program in Medical Humanities. Work deemed to be ‘above and beyond’ expectation will be considered for Distinction.

- To apply for Distinction, students must have a minor GPA in Medical Humanities of 3.80 and an overall GPA of 3.30.
- Applications for Distinction must be submitted to the Director of Medical Humanities on or before the last day of classes in the spring semester by 5:00 pm.
- As part of the application for Distinction, students must submit a single-authored research or creative work, created for a Medical Humanities class, that represents the substantive output of a semester’s work (length will vary by discipline).
- In addition, any winning submission to the Annual Medical Humanities Best Essay contest completed by a student in the minor will be automatically considered for Distinction if the student meets all other criteria.
- The student’s project does not have to be completed nor in its final format to apply for Distinction. All final research and creative work materials will be due on the last day of final examinations.
- Applications must include a 1-page letter of support from a sponsoring faculty advisor.
• Applications are available on the Medical Humanities website at: https://hrc.rice.edu/medicalhumanities/essay

Experiential Learning
Advanced students in the Medical Humanities minor have the opportunity to conduct experiential learning and research in our practica, enroll in internships at Houston-area hospitals, archives, and community partner institutions, and take a multi-institution seminar, co-taught by researchers and clinicians in the Texas Medical Center, University of Houston, University of Texas School of Public Health, and Rice.

Additional Information
For additional information, please see the Medical Humanities website: https://hrc.rice.edu/medicalhumanities/minor. See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this minor.

Medieval and Early Modern Studies

Contact Information
Medieval and Early Modern Studies
https://medieval.rice.edu/
326 Humanities Building
713-348-4947

Peter Loewen
Program Director
mdem@rice.edu

The Medieval and Early Modern Studies program enables students to study medieval and early modern cultures in the period between 500 and 1700 A.D.

As an interdisciplinary major, the program combines a broad background in various aspects of medieval and early modern culture with more specialized study in a selected field. These fields of emphasis or specialized study include medieval and early modern art history, history, literature (Arabic, Chinese, English, French, Spanish, or Latin), music, philosophy, or religion.

The department also offers an undergraduate minor for students who wish to master a core body of basic knowledge about medieval and early modern studies.

Bachelor's Program
• Bachelor of Arts (BA) Degree with a Major in Medieval and Early Modern Studies (p. 569)

Minor
• Minor in Medieval and Early Modern Studies (p. 571)

Medieval and Early Modern Studies does not currently offer an academic program at the graduate level.

Director and Advisor
Peter V. Loewen

Professors
Gregory Barnett
Joseph A. Campana, Jr.
David Cook
Michael R. Maas
Joseph Manca
Scott McGill
Alida C. Metcalf
Donald Ray Morrison
Deborah Nelson-Campbell
Nanxiu Qian
Paula A. Sanders
Meredith Skura
Edward A. Snow
John M. Stroup
Diane Wolfthal
John H. Zammito

Associate Professors
Lisa A. Balabanlilar
Sarah Ellenzwieg
Claire Fanger
Jeffrey B. Fleisher
Shih-Shan Susan Huang
Maya Soifer Irish
Peter V. Loewen
Linda E. Neagley
Brian Ogren
Aysha Pollnitz

Assistant Professors
Niki Clements
Daniel Domingues Da Silva
Esther Fernández
Emily Houlik-Ritchey

Lecturer
Ted Somerville

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: MDEM

Program Description and Code
• Medieval and Early Modern Studies: MDEM

Undergraduate Degree Description and Code
• Bachelor of Arts degree: BA

Undergraduate Major Description and Code
• Major in Medieval and Early Modern Studies: MDEM
Undergraduate Minor Description and Code

- Minor in Medieval and Early Modern Studies: MDMM

CIP Code and Description

- MDEM Major/Program: CIP Code/Title: 30.1301 - Medieval and Renaissance Studies
- MDMM Minor: CIP Code/Title: 30.1301 - Medieval and Renaissance Studies

1 Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Bachelor of Arts (BA) Degree with a Major in Medieval and Early Modern Studies

Program Learning Outcomes for the BA Degree with a Major in Medieval and Early Modern Studies

Upon completing the BA degree with a major in Medieval and Early Modern Studies, students will be able to:

1. Situate Medieval and Early Modern studies more broadly within several interdisciplinary fields, including history, art, philosophy, music, literature, and religion.
2. Define and apply appropriate disciplinary and/or interdisciplinary methodologies, vocabularies, concepts, and theories to critically respond to questions within the field of Medieval and Early Modern Studies.
3. Demonstrate the ability to define and respond to research questions and scholarly debates within the field, including the ability to analyze primary and secondary sources, draw conclusions from the analysis of these sources, and cite evidence in support of conclusions.
4. Demonstrate a firm grasp of written, visual, and oral communication, including critical writing principles such as appropriate citation, use of evidence, clarity, and grammatical correctness.

Requirements for the BA Degree with a Major in Medieval and Early Modern Studies

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Medieval and Early Modern Studies must complete:

- A minimum of 10 courses (30 credit hours) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 5 courses (15 credit hours) taken at the 300-level or above.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<td>Total Credit Hours Required for the BA Degree with a Major in Medieval and Early Modern Studies</td>
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Degree Requirements

Core Requirements

Select 10 courses from the following: 1, 2

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<tr>
<td>MDEM 311 / ANTH 312</td>
<td>AFRICAN PREHISTORY</td>
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<tr>
<td>MDEM 111 / CLAS 102 / HART 101</td>
<td>INTRODUCTION TO THE HISTORY OF WESTERN ART I: PREHISTORIC TO GOTHIC</td>
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<tr>
<td>MDEM 330 / HART 330</td>
<td>EARLY MEDIEVAL ART</td>
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<td>MDEM 331 / HART 331</td>
<td>GOTHIC ART</td>
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<td>MDEM 332 / HART 332</td>
<td>ART OF THE COURTS</td>
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<td>MDEM 340 / HART 340</td>
<td>NORTHERN RENAISSANCE ART</td>
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<td>MASTERS OF THE BAROQUE ERA</td>
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<td>MDEM 373 / ASIA 372 / HART 372</td>
<td>CHINESE ART AND VISUAL CULTURE</td>
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<td>MDEM 376 / ASIA 376 / HART 376</td>
<td>EAST &amp; WEST: MEDIEVAL VISUAL CULTURE IN CHINA AND NORTHERN EUROPE</td>
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<td>MDEM 378 / HART 378</td>
<td>DUTCH ART IN THE AGE OF REMBRANDT</td>
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<td>MDEM 431 / HART 431</td>
<td>ARCHITECTURE OF THE GOTHIC CATHEDRAL FROM THE MIDDLE AGES TO THE TWENTIETH CENTURY</td>
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<td>MDEM 434 / HART 434 / SWGS 434</td>
<td>SEEING SEX IN EUROPEAN ART, 1400-1700</td>
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<tr>
<td>MDEM 435 / HART 435 / HIST 443</td>
<td>MULTICULTURAL EUROPE, 1400-1700</td>
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<td>ASIAN STUDIES</td>
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<td>MDEM 370 / ASIA 330 / CHIN 330</td>
<td>INTRODUCTION TO TRADITIONAL CHINESE POETRY</td>
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<td>MDEM 375 / ASIA 335 / CHIN 335</td>
<td>INTRODUCTION TO CLASSICAL CHINESE NOVELS</td>
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<td>MDEM 379 / ASIA 399 / SWGS 399</td>
<td>WOMEN IN CHINESE LITERATURE</td>
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<td>MDEM 427</td>
<td>TOPICS IN EARLY MUSIC</td>
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<td>MDEM 429 / MUSI 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
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**Classical Studies**

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<td>MDEM 212 / LATI 202</td>
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<td>MDEM 103 / RELI 104</td>
<td>INTRODUCTION TO JEWISH MYSTICISM</td>
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<td>MDEM 105 / RELI 105</td>
<td>INTRODUCTION TO MEDIEVAL CHRISTIAN THOUGHT</td>
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<td>MDEM 271 / RELI 271</td>
<td>MEDIEVAL POPULAR CHRISTIANITY</td>
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<td>MDEM 391 / RELI 391</td>
<td>THE REFORMATION &amp; ITS RESULTS</td>
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</table>

**Total Credit Hours Required for the Major in Medieval and Early Modern Studies**

30

**Additional Credit Hours to Complete BA Degree Requirements**

30

**University Graduation Requirements**

60

**Total Credit Hours**

120

**Footnotes and Additional Information**

*Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1. Of the 10 required courses (30 credit hours), a total of 5 courses (15 credit hours) must be taken at the 300-level or above. Please note that not all courses will be offered each academic year.

2. The 10 required courses (30 credit hours) must be taken from at least 3 different fields or departments (Anthropology, Art History, Asian Studies, Classical Studies, English, European Studies, French Studies, German Studies, History, Latin American Studies, Medieval and Early Modern Studies, Music, Philosophy, Religion, and Spanish and Portuguese).

**Recommended Coursework**

It is recommended, but not required, that students take 2 semesters at the college level in an appropriate language (or languages). For students considering MDEM graduate work, it is recommended that they study at least 1 foreign language in some depth (as most graduate schools require a reading knowledge of French and German for the PhD).

**Policies for the BA Degree with a Major in Medieval and Early Modern Studies**

**Transfer Credit**

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: [https://oaa.rice.edu](https://oaa.rice.edu). Students are encouraged to meet with their academic advisors to discuss transfer credit options.
academic program’s transfer credit advisor when considering transfer credit possibilities.

**Program Transfer Credit Guidelines**

Students pursuing the major in Medieval and Early Modern Studies should be aware of the following program-specific transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

**Distribution Credit Information**

The determination of distribution eligibility is done as part of the new course creation process [here](https://registrar.rice.edu/facstaff/courseprocess/). As part of an annual roll call [here](https://registrar.rice.edu/facstaff/distribution_credit/) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean’s Offices of each of the academic schools.

Faculty and leadership in the academic schools are responsible for ensuring that the courses identified as distribution-eligible meet the criteria as set in the General Announcements (p. 26). Students are responsible for ensuring that they meet graduation requirements (p. 26) by completing coursework designated as distribution at the time of course registration.

Distribution courses from Medieval and Early Modern Studies (MDEM) are broad in theme and scope and prompt students to probe knowledge about the variety of often interrelated medieval and early modern civilizations from the 4th to the 16th centuries. They involve a broad, interdisciplinary spectrum of knowledge that provides students with the tools for thinking critically about formations of ideas in the long history of culture and cultural exchange among Europe, Asia, the Middle East, Africa, and the Americas. Many of them are introductions to the medieval and/or early modern periods in a particular field of study (e.g. History, Art History, Religion, Music).

**Additional Information**

For additional information, please see the Medieval and Early Modern Studies website: [here](https://medieval.rice.edu/).

**Opportunities for the BA Degree with a Major in Medieval and Early Modern Studies**

**Academic Honors**

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

**Senior Thesis**

Qualified majors may apply before their senior year for directed research leading to a senior thesis, carried out during both semesters of the senior year. Each semester will require 3 credit hours; these 6 credit hours (MDEM 494 and MDEM 495) are in addition to the credit hours required for the major.

To qualify for senior thesis, students must have an approved research proposal and the agreement of a faculty member to serve as advisor for that project. Applicants will normally be required to have a GPA of 3.75 in MDEM courses and to have completed courses relevant to the proposed thesis topic (e.g. English, History, Art History, etc.), to be determined by the thesis advisor. Applications should be submitted to the director of Medieval and Early Modern Studies and will be evaluated by the advisory board.

Students who are considering applying to write a senior thesis should consult the program director and potential advisor as early as possible. Normally students will apply before preregistration in the second semester of their junior year and will spend time during the following summer reading from a list they have developed with their advisor. The thesis normally will be between 7,500 and 15,000 words (approximately 30-60 pages) in length. Students will enroll MDEM 494 and MDEM 495.

**Application Requirements**

- Department thesis application form (available at program website and from the program director) signed by the program director and the faculty member who will supervise the project
- A 500 word abstract of the proposed project

**Final Submission and Presentations**

- An electronic copy of the final thesis must be submitted by the last day of final examinations for degree candidates. Presentations will take place at the MDEM Undergraduate Conference.

**Additional Information**

For additional information, please see the Medieval and Early Modern Studies website: [here](https://medieval.rice.edu/)

See [here](https://humanities.rice.edu/student-life) for tables of fellowships, prizes, and internships/practica that may be relevant to this major.

**Minor in Medieval and Early Modern Studies**

**Program Learning Outcomes for the Minor in Medieval and Early Modern Studies**

Upon completing the minor in Medieval and Early Modern Studies, students will be able to:

1. Define and apply appropriate disciplinary and/or interdisciplinary methodologies, vocabularies, concepts, and theories to respond critically to questions within the field of Medieval and Early Modern Studies.

2. Demonstrate the ability to define and respond to research questions and scholarly debates within the field, including the ability to analyze primary and secondary sources, draw conclusions from the analysis of these sources, and cite evidence in support of conclusions.

**Requirements for the Minor in Medieval and Early Modern Studies**

Students pursuing the minor in Medieval and Early Modern Studies must complete:

1. Define and apply appropriate disciplinary and/or interdisciplinary methodologies, vocabularies, concepts, and theories to respond critically to questions within the field of Medieval and Early Modern Studies.

2. Demonstrate the ability to define and respond to research questions and scholarly debates within the field, including the ability to analyze primary and secondary sources, draw conclusions from the analysis of these sources, and cite evidence in support of conclusions.
• A minimum of 6 courses (18 credit hours) to satisfy minor requirements.
• A minimum of 3 courses (9 credit hours) taken at the 300-level or above.
• No courses from study abroad or transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor's academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the minor's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/)). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
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<tr>
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<td>Early Modern Studies</td>
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**Minor Requirements**

**Core Requirements**

Select 6 courses from the following:

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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<td>MDEM 311</td>
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<td>ANTH 312</td>
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<td>MDEM 111</td>
<td>INTRODUCTION TO THE HISTORY OF WESTERN ART I:</td>
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<td>CLAS 102</td>
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<td>EARLY MEDIEVAL ART</td>
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<td>HART 330</td>
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<td>MDEM 331</td>
<td>GOTHIC ART</td>
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<tr>
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<tr>
<td>MDEM 332</td>
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<tr>
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<td>MDEM 343</td>
<td>MASTERS OF THE BAROQUE ERA</td>
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<td>HART 343</td>
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<td>CHINESE ART AND VISUAL CULTURE</td>
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<td>EAST &amp; WEST: MEDIEVAL VISUAL CULTURE IN CHINA AND</td>
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<td>NORTHERN EUROPE</td>
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<td>MDEM 431</td>
<td>ARCHITECTURE OF THE GOTHIC CATHEDRAL FROM THE</td>
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<td>HART 431</td>
<td>MIDDLE AGES TO THE TWENTIETH CENTURY</td>
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<td>MDEM 370</td>
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<td>CHIN 330</td>
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<td>ASIA 335</td>
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<td>ELEMENTARY LATIN II</td>
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<td>MDEM 404</td>
<td>BEGINNINGS OF THE LANGUAGE AND LITERATURE OF FRANCE</td>
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<td>COURTLY LOVE IN MEDIEVAL FRANCE</td>
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<td>FREN 415</td>
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<td>MDEM 308</td>
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<td>HIST 327</td>
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Medieval and Early Modern Studies

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<td>MEDIEVAL CIVILIZATIONS</td>
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<td>MDEM 210 / HIST 211</td>
<td>MEDIEVAL VIOLENCE</td>
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<td>MDEM 320</td>
<td>DIRECTED READING IN MEDIEVAL STUDIES</td>
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<td>MDEM 411</td>
<td>THE LITERARY AND HISTORICAL IMAGE OF THE MEDIEVAL WOMAN</td>
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<td>Music</td>
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<tr>
<td>MDEM 222 / MUSI 222</td>
<td>MEDIEVAL AND RENAISSANCE ERAS</td>
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<tr>
<td>MDEM 427</td>
<td>TOPICS IN EARLY MUSIC</td>
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<td>MDEM 456 / MUSI 436</td>
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<tr>
<td>Philosophy</td>
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<td>MDEM 201 / CLAS 201 / PHIL 201</td>
<td>HISTORY OF PHILOSOPHY I</td>
<td>3</td>
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<tr>
<td>MDEM 301 / CLAS 301 / PHIL 301</td>
<td>ANCIENT AND MEDIEVAL PHILOSOPHY</td>
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<td>MDEM 481</td>
<td>ANCIENT AND MEDIEVAL PHILOSOPHY</td>
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<tr>
<td>Religion</td>
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<tr>
<td>MDEM 103 / RELI 104</td>
<td>INTRODUCTION TO JEWISH MYSTICISM</td>
<td>3</td>
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<tr>
<td>MDEM 105 / RELI 105</td>
<td>INTRODUCTION TO MEDIEVAL CHRISTIAN</td>
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<td>MDEM 271 / RELI 271</td>
<td>MEDIEVAL POPULAR CHRISTIANITY</td>
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<tr>
<td>MDEM 391 / RELI 391</td>
<td>THE REFORMATION &amp; ITS RESULTS</td>
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<tr>
<td>Total Credit Hours</td>
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</tbody>
</table>

Footnotes and Additional Information
1. Of the 6 required courses (18 credit hours), a total of 3 courses (9 credit hours) must be taken at the 300-level or above. Please note that not all courses listed above will be offered every academic year.
2. The 6 required courses (18 credit hours) must be taken from at least 2 different fields or departments (Anthropology, Art History, Asian Studies, Classical Studies, English, European Studies, French Studies, German Studies, History, Latin American Studies, Medieval and Early Modern Studies, Music, Philosophy, Religion, and Spanish and Portuguese).

Transfer Credit
For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Distribution Credit Information
The determination of distribution eligibility is done as part of the new course creation process (https://registrar.rice.edu/facstaff/courseprocess/). As part of an annual roll call (https://registrar.rice.edu/facstaff/distribution_credit/) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean's Offices of each of the academic schools.

Faculty and leadership in the academic schools are responsible for ensuring that the courses identified as distribution-eligible meet the criteria as set in the General Announcements (p. 26). Students are responsible for ensuring that they meet graduation requirements (p. 26) by completing coursework designated as distribution at the time of course registration.

Additional Information
For additional information, please see the Medieval and Early Modern Studies website: https://medieval.rice.edu/

Opportunities for the Minor in Medieval and Early Modern Studies

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Additional Information
For additional information, please see the Medieval and Early Modern Studies website: https://medieval.rice.edu/

Military Science
The goal of the U.S. Army ROTC program is to develop technically competent, physically fit, and highly motivated men and women for positions of responsibility as commissioned officers in the active U.S. Army, the U.S. Army Reserve, and the National Guard. Upon completion of the curriculum, students will have an understanding of the fundamental concepts and principles of the military as an art and as a science. The leadership and managerial experience gained through ROTC provides great benefit for students in their military careers as well as in both their civilian endeavors.

Rice does not offer a degree in military science. However, interested students can obtain a degree in any of the other programs offered by Rice. Credit for courses in military science may be obtained by attending courses at the University of Houston. The financial aid available to an ROTC student may be used for Rice courses as well as the University of Houston ROTC courses.
For general university requirements, see Graduation Requirements (p. 26). For requirements for a specific degree program, see the pages for that degree program. For more information on the Army ROTC program in particular, contact the military science department at the University of Houston by calling 713-743-3875.

**Statutory Authority**

General statutory authority for establishment and operation of the ROTC program, including the scholarship program, is contained in Title 10, United States Code, Chapter 103 (Sec. 2102–2111). Specific rules and procedures are found in U.S. Army Regulation 145–1.

**Course Credit**

ROTC classes may be taken for elective credit toward any degree plan at the University of Houston or Rice University. Freshman- and sophomore-level classes are open to all students, regardless of age or physical condition. No military obligation is incurred as a result of enrollment in these courses. Junior- and senior-level courses are more restrictive and do require a military obligation. ROTC scholarship students also incur a military obligation.

**Four-Year Program**

The four-year program is divided into two courses: the basic course, which is normally attended by students during their freshman- and sophomore years; and the advanced course, attended during the junior and senior years. Advanced course students attend a six-week paid advanced camp in Fort Lewis, Washington, normally between their junior and senior years.

**The Basic Course**

The basic course consists of four semesters of military science, which include:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MILI 121</td>
<td>INTRODUCTION TO LEADERSHIP</td>
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<tr>
<td>MILI 122</td>
<td>INTRODUCTION TO LEADERSHIP II</td>
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<tr>
<td>MILI 201</td>
<td>FOUNDATIONS OF LEADERSHIP</td>
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</tr>
<tr>
<td>MILI 202</td>
<td>FOUNDATIONS OF LEADERSHIP II</td>
<td>2</td>
</tr>
</tbody>
</table>

These freshman- and sophomore-level classes are open to all students without obligation.

**The Advanced Course**

Students entering the advanced course must enter into a contract to pursue and accept a commission in the active army, the Army Reserve, or the National Guard. To be considered for contracting into the advanced course, the student must be a full-time student in a course of instruction that leads to a degree in a recognized academic field, have a minimum of two years of academic work remaining in a curriculum leading to a baccalaureate or advanced degree, be under age 30 when commissioned, and pass a physical and medical examination.

**Two-Year Program**

The two-year program is designed for students who did not take the basic course but otherwise are eligible to enroll in the advanced course. This program allows students completing their sophomore year to attend a four-week Leader's Training Course during June and July at Fort Knox, Kentucky, in lieu of taking the first two years of ROTC. There is no military obligation for attending Leader's Training Course. The army provides transportation, room, and board. Students are paid approximately $900 for the four-week period.

**Laboratory Requirements**

A military science laboratory is required for students enrolling in:

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<thead>
<tr>
<th>Code</th>
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<td>MILI 201</td>
<td>FOUNDATIONS OF LEADERSHIP</td>
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<td>MILI 202</td>
<td>FOUNDATIONS OF LEADERSHIP II</td>
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<td>MILI 301</td>
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<td>MILI 302</td>
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<td>MILI 401</td>
<td>ADAPTIVE LEADERSHIP</td>
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<tr>
<td>MILI 402</td>
<td>LEADERSHIP IN A COMPLEX WORLD</td>
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</table>

This laboratory provides hands-on opportunities for marksmanship training, rappelling, drill and ceremonies, communications training, and other activities.

**Veterans**

Veterans who have served on active duty or in the Army Reserve or National Guard also are eligible for the ROTC program. Although veterans are not required to take the basic course, they are encouraged to do so. All students, including veterans, must have a minimum of 54 credit hours prior to enrolling in the advanced course.

**National Guard and Army Reserve Members**

Students enrolled in ROTC may also be members of the Army Reserve/National Guard. Through the Simultaneous Membership Program (SMP), those students enrolled in the advanced course will be placed in a leadership position as a cadet and will receive pay and entitlements from the National Guard or Army Reserve in the pay grade of Sergeant (E-5).

**Financial Assistance**

The United States Army offers, on a competitive nationwide basis, four-, three-, and two-year scholarships. The scholarships cover tuition 100%. Recipients also receive benefits for educational fees (to include lab fees), a book allowance, and a subsistence allowance ranging from $300 to $500 per month. Applicants must be U.S. citizens and must be under age 27 on the anticipated graduation date. Applications are available from the military science department. Veteran applicants can extend the age limit up to a maximum of three years, based on prior active duty service.

**Other Financial Aid**

All students enrolled in the advanced course will receive a subsistence allowance of $450 per month junior year and $500 per month senior year. For more information, contact the military science department. GI Bill® recipients still retain benefits.

**Tuition**

Members of the Army or the Army Reserve, National Guard, Texas State Guard, or other reserve forces may be exempted from the nonresident tuition fee and other fees and charges.
Special Training

Basic- and advanced-course students may volunteer for and may attend the U.S. Army Airborne and Air Assault courses during June, July, and August. Cadet Troop Leadership Training positions also are available to Advanced-course cadets during the summer months.

Miscellaneous

All participating cadets are eligible for our internal scholarships provided by our alumni and sponsors of the program.

The Corps of Cadets sponsors an annual military ball in addition to other social events throughout the school year. The Department of Military Science sponsors extracurricular activities such as the University of Houston Color Guard and the Ranger Challenge Team.

Military Science does not currently offer an academic program at the graduate level.

Chair and Professor

Lieutenant Colonel Kurt Robinson

Assistant Professors

Lieutenant Colonel Steven Lopez
Captain McVay Chambers
Captain Jonathan Howard
Master Sergeant Al Frances
Sergeant First Class David Briseno
Sergeant First Class Roland Thomas
Staff Sergeant John Russell

Description and Code Legend

Note: Internally the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule

• Course offerings/subject code: MILI

Museums and Cultural Heritage

Contact Information

Museums and Cultural Heritage

https://hrc.rice.edu/culturalheritage/minor (https://hrc.rice.edu/culturalheritage/minor/)
116 Humanities Building
713-348-4548

Leo Costello
Program Co-Director
lcostell@rice.edu

Fabiola López-Durán
Program Co-Director
fld@rice.edu

Museums and Cultural Heritage incorporates the fields of architecture, anthropology, art, history, and cultural studies to study the identification, preservation, and/or representation of art and heritage materials. Such materials often serve as the evidentiary basis for humanistic, architectural, and social science disciplines.

Students in the minor will learn about the preservation and use of tangible and intangible cultural heritage for study, archival purposes, and public display through the study of museums and cultural heritage institutions, new digital analysis tools and media, and traditional methods of preservation and analysis.

Minor

• Minor in Museums and Cultural Heritage (p. 576)

Museums and Cultural Heritage does not currently offer an academic program at the graduate level.

Co-Directors and Advisors

Leo Costello
Fabiola López-Durán

Professors

Farès el-Dahdah
Susan Keech McIntosh
Diane Wolfthal

Associate Professors

Leo Costello
Jeffrey B. Fleisher
Reto Geiser
Fabiola López-Durán
Caleb McDaniel
Linda E. Neagley
Kerry R. Ward

Lecturer

John Mulligan

Adjunct Lecturer

Melissa Bailar

Steering Committee

Leo Costello
Farès el-Dahdah
Jeffrey B. Fleisher
Reto Geiser
Fabiola López-Durán
Susan Keech McIntosh
Kerry R. Ward

Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule

• Course offerings/subject codes: Courses from various subjects may apply towards this program
Program Description and Code
• Museums and Cultural Heritage: MUCH

Undergraduate Minor Description and Code
• Minor in Museums and Cultural Heritage: MUCH

CIP Code and Description¹
• MUCH Minor: CIP Code/Title: 30.1401 - Museology/Museum Studies

¹ Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Minor in Museums and Cultural Heritage

Program Learning Outcomes for the Minor in Museums and Cultural Heritage

Upon completing the minor in Museums and Cultural Heritage, students will be able to:

1. Understand the historical, changing uses and meanings of art/cultural objects and collections in museums, particularly with regard to the concept of heritage.
2. Explain the historical and contemporary issues that affect art objects and cultural heritage, including recovery and preservation, and presentation to the public for education, research, and continued practice/use.
3. Work with primary sources relating to art and cultural heritage focusing on visual analysis, recovery and preservation methods, or archival research.
4. Conduct independent and collaborative research in museums and cultural heritage based in a specific disciplinary methodology and communicate it to a public audience through oral, written, visual, or other practical means.

Requirements for the Minor in Museums and Cultural Heritage

Students pursuing the minor in Museums and Cultural Heritage must complete:

• A minimum of 6 courses (18-21 credit hours, depending on course selection) to satisfy minor requirements.
• A minimum of 3 courses (9 credit hours) taken at the 300-level or above.
• A maximum of 2 courses (6 credit hours) from study abroad or transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the minor’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Total Credit Hours Required for the Minor in Museums and Cultural Heritage</td>
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</table>

Minor Requirements

<table>
<thead>
<tr>
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<th>Credit Hours</th>
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<tbody>
<tr>
<td>ANTH 324</td>
<td>EXHIBITING ART, EXHIBITING CULTURE</td>
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</table>

Elective Requirements ¹

Museums or Preservation

Select 2 courses from the following: 6-7

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
<td>ANTH 362</td>
<td>ARCHAEOLOGICAL FIELD TECHNIQUES</td>
<td></td>
</tr>
<tr>
<td>ARCH 323</td>
<td>SEMINAR IN ARCHITECTURE</td>
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<tr>
<td>ARTS 378</td>
<td>EXHIBITION DESIGN</td>
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<tr>
<td>FILM 327 / ARTS 327 / ANTH 324</td>
<td>DOCUMENTARY PRODUCTION</td>
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<tr>
<td>FILM 430</td>
<td>ADVANCED METHODS IN SOUND, CINEMATOGRAPHY, AND EDITING</td>
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</tr>
<tr>
<td>HART 101 / CLAS 102 / MDEM 111</td>
<td>INTRODUCTION TO THE HISTORY OF WESTERN ART I: ANTIQUITY TO GOTHIC</td>
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<tr>
<td>HART 297</td>
<td>SPECIAL TOPICS IN MUSEUM CURATORIAL STUDIES</td>
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<tr>
<td>HART 307</td>
<td>TECHNICAL ART HISTORY: STUDYING THE TECHNIQUES OF WESTERN PAINTING, 13TH-20TH CENTURIES</td>
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<tr>
<td>HART 312 / HURC 308</td>
<td>ADVANCED STUDY IN MUSEUMS AND HERITAGE: ARTS OF ANCIENT MEDITERRANEAN AT THE MENIL COLLECTION</td>
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<td>HART 397</td>
<td>HART IN THE WORLD FIELD STUDY</td>
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<td>HIST 244</td>
<td>MUSEUMS IN WORLD HISTORY</td>
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<td>HIST 318</td>
<td>DIGITAL HISTORY METHODS</td>
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<td>HISTORY OF AFRICA IN THE MUSEUM</td>
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<td>HURC 405</td>
<td>DIACHRONIC MAPPING: THE RICE UNIVERSITY CAMPUS</td>
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<tr>
<td>SOCI 365 / ANTH 365</td>
<td>POLITICS OF REPRESENTATION: HOW WE UNDERSTAND 'WAR' AND 'THE RACIAL OTHER'</td>
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Cultural Heritage

Select 2 courses from the following: 6-8

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>ANTH 205</td>
<td>INTRODUCTION TO ARCHAEOLOGY</td>
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<tr>
<td>ANTH 303</td>
<td>INTRODUCTION TO ARCHAEOLOGICAL SCIENCE</td>
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<tr>
<td>ANTH 308 / SWGS 336</td>
<td>THE ANTHROPOLOGY OF THE HISTORICAL IMAGINATION</td>
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<tr>
<td>ANTH 312 / MDEM 311</td>
<td>AFRICAN PREHISTORY</td>
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<tr>
<td>ANTH 345</td>
<td>THE POLITICS OF THE PAST: ARCHAEOLOGY IN SOCIAL CONTEXT</td>
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<tr>
<td>ANTH 355</td>
<td>SPACE, PLACE, AND LANDSCAPE</td>
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</table>
ANTH 363  THE ARCHAEOLOGY OF CITIES AND STATES
ARCH 225 / HART 225  INTRODUCTION TO ARCHITECTURAL THINKING
ARCH 345 / HART 345  THEORY OF ARCHITECTURE I (1450-1850)
FWIS 140  IMAGINING THE PAST: FILM, FICTION, AND HISTORY
GERM 351 / HART 387  HOLOCAUST MEMORY IN MODERN GERMANY
HART 348  A REVOLUTION FROM WITHIN: TRENDS IN CONTEMPORARY CUBAN CULTURE
HART 359 / ARCH 359 / FILM 359  CINEMAS OF URBAN ALIENATION
HART 391 / ANTH 345 / HIST 366 / HURC 432 / ARCH 366  PLACE AND MEMORY IN MIDDLE EASTERN AND EUROPEAN CINEMA
HIST 366 / ARCH 366  RIO DE JANEIRO: A SOCIAL AND ARCHITECTURAL HISTORY
HART 400  BAYOU BEND UNDERGRADUATE INTERNSHIP I
HART 401  BAYOU BEND UNDERGRADUATE INTERNSHIP II
HURC 423  HRC PRACTICUM IN CULTURAL HERITAGE
HUMA 406  ARTS AND CULTURE INTERNSHIP
HUMA 407  ARTS AND CULTURE INTERNSHIP 2

Select 1 course from the following: 3
HART 300  MUSEUM INTERNSHIP I
HART 301  MUSEUM INTERNSHIP II
HART 400  BAYOU BEND UNDERGRADUATE INTERNSHIP I
HART 401  BAYOU BEND UNDERGRADUATE INTERNSHIP II
HURC 423  HRC PRACTICUM IN CULTURAL HERITAGE
HUMA 406  ARTS AND CULTURE INTERNSHIP
HUMA 407  ARTS AND CULTURE INTERNSHIP 2

Capstone Symposium 4

Footnotes and Additional Information
1 A maximum of 2 courses (6 credit hours) from the same subject code can be counted toward the Elective Requirements for the minor.
2 One of the following courses must be completed before starting a practicum to provide adequate background knowledge: the Core Requirement: ANTH 341/HURC 341; or one of the following Elective Requirements: ANTH 345, HART 312, or HIST 244.
3 The practicum will introduce students to the field directly, promoting an engaged and active learning environment while fostering connections in the fields of museum work, cultural heritage, and preservation. All practica should be taken through established courses or independent study at the 300-level or 400-level (for at least 3 credit hours) and must focus on active participation on the part of students in the mission of the project or institution, with meaningful pedagogical or research outcomes for the student; the chief duties of a student in a practicum cannot be clerical. Students who do not complete one of the application-based internships at area museums and cultural institutions listed above (HART 300, HART 301, HART 400, HART 401) will have the following two alternative options for completing this requirement with advisor (or Official Certifier) approval:
   1. Internships and Practica (of at least 3 credit hours) offered through the Humanities Research Center, the Center for Civic Leadership, or the School of Humanities with the research and related activities approved by a program advisor.
   2. Faculty-Directed Initiatives - independent study courses (for at least 3 credit hours) affiliated with the pertinent department or center.
4 Every year, the HRC will host a capstone symposium (not a course), in which students who have completed their coursework for the minor will present their practicum experiences and address what they have learned throughout the minor’s curriculum.

Policies for the Minor in Museums and Cultural Heritage

Program Restrictions and Exclusions
Students pursuing the minor in Museums and Cultural Heritage should be aware of the following program restriction:
• As noted in Majors, Minors, and Certificates (p. 11), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines
Students pursuing the minor in Museums and Cultural Heritage should be aware of the following program-specific transfer credit guidelines:
• No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing may apply toward the minor.
• Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Distribution Credit Information
The determination of distribution eligibility is done as part of the new course creation process (https://registrar.rice.edu/facstaff/courseprocess/). As part of an annual roll call (https://registrar.rice.edu/...
Music

Contact Information

Music
https://music.rice.edu/
Alice Pratt Brown Hall
713-348-4854

Robert A. Yekovich
Dean
yekovr@rice.edu

Gary A. Smith
Associate Dean
gasmith@rice.edu

At the undergraduate level, the Shepherd School of Music offers both professional training and a broad liberal arts curriculum. Degree programs include a BA degree in music and a BMus degree in performance, composition, music history, and music theory. Acceptance into a five-year honors program leads to the simultaneous awarding of the BMus and MMus degrees.

At the graduate level, the school offers professional music training for qualified students in the fields of music composition, performance, or research that is supported by lab or performing ensembles. This training includes theory and history seminars. Advanced degree programs include a MMus degree in composition, orchestral conducting, musicology, and performance; a post-master’s Artist Diploma (AD) in orchestral conducting and performance; and a DMA degree in composition and selected areas of performance.

Other Musical Opportunities

For Non-Majors
Students who are not music majors may take the following courses designed for the general student. Other music courses not on this list require the permission of the instructor, and the approval of the dean of the Shepherd School.

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td>MUSI 117</td>
<td>FUNDAMENTALS OF MUSIC I</td>
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<tr>
<td>MUSI 141–MUSI 197</td>
<td>for individual instruction in all instruments</td>
<td></td>
</tr>
<tr>
<td>MUSI 314</td>
<td>MUSIC IN WESTERN CULTURE</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 317</td>
<td>THEORY FOR NON-MAJORS I</td>
<td>3</td>
</tr>
<tr>
<td>or MUSI 318</td>
<td>THEORY FOR NON-MAJORS II</td>
<td></td>
</tr>
<tr>
<td>MUSI 334</td>
<td>CAMPANILE ORCHESTRA</td>
<td>1</td>
</tr>
<tr>
<td>or MUSI 335</td>
<td>UNDERGRADUATE CHORUS</td>
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</tr>
<tr>
<td>MUSI 340</td>
<td>RICE SYMPHONIC BAND</td>
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<td>MUSI 342</td>
<td>RICE JAZZ ENSEMBLE</td>
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<tr>
<td>MUSI 345</td>
<td>APPLIED STUDIES IN JAZZ</td>
<td>2</td>
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<tr>
<td>MUSI 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
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</tr>
<tr>
<td>MUSI 415</td>
<td>BAND ARRANGING</td>
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</table>

Lectures and Performances
A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

Bachelor’s Programs

- Bachelor of Music (BMus) Degree with a Major in Bassoon Performance (p. 612)
- Bachelor of Music (BMus) Degree with a Major in Cello Performance (p. 614)
- Bachelor of Music (BMus) Degree with a Major in Clarinet Performance (p. 617)
- Bachelor of Music (BMus) Degree with a Major in Composition (p. 619)
Master's Programs

- Bachelor of Music (BMus) Degree with a Major in Double Bass Performance (p. 621)
- Bachelor of Music (BMus) Degree with a Major in Flute Performance (p. 623)
- Bachelor of Music (BMus) Degree with a Major in Harp Performance (p. 625)
- Bachelor of Music (BMus) Degree with a Major in Horn Performance (p. 627)
- Bachelor of Music (BMus) Degree with a Major in Music History (p. 630)
- Bachelor of Music (BMus) Degree with a Major in Music Theory (p. 633)
- Bachelor of Music (BMus) Degree with a Major in Oboe Performance (p. 635)
- Bachelor of Music (BMus) Degree with a Major in Organ Performance (p. 637)
- Bachelor of Music (BMus) Degree with a Major in Percussion Performance (p. 639)
- Bachelor of Music (BMus) Degree with a Major in Piano Performance (p. 641)
- Bachelor of Music (BMus) Degree with a Major in Trombone Performance (p. 644)
- Bachelor of Music (BMus) Degree with a Major in Trumpet Performance (p. 646)
- Bachelor of Music (BMus) Degree with a Major in Tuba Performance (p. 648)
- Bachelor of Music (BMus) Degree with a Major in Viola Performance (p. 650)
- Bachelor of Music (BMus) Degree with a Major in Violin Performance (p. 652)
- Bachelor of Music (BMus) Degree with a Major in Vocal Performance (p. 654)
- Bachelor of Arts (BA) Degree with a Major in Music (p. 610)

- Bachelor of Music (BMus) Degree with a Major in Double Bass Performance (p. 621)
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- Bachelor of Music (BMus) Degree with a Major in Vocal Performance (p. 654)
- Bachelor of Arts (BA) Degree with a Major in Music (p. 610)

Post-Master's Performance Programs

- Doctor of Musical Arts (DMA) Degree in the field of Bassoon Performance (p. 581)
- Doctor of Musical Arts (DMA) Degree in the field of Cello Performance (p. 583)
- Doctor of Musical Arts (DMA) Degree in the field of Clarinet Performance (p. 585)
- Doctor of Musical Arts (DMA) Degree in the field of Double Bass Performance (p. 586)
- Doctor of Musical Arts (DMA) Degree in the field of Flute Performance (p. 588)
- Doctor of Musical Arts (DMA) Degree in the field of Harp Performance (p. 589)
- Doctor of Musical Arts (DMA) Degree in the field of Horn Performance (p. 591)
- Doctor of Musical Arts (DMA) Degree in the field of Oboe Performance (p. 593)
- Doctor of Musical Arts (DMA) Degree in the field of Opera Performance (p. 594)
- Doctor of Musical Arts (DMA) Degree in the field of Orchestral Conducting (p. 596)
- Doctor of Musical Arts (DMA) Degree in the field of Organ Performance (p. 597)
- Doctor of Musical Arts (DMA) Degree in the field of Percussion Performance (p. 599)
- Doctor of Musical Arts (DMA) Degree in the field of Piano Performance (p. 600)
- Doctor of Musical Arts (DMA) Degree in the field of Trombone Performance (p. 602)
- Doctor of Musical Arts (DMA) Degree in the field of Trumpet Performance (p. 604)
- Doctor of Musical Arts (DMA) Degree in the field of Tuba Performance (p. 605)
- Doctor of Musical Arts (DMA) Degree in the field of Viola Performance (p. 607)
- Doctor of Musical Arts (DMA) Degree in the field of Violin Performance (p. 608)

Doctoral Programs

- Doctor of Musical Arts (DMA) Degree in the field of Cello Performance (p. 657)
- Doctor of Musical Arts (DMA) Degree in the field of Clarinet Performance (p. 659)
- Doctor of Musical Arts (DMA) Degree in the field of Composition (p. 661)
- Doctor of Musical Arts (DMA) Degree in the field of Double Bass Performance (p. 663)
- Doctor of Musical Arts (DMA) Degree in the field of Flute Performance (p. 665)
• Doctor of Musical Arts (DMA) Degree in the field of Oboe Performance (p. 667)
• Doctor of Musical Arts (DMA) Degree in the field of Organ Performance (p. 670)
• Doctor of Musical Arts (DMA) Degree in the field of Percussion Performance (p. 672)
• Doctor of Musical Arts (DMA) Degree in the field of Piano Performance (p. 674)
• Doctor of Musical Arts (DMA) Degree in the field of Viola Performance (p. 676)
• Doctor of Musical Arts (DMA) Degree in the field of Violin Performance (p. 678)
• Doctor of Musical Arts (DMA) Degree in the field of Vocal Performance (p. 681)

Dean
Robert A. Yekovich

Professors
Karim Al-Zand
Robert Atherholt
Gregory Barnett
Anthony K. Brandt
Barbara Butler
Leone Buyse
Shih-Hui Chen
Kenneth Cowan
James F. Dunham
Paul V. H. Ellison
Norman Fischer
Charles Geyer
Kenneth Goldsmith
Arthur W. Gottschalk
Richard Hawley
Michael Heaston
Desmond Hoebig
Thomas I. Jaber
Pierre D. Jalbert
Benjamin C. Kamins
Paul Kantor
Stephen King
Richard A. Lavenda
Cho-Liang Lin
Jon Kimura Parker
Timothy Pitts
Larry Rachleff
Robin Rice
Robert Roux
Kurt Stallmann
Ivo-Jan van der Werff
William VerMeulen
Michael Webster
Kathleen Winkler

Associate Professors
Allen Barnhill
David Ferris
David E. Kirk
Thomas LeGrand

Peter V. Loewen
Paula Page
Janet Ratliff
Brinton Avenil Smith
Matthew Strauss

Assistant Professors
Damian Blättler
Alexandra Kieffer
Danielle Ward-Griffin

Artist Teachers
Brian Connelly
Joan DerHovsepian
Debra Dickinson
Susan Dunn
Jeanne Kierman Fischer
Christopher French
Eric Halen
Jerry Hou
Sohyoung Park
Bethany Self
Karen Roethlisberger Vern
Virginia Weckstrom Kantor

Lecturers
Rachel Buchman
Mary Greitzer
Christopher Turbassi
Chapman Welch

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: MUSI

School Description and Code
• Music: MUSI

Undergraduate Degree Descriptions and Codes
• Bachelor of Arts degree: BA
• Bachelor of Music degree: BMus

Undergraduate Major Descriptions and Code
• Major in Music (BA degree): MUSI
• Major in Bassoon Performance (BMus degree): MBSN
• Major in Cello Performance (BMus degree): MCEL
• Major in Clarinet Performance (BMus degree): MCLR
• Major in Composition (BMus degree): MCMP
• Major in Double Bass Performance (BMus degree): MDBS
• Major in Flute Performance (BMus degree): MFLT
• Major in Harp Performance (BMus degree): MHRP
• Major in Horn Performance (BMus degree): MHRN
• Major in Music History (BMus degree): MHIS
• Major in Music Theory (BMus degree): MTHE
Graduate Degree Program Descriptions and Codes

- Major in Oboe Performance (BMus degree): MOBO
- Major in Organ Performance (BMus degree): MORG
- Major in Percussion Performance (BMus degree): MPER
- Major in Piano Performance (BMus degree): MPIA
- Major in String Quartet Performance (MMus degree): MSQT
- Major in Violin Performance (BMus degree): MVLN
- Major in Vocal Performance (BMus degree): MVOC

CIP Code and Description

- 50.0901 - Music, General
- 50.0902 - Music History, Literature, and Theory
- 50.0903 - Music Performance
- 50.0907 - Keyboard Instruments
- 50.0908 - Voice and Opera
- 50.0909 - Conducting
- 50.0910 - Composition
- 50.0914 - Brass Instruments
- 50.0915 - Woodwind Instruments
- 50.0916 - Percussion Instruments
- 50.0917 - Stringed Instruments

Program Learning Outcomes for the Artist Diploma

Upon completing the Artist Diploma, students will be able to:

1. Demonstrate the technical mastery and musical expertise requisite to having a significant professional career in their chosen area of performance.
2. Master intellectually the stylistic differences when performing music of the Baroque, Classical, Romantic, modern and contemporary eras and be able to apply them in performance.
3. Accumulate a significantly expanded and diverse list of repertoire.
4. Be equipped with multiple extra-musical career skills.

Requirements for the Artist Diploma

For general university requirements, see Diploma Programs (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the Artist Diploma in any field of music performance must complete:

- A minimum of 41 credit hours to satisfy diploma requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the diploma program.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
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Diploma Requirements

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<tr>
<td>MUSI 760</td>
<td>INDIVIDUAL AND COMMITTEE INSTRUCTION FOR ARTIST DIPLOMA (minimum of 4 semesters)</td>
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<tr>
<td>MUSI 761</td>
<td>ARTIST DIPLOMA RECITAL ¹</td>
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<tr>
<td>MUSI 762</td>
<td>ARTIST DIPLOMA SEMINAR</td>
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<td>MUSI 763</td>
<td>ARTIST DIPLOMA SPECIAL PROJECT (minimum of 2 semesters)</td>
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<td>MUSI 764</td>
<td>ARTIST DIPLOMA PERFORMANCE (minimum of 4 semesters )</td>
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<tr>
<td></td>
<td>Select 2 courses from the Music Career and Skills Enhancement course offerings</td>
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</tr>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>41</td>
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</tbody>
</table>

Footnotes and Additional Information

¹ Students pursuing the Artist Diploma in all fields of music performance must perform two (2) recitals with the exception of students in the field of Opera Performance, who are not required to perform recitals.

Course List to Satisfy Requirements

Academic Coursework

Academic Coursework is comprised of a minimum of 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
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<tr>
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<td>Music Career and Skills Enhancement</td>
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<tr>
<td></td>
<td>Select 2 courses from the following:</td>
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<tr>
<td>LPCR 200</td>
<td>ADVANCED MENTAL TRAINING</td>
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<tr>
<td>MGMT 621</td>
<td>THE NEW ENTERPRISE</td>
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<td>MGMT 625</td>
<td>DESIGN THINKING</td>
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Diploma Requirements

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<td>ARTIST DIPLOMA SEMINAR</td>
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<tr>
<td>MUSI 763</td>
<td>ARTIST DIPLOMA SPECIAL PROJECT (minimum of 2 semesters)</td>
<td>3</td>
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Artist Diploma (AD) in the field of Cello Performance
Artist Diploma (AD) in the field of Cello Performance

MUSI 764 ARTIST DIPLOMA PERFORMANCE
(minimum of 4 semesters) 3

Academic Coursework
Select 2 courses from the Music Career and Skills Enhancement course offerings (see course list below) 4

Total Credit Hours 41

Footnotes and Additional Information
1 Students pursuing the Artist Diploma in all fields of music performance must perform two (2) recitals with the exception of students in the field of Opera Performance, who are not required to perform recitals.

Course List to Satisfy Requirements

Academic Coursework
Academic Coursework is comprised of a minimum of 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings

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Additional Information
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Artist Diploma (AD) in the field of Clarinet Performance

Program Learning Outcomes for the Artist Diploma

Upon completing the Artist Diploma, students will be able to:

1. Demonstrate the technical mastery and musical expertise requisite to having a significant professional career in their chosen area of performance.
2. Master intellectually the stylistic differences when performing music of the Baroque, Classical, Romantic, modern and contemporary eras and be able to apply them in performance.
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Requirements for the Artist Diploma

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2019-2020 General Announcements

PDF Generated 1/29/2020
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**Artist Diploma (AD) in the field of Double Bass Performance**

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2. Master intellectually the stylistic differences when performing music of the Baroque, Classical, Romantic, modern and contemporary eras and be able to apply them in performance.
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Select 2 courses from the Music Career and Skills Enhancement course offerings (see course list below) ⁴ ⁴

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<tr>
<td>MUSI 500</td>
<td>IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES ¹</td>
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<td>MUSI 501</td>
<td>ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING ¹</td>
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**Academic Standards**

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Graduate degree requirement: a minimum overall grade point average of 2.67 is necessary for graduation.

**Leaves of Absence and Voluntary Withdrawal**

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the
Artist Diploma (AD) in the field of Flute Performance

Program Learning Outcomes for the Artist Diploma

Upon completing the Artist Diploma, students will be able to:

1. Demonstrate the technical mastery and musical expertise requisite to having a significant professional career in their chosen area of performance.
2. Master intellectually the stylistic differences when performing music of the Baroque, Classical, Romantic, modern and contemporary eras and be able to apply them in performance.
3. Accumulate a significantly expanded and diverse list of repertoire.
4. Be equipped with multiple extra-musical career skills.

Requirements for the Artist Diploma

For general university requirements, see Diploma Programs (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the Artist Diploma in any field of music performance must complete:

- A minimum of 41 credit hours to satisfy diploma requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
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Diploma Requirements

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<td>MUSI 760</td>
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<tr>
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Academic Coursework

Select 2 courses from the Music Career and Skills Enhancement course offerings (see course list below) | 4

Total Credit Hours: 41

Footnotes and Additional Information

1 Students pursuing the Artist Diploma in all fields of music performance must perform two (2) recitals with the exception of students in the field of Opera Performance, who are not required to perform recitals.

Course List to Satisfy Requirements

Academic Coursework

Academic Coursework is comprised of a minimum of 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings

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**Graduate degree requirement:** a minimum overall grade point average of 2.67 is necessary for graduation.

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#### Academic Standards

**Curriculum and Degree Requirements**

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### Additional Information

For additional information, please see the Shepherd School of Music website at: [https://music.rice.edu](https://music.rice.edu)

### Opportunities for the Artist Diploma

**Other Musical Opportunities**

**Lectures and Performances**

A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

### Additional Information

For additional information, please see the Shepherd School of Music website at: [https://music.rice.edu](https://music.rice.edu)

### Artist Diploma (AD) in the field of Harp Performance

**Program Learning Outcomes for the Artist Diploma**

Upon completing the Artist Diploma, students will be able to:

1. Demonstrate the technical mastery and musical expertise requisite to having a significant professional career in their chosen area of performance.
2. Master intellectually the stylistic differences when performing music of the Baroque, Classical, Romantic, modern and contemporary eras and be able to apply them in performance.
3. Accumulate a significantly expanded and diverse list of repertoire.
4. Be equipped with multiple extra-musical career skills.

### Requirements for the Artist Diploma

For general university requirements, see [Diploma Programs](https://music.rice.edu) (p. 68). For additional requirements, regulations, and procedures for all graduate
programs, please see All Graduate Students (p. 55). Students pursuing the Artist Diploma in any field of music performance must complete:

- A minimum of 41 credit hours to satisfy diploma requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the diploma program.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

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Footnotes and Additional Information

¹ Students pursuing the Artist Diploma in all fields of music performance must perform two (2) recitals with the exception of students in the field of Opera Performance, who are not required to perform recitals.

Course List to Satisfy Requirements

Academic Coursework

Academic Coursework is comprised of a minimum of 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings

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<td>APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM</td>
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Artist Diploma (AD) in the field of Horn Performance

Program Learning Outcomes for the Artist Diploma

Upon completing the Artist Diploma, students will be able to:

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2. Master intellectually the stylistic differences when performing music of the Baroque, Classical, Romantic, modern and contemporary eras and be able to apply them in performance.

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Additional Information
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Artist Diploma (AD) in the field of Oboe Performance

Program Learning Outcomes for the Artist Diploma

Upon completing the Artist Diploma, students will be able to:

1. Demonstrate the technical mastery and musical expertise requisite to having a significant professional career in their chosen area of performance.
2. Master intellectually the stylistic differences when performing music of the Baroque, Classical, Romantic, modern and contemporary eras and be able to apply them in performance.
3. Accumulate a significantly expanded and diverse list of repertoire.
4. Be equipped with multiple extra-musical career skills.

Requirements for the Artist Diploma

For general university requirements, see Diploma Programs (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the Artist Diploma in any field of music performance must complete:

- A minimum of 41 credit hours to satisfy diploma requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
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Footnotes and Additional Information

¹ Students pursuing the Artist Diploma in all fields of music performance must perform two (2) recitals with the exception of students in the field of Opera Performance, who are not required to perform recitals.

Course List to Satisfy Requirements

Academic Coursework

Academic Coursework is comprised of a minimum of 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings

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Artist Diploma (AD) in the field of Opera Performance

Program Learning Outcomes for the Artist Diploma

Upon completing the Artist Diploma, students will be able to:

1. Demonstrate the technical mastery and musical expertise requisite to having a significant professional career in their chosen area of performance.
2. Master intellectually the stylistic differences when performing music of the Baroque, Classical, Romantic, modern and contemporary eras and be able to apply them in performance.
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**Academic Coursework**

**Select 2 courses from the Music Career and Skills Enhancement course offerings (see course list below)**

Total Credit Hours: 41

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Artist Diploma (AD) in the field of Orchestral Conducting

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2. Master intellectually the stylistic differences when performing music of the Baroque, Classical, Romantic, modern and contemporary eras and be able to apply them in performance.
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Additional Information
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Opportunities for the Artist Diploma
Other Musical Opportunities
Lectures and Performances
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Additional Information
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Artist Diploma (AD) in the field of Organ Performance

Program Learning Outcomes for the Artist Diploma

Upon completing the Artist Diploma, students will be able to:

1. Demonstrate the technical mastery and musical expertise requisite to having a significant professional career in their chosen area of performance.
2. Master intellectually the stylistic differences when performing music of the Baroque, Classical, Romantic, modern and contemporary eras and be able to apply them in performance.
3. Accumulate a significantly expanded and diverse list of repertoire.
4. Be equipped with multiple extra-musical career skills.

Requirements for the Artist Diploma

For general university requirements, see Diploma Programs (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the Artist Diploma in any field of music performance must complete:

• A minimum of 41 credit hours to satisfy diploma requirements.
• A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
• A minimum of 24 credit hours must be taken at Rice University.
• A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
• A minimum overall GPA of 2.67 or higher in all Rice coursework.

2019-2020 General Announcements
PDF Generated 1/29/2020
• A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the diploma program.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

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### Diploma Requirements

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<td>INDIVIDUAL AND COMMITTEE INSTRUCTION FOR ARTIST DIPLOMA (minimum of 4 semesters)</td>
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<tr>
<td>MUSI 761</td>
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<td>MUSI 762</td>
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<td></td>
<td>Academic Coursework</td>
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<tr>
<td></td>
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Total Credit Hours 41

### Footnotes and Additional Information

1 Students pursuing the Artist Diploma in all fields of music performance must perform two (2) recitals with the exception of students in the field of Opera Performance, who are not required to perform recitals.

### Course List to Satisfy Requirements

#### Academic Coursework

Academic Coursework is comprised of a minimum of 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings

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### Policies for the Artist Diploma

#### Shepherd School of Music Graduate Program Handbook

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#### Academic Standards

##### Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

##### Grading Policy

A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of C+ (2.33 grade points) or lower in their major applied area, whether for consecutive semesters or not, the
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Additional Information
For additional information, please see the Shepherd School of Music website at: https://music.rice.edu

Artist Diploma (AD) in the field of Percussion Performance

Program Learning Outcomes for the Artist Diploma

Upon completing the Artist Diploma, students will be able to:

1. Demonstrate the technical mastery and musical expertise requisite to having a significant professional career in their chosen area of performance.
2. Master intellectually the stylistic differences when performing music of the Baroque, Classical, Romantic, modern and contemporary eras and be able to apply them in performance.
3. Accumulate a significantly expanded and diverse list of repertoire.
4. Be equipped with multiple extra-musical career skills.

Requirements for the Artist Diploma

For general university requirements, see Diploma Programs (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the Artist Diploma in any field of music performance must complete:

- A minimum of 41 credit hours to satisfy diploma requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the diploma program.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

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Diploma Requirements

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Academic Coursework

Select 2 courses from the Music Career and Skills Enhancement course offerings (see course list below)

Total Credit Hours 41

Footnotes and Additional Information

¹ Students pursuing the Artist Diploma in all fields of music performance must perform two (2) recitals with the exception of students in the field of Opera Performance, who are not required to perform recitals.

Course List to Satisfy Requirements

Academic Coursework

Academic Coursework is comprised of a minimum of 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings
Artist Diploma (AD) in the field of Piano Performance

Program Learning Outcomes for the Artist Diploma

Upon completing the Artist Diploma, students will be able to:

1. Demonstrate the technical mastery and musical expertise requisite to having a significant professional career in their chosen area of performance.
2. Master intellectually the stylistic differences when performing music of the Baroque, Classical, Romantic, modern and contemporary eras and be able to apply them in performance.

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Course List to Satisfy Requirements

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<td>MUSI 501</td>
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<td>CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS</td>
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<td>TECHNOLOGY FOR MUSICIANS</td>
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<td>FUNDAMENTALS OF PRIVATE TEACHING</td>
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<td>THE ART AND BUSINESS OF STUDIO TEACHING</td>
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<td>THEMATIC PROGRAMMING: THE ART OF THE RECITAL</td>
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<td>MUSI 532</td>
<td>THE FELDENKRAIS METHOD AND THE MUSICIAN’S BODY</td>
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<td>MUSI 538</td>
<td>THE ART OF PERFORMANCE: PRESENCE ON STAGE</td>
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<td>APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM</td>
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Footnotes and Additional Information

1 Students pursuing the Artist Diploma in all fields of music performance must perform two (2) recitals with the exception of students in the field of Opera Performance, who are not required to perform recitals.

Policies for the Artist Diploma

Shepherd School of Music Graduate Program Handbook

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Artist Diploma (AD) in the field of Trombone Performance
Program Learning Outcomes for the Artist Diploma
Upon completing the Artist Diploma, students will be able to:
1. Demonstrate the technical mastery and musical expertise requisite to having a significant professional career in their chosen area of performance.
2. Master intellectually the stylistic differences when performing music of the Baroque, Classical, Romantic, modern and contemporary eras and be able to apply them in performance.
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Rice University

MUSI 763 ARTIST DIPLOMA SPECIAL PROJECT (minimum of 2 semesters) 3
MUSI 764 ARTIST DIPLOMA PERFORMANCE (minimum of 4 semesters) 3

Academic Coursework
Select 2 courses from the Music Career and Skills Enhancement course offerings (see course list below) 4

Total Credit Hours 41

Footnotes and Additional Information
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Course List to Satisfy Requirements
Academic Coursework
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<td>CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS</td>
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<td>MUSIC AND PERFORMANCE: THE MIND/BODY CONNECTION</td>
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<td>TECHNOLOGY FOR MUSICIANS</td>
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<td>THE FELDENKRAIS METHOD AND THE MUSICIAN’S BODY</td>
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<td>THE ART OF PERFORMANCE: PRESENCE ON STAGE</td>
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<td>APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM</td>
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Additional Information
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Artist Diploma (AD) in the field of Trumpet Performance

Program Learning Outcomes for the Artist Diploma
Upon completing the Artist Diploma, students will be able to:

1. Demonstrate the technical mastery and musical expertise requisite to having a significant professional career in their chosen area of performance.
2. Master intellectually the stylistic differences when performing music of the Baroque, Classical, Romantic, modern and contemporary eras and be able to apply them in performance.
3. Accumulate a significantly expanded and diverse list of repertoire.
4. Be equipped with multiple extra-musical career skills.

Requirements for the Artist Diploma
For general university requirements, see Diploma Programs (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the Artist Diploma in any field of music performance must complete:

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<td>MUSI 761</td>
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<td>MUSI 762</td>
<td>ARTIST DIPLOMA SEMINAR</td>
<td>3</td>
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<tr>
<td>MUSI 763</td>
<td>ARTIST DIPLOMA SPECIAL PROJECT</td>
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<td></td>
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<td>MUSI 764</td>
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Academic Coursework
Select 2 courses from the Music Career and Skills Enhancement course offerings (see course list below) 4

Total Credit Hours 41

Footnotes and Additional Information

1 Students pursuing the Artist Diploma in all fields of music performance must perform two (2) recitals with the exception of students in the field of Opera Performance, who are not required to perform recitals.

Course List to Satisfy Requirements

Academic Coursework
Academic Coursework is comprised of a minimum of 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings

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Opportunities for the Artist Diploma

Other Musical Opportunities

Lectures and Performances

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Additional Information

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Artist Diploma (AD) in the field of Tuba Performance

Program Learning Outcomes for the Artist Diploma

Upon completing the Artist Diploma, students will be able to:

1. Demonstrate the technical mastery and musical expertise requisite to having a significant professional career in their chosen area of performance.
2. Master intellectually the stylistic differences when performing music of the Baroque, Classical, Romantic, modern and contemporary eras and be able to apply them in performance.
3. Accumulate a significantly expanded and diverse list of repertoire.
4. Be equipped with multiple extra-musical career skills.

Requirements for the Artist Diploma

For general university requirements, see Diploma Programs (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the Artist Diploma in any field of music performance must complete:

- A minimum of 41 credit hours to satisfy diploma requirements.
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- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
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- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the diploma program.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://
Artist Diploma (AD) in the field of Tuba Performance

In combination with the Performance major, students are required to complete an Artist Diploma (AD) in the field of Tuba Performance. These requirements must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

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Diploma Requirements

### Program Requirements

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<td>ARTIST DIPLOMA PERFORMANCE (minimum of 4 semesters )</td>
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### Academic Coursework

Select 2 courses from the Music Career and Skills Enhancement course offerings (see course list below)  

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Footnotes and Additional Information

1. Students pursuing the Artist Diploma in all fields of music performance must perform two (2) recitals with the exception of students in the field of Opera Performance, who are not required to perform recitals.

Course List to Satisfy Requirements

Academic Coursework

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Artist Diploma (AD) in the field of Viola Performance

Program Learning Outcomes for the Artist Diploma

Upon completing the Artist Diploma, students will be able to:

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Total Credit Hours 41

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¹ Students pursuing the Artist Diploma in all fields of music performance must perform two (2) recitals with the exception of students in the field of Opera Performance, who are not required to perform recitals.

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Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Additional Information
For additional information, please see the Shepherd School of Music website at: https://music.rice.edu (https://music.rice.edu/)

Opportunities for the Artist Diploma
Other Musical Opportunities

Lectures and Performances
A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

Additional Information
For additional information, please see the Shepherd School of Music website at: https://music.rice.edu (http://music.rice.edu/)

Artist Diploma (AD) in the field of Violin Performance
Program Learning Outcomes for the Artist Diploma

Upon completing the Artist Diploma, students will be able to:

1. Demonstrate the technical mastery and musical expertise requisite to having a significant professional career in their chosen area of performance.
2. Master intellectually the stylistic differences when performing music of the Baroque, Classical, Romantic, modern and contemporary eras and be able to apply them in performance.
3. Accumulate a significantly expanded and diverse list of repertoire.
4. Be equipped with multiple extra-musical career skills.

Requirements for the Artist Diploma
For general university requirements, see Diploma Programs (p. 68). For additional requirements, regulations, and procedures for all graduate...
programs, please see All Graduate Students (p. 55). Students pursuing the Artist Diploma in any field of music performance must complete:

- A minimum of 41 credit hours to satisfy diploma requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the diploma program.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

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<tr>
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<tbody>
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**Diploma Requirements**

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<tr>
<td>MUSI 760</td>
<td>INDIVIDUAL AND COMMITTEE INSTRUCTION FOR ARTIST DIPLOMA (minimum of 4 semesters)</td>
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<tr>
<td>MUSI 761</td>
<td>ARTIST DIPLOMA RECITAL</td>
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<td>ARTIST DIPLOMA SPECIAL PROJECT (minimum of 2 semesters)</td>
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<td>MUSI 764</td>
<td>ARTIST DIPLOMA PERFORMANCE (minimum of 4 semesters)</td>
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<tr>
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<td>Academic Coursework</td>
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<tr>
<td></td>
<td>Select 2 courses from the Music Career and Skills Enhancement course offerings (see course list below)</td>
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</table>

Total Credit Hours 41

**Footnotes and Additional Information**

1 Students pursuing the Artist Diploma in all fields of music performance must perform two (2) recitals with the exception of students in the field of Opera Performance, who are not required to perform recitals.

**Course List to Satisfy Requirements**

**Academic Coursework**

Academic Coursework is comprised of a minimum of 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings

**Music Career and Skills Enhancement**

<table>
<thead>
<tr>
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<td>ADVANCED MENTAL TRAINING</td>
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<td>MGMT 621</td>
<td>THE NEW ENTERPRISE</td>
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<td>MGMT 625</td>
<td>DESIGN THINKING</td>
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<td>MGMT 629</td>
<td>BUSINESS PLAN DEVELOPMENT</td>
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<td>MGMT 676</td>
<td>SOCIAL ENTERPRISE</td>
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<tr>
<td>MUSI 413</td>
<td>INTRODUCTION TO DALCROZE EURHYTHMICS</td>
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<tr>
<td>MUSI 500</td>
<td>IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES</td>
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<tr>
<td>MUSI 501</td>
<td>ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING</td>
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<td>MUSI 502</td>
<td>CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS</td>
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<tr>
<td>MUSI 503</td>
<td>MUSIC AND PERFORMANCE: THE MIND/ BODY CONNECTION</td>
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<td>MUSI 507</td>
<td>TECHNOLOGY FOR MUSICIANS</td>
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<td>MUSI 508</td>
<td>FUNDAMENTALS OF PRIVATE TEACHING</td>
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<td>MUSI 510</td>
<td>PROFESSIONAL DEVELOPMENT FOR MUSICIANS</td>
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<td>MUSI 515</td>
<td>MUSIC ENTREPRENEURSHIP</td>
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<td>MUSI 518</td>
<td>THE ART AND BUSINESS OF STUDIO TEACHING</td>
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<td>MUSI 519</td>
<td>THEMATIC PROGRAMMING: THE ART OF THE RECITAL</td>
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<tr>
<td>MUSI 532</td>
<td>THE FELDENKRAIS METHOD AND THE MUSICIAN'S BODY</td>
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<td>MUSI 538</td>
<td>THE ART OF PERFORMANCE: PRESENCE ON STAGE</td>
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<tr>
<td>MUSI 540</td>
<td>APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM</td>
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</tbody>
</table>

**Policies for the Artist Diploma**

Shepherd School of Music Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Shepherd School of Music publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Shepherd_School_of_Music_Graduate_Handbook.pdf

**Academic Standards**

**Curriculum and Degree Requirements**

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

**Grading Policy**

A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner.
A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student's work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of C+ (2.33 grade points) or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

**Note:** For music history and musicology majors a grade of C+ (2.33 grade points) or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum overall grade point average of 2.67 is necessary for graduation.

**Leaves of Absence and Voluntary Withdrawal**

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean's office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudit. Students should explain the reasons for their withdrawal to the dean before leaving campus.

**Additional Information**

For additional information, please see the Shepherd School of Music website at: [https://music.rice.edu](https://music.rice.edu)

**Opportunities for the Artist Diploma**

**Other Musical Opportunities**

**Lectures and Performances**

A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

**Additional Information**

For additional information, please see the Shepherd School of Music website at: [https://music.rice.edu](https://music.rice.edu)

### Bachelor of Arts (BA) Degree with a Major in Music

**Program Learning Outcomes for the BA Degree with a Major in Music**

Upon completing the BA degree with a major in Music, students will be able to:

1. Demonstrate an intermediate level of technical and musical competence in performance.

2. Possess rudimentary skills in music theory and an understanding of how those skills are related to music performance.

3. Acquire a fundamental understanding and appreciation of the various historical periods of music literature.

### Requirements for the BA Degree with a Major in Music

For general university requirements, see **Graduation Requirements (p. 26).** Students pursuing the BA degree with a major in Music must complete:

- A minimum of 19 courses (43-51 credit hours, depending on course selection) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 14 courses (30 credit hours) taken at the 300-level or above.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor, or where applicable, the department's Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major's Official Certifier [https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/].) Students and their academic advisors should identify and clearly document the courses to be taken.

#### Summary

<table>
<thead>
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<th>Code</th>
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<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Music</td>
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#### Degree Requirements

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<th>Title</th>
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<td>MUSI 211</td>
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<tr>
<td>MUSI 212</td>
<td>THEORY II</td>
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</tr>
<tr>
<td>MUSI 311</td>
<td>THEORETICAL STUDIES III</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 312</td>
<td>THEORETICAL STUDIES IV</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Select 1 course from the following:</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 316 / FILM 323</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 378 / ASIA 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
<td>3</td>
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<tr>
<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
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<td>ELECTRONIC MUSIC COMPOSITION</td>
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<tr>
<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
<td></td>
</tr>
<tr>
<td>MUSI 416</td>
<td>ORCHESTRATION</td>
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</tr>
<tr>
<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
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<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
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<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
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<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
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<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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</table>
MUSI 613 TONAL COUNTERPOINT
MUSI 617 MUSIC SINCE 1950

**Aural Skills and Performance Techniques**

MUSI 231 AURAL SKILLS AND PERFORMANCE TECHNIQUE I 2
MUSI 232 AURAL SKILLS AND PERFORMANCE TECHNIQUE II 2

**Music History**

MUSI 222 / MDEM 222 MEDIEVAL AND RENAISSANCE ERAS 3
MUSI 321 BAROQUE AND EARLY CLASSICAL ERAS 3
MUSI 322 CLASSICAL AND ROMANTIC ERAS 3
MUSI 421 THE MODERN ERA 3

**Individual and Ensemble Study**

Select a minimum of 4 semesters from the following: 1

Any 300-level individual instrumental or vocal study course (see course list below)

Any 400-level individual instrumental or vocal study course (see course list below)

Select a minimum of 4 semesters from the following: 4-8

- MUSI 335 UNDERGRADUATE CHORUS
- MUSI 337 UNDERGRADUATE ORCHESTRA

**Total Credit Hours Required for the Major in Music** 43-51

**Additional Credit Hours to Complete BA Degree Requirements**

- University Graduation Requirements (p. 26) 7
- 60

**Total Credit Hours** 120

**Footnotes and Additional Information**

1 Students in the BA degree program who wish to continue taking private lessons beyond the required four (4) semesters of individual instrumental and/or vocal study must obtain permission from the dean of the Shepherd School of Music.

**Policies for the BA Degree with a Major in Music**

**Admission**

The Shepherd School does not admit students to the BA degree with a major in Music. It is provided as an option for those BMus performance majors who no longer wish to pursue the performance degree.

**Academic Standards**

**Curriculum and Degree Requirements**

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

**Grading Policy**

A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner:

- A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student's work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.
• If a student receives a second semester of C+ (2.33 grade points) or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a BMus degree seeking student and merit scholarship from the Shepherd School will be discontinued.

**Please Note:** For music history and musicology majors, a grade of C+ (2.33 grade points) or lower in any music history course is considered unsatisfactory and will be evaluated as noted above. For music theory majors, a grade of C+ (2.33 grade points) or lower in any advanced music theory course is considered unsatisfactory and will be evaluated as noted above.

**Leaves of Absence and Voluntary Withdrawal**
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudit. Students should explain the reasons for their withdrawal to the dean before leaving campus.

**Examination**
At the end of each semester, a jury examination in applied music may be given over the material studied during the semester.

**Performance**
Students are expected to perform frequently during their residence at Rice. Students are expected to attend both faculty and student recitals. In addition, all music majors must participate in the school’s conducted ensembles as assigned.

**Transfer Credit**
For Rice University’s policy regarding transfer credit, see [Transfer Credit](p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [https://oaa.rice.edu](https://oaa.rice.edu). Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

**Departmental Transfer Credit Guidelines**
Students pursuing the BA degree with a major in Music should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

**Additional Information**
For additional information, please see the Shepherd School of Music website: [https://music.rice.edu](https://music.rice.edu)

**Opportunities for the BA Degree with a Major in Music**

**Academic Honors**
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see [Latin Honors](p. 48) (*summa cum laude, magna cum laude, and cum laude*) and [Distinction in Research and Creative Work](p. 48). Some departments have department-specific Honors awards or designations.

**Other Musical Opportunities**

**Lectures and Performances**
A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

**Bachelor of Music (BMus) Degree with a Major in Bassoon Performance**

**Program Learning Outcomes for the BMus Degree**
Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student’s major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

**Requirements for the BMus Degree**

For general university requirements, see [Graduation Requirements](p. 26). Students pursuing the BMus degree must complete:

- The requirements for one major offered by the BMus degree program.
- A minimum of 120 credit hours to satisfy degree requirements.

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s [Official Certifier](https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.
Summary

Total Credit Hours Required for the Major in Bassoon Performance 83
Total Credit Hours Required for the BMus Degree with a Major in Bassoon Performance 120

Degree Requirements

Music Theory

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Select 1 course from the following:

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<tr>
<td>MUSI 316 / FILM 323</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
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<tr>
<td>MUSI 378 / ASIA 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
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<td>MODAL COUNTERPOINT</td>
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<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
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<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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<td>MUSI 613</td>
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<tr>
<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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Aural Skills and Performance Techniques

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<td>AURAL SKILLS AND PERFORMANCE TECHNIQUE II</td>
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<td>MUSI 331</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES III</td>
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<td>MUSI 332</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES IV</td>
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Music History

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<td>BAROQUE AND EARLY CLASSICAL ERAS</td>
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<td>THE MODERN ERA</td>
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Individual and Ensemble Study

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<tr>
<td>MUSI 457</td>
<td>BASSOON FOR MAJORS (minimum of 8 semesters)</td>
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<tr>
<td>MUSI 337</td>
<td>UNDERGRADUATE ORCHESTRA (minimum of 8 semesters)</td>
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<tr>
<td>MUSI 338</td>
<td>UNDERGRADUATE CHAMBER MUSIC (minimum of 4 semesters)</td>
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MUSI 339 | UNDERGRADUATE ORCHESTRAL REPertoire (minimum of 4 semesters) | 1            |

Recitals

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<td>MUSI 441</td>
<td>SENIOR RECITAL</td>
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</table>

Piano Proficiency Exam

Students must complete and pass the Piano Proficiency Exam

Total Credit Hours Required for the Major in Bassoon Performance 83

Total Credit Hours 120

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

Recommended

It is recommended, though not required, for students to complete MUSI 723.

Policies for the BMus Degree

Admission

An audition, in person, is required of each undergraduate applicant. A recorded audition may be considered in lieu of a live audition in extreme circumstances. The Shepherd School faculty and the university’s Committee on Admission jointly determine admission, the latter basing its evaluation on successful academic achievement and other standards of college admission. Transfer applicants from other colleges, conservatories, and universities must audition, and take placement exams in both music history and music theory. Once admitted, their prior preparation in music is assessed, which may reduce the required period of study at Rice.

Academic Standards

Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy

A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner:

- A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.
- If a student receives a second semester of C+ (2.33 grade points) or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a BMus degree seeking...
student and merit scholarship from the Shepherd School will be discontinued.

**Please Note:** For music history and musicology majors, a grade of C+ (2.33 grade points) or lower in any music history course is considered unsatisfactory and will be evaluated as noted above. For music theory majors, a grade of C+ (2.33 grade points) or lower in any advanced music theory course is considered unsatisfactory and will be evaluated as noted above.

**Leaves of Absence and Voluntary Withdrawal**

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudit. Students should explain the reasons for their withdrawal to the dean before leaving campus.

**Examinations**

At the end of each semester, a jury examination in applied music may be given over the material studied during the semester. All degree candidates except BA students must demonstrate keyboard proficiency by examination. If students have little or no knowledge of the keyboard, they should enroll in secondary piano at the beginning of their first semester and continue study until they can meet the examination requirements.

**Performance**

Students are expected to perform frequently during their residence at Rice. Performance majors must present at least two full recitals. Composition and conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all music majors must participate in the school’s conducted ensembles as assigned.

**Transfer Credit**

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [https://oaa.rice.edu](https://oaa.rice.edu). Students are encouraged to meet with their departmental transfer credit advisor when considering transfer credit possibilities.

**Departmental Transfer Credit Guidelines**

Students pursuing the BMus degree should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

**Additional Information**

For additional information, please see the Shepherd School of Music website: [https://music.rice.edu](https://music.rice.edu/)

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**Opportunities for the BMus Degree**

**Academic Honors**

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see [Latin Honors](p. 48) (summa cum laude, magna cum laude, and cum laude) and [Distinction in Research and Creative Work](p. 48). Some departments have department-specific Honors awards or designations.

**BMus/MMus Honors Program**

Shepherd School students who demonstrate truly exceptional musical and academic accomplishment may apply for the BMus/MMus five-year coordinated program. This program, often referred to in the school as the BMus/MMus Honors Program, allows for the completion and awarding of both the BMus and MMus degrees concurrently. Application to this program is made in the student’s fifth or sixth semester of undergraduate studies.

The same general university requirements apply, but students seeking the combined BMus/MMus degrees must complete a total of at least 150 semester hours by graduation. The number of required hours varies according to major area.

The first five semesters of course work in this program parallel the core curriculum of the bachelor’s degrees. The sixth semester is a transitional semester during which students qualify for admission to the combined program. For further information, including application procedures, see the Shepherd School Student Handbook.

**Other Musical Opportunities**

**Lectures and Performances**

A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

**Additional Information**

For additional information, please see the Shepherd School of Music website: [https://music.rice.edu](https://music.rice.edu/)

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**Bachelor of Music (BMus) Degree with a Major in Cello Performance**

**Program Learning Outcomes for the BMus Degree**

Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student’s major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

Requirements for the BMus Degree

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BMus degree must complete:

- The requirements for one major offered by the BMus degree program.
- A minimum of 120 credit hours to satisfy degree requirements.

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier [https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/].) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<th>Code</th>
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<td>Total Credit Hours Required for the BMus Degree with a Major in Cello Performance</td>
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Degree Requirements

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<td>MUSI 212</td>
<td>THEORY II</td>
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<td>MUSI 311</td>
<td>THEORETICAL STUDIES III</td>
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<td>BASIC ELECTRONIC MUSIC</td>
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<td>ELECTRONIC MUSIC COMPOSITION</td>
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<td>MUSIC BUSINESS AND LAW</td>
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<td>MUSI 416</td>
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<td>MUSIC FOR MEDIA</td>
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<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
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<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
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<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
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Aural Skills and Performance Techniques

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<td>MUSI 338</td>
<td>UNDERGRADUATE CHAMBER MUSIC (minimum of 6 semesters)</td>
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<td>MUSI 339</td>
<td>UNDERGRADUATE ORCHESTRAL REPERTOIRE (minimum of 3 semesters)</td>
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Recitals

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Piano Proficiency Exam

Students must complete and pass the Piano Proficiency Exam

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<tr>
<th>Code</th>
<th>Title</th>
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<td>Total Credit Hours Required for the Major in Cello Performance</td>
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<tr>
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<td>University Graduation Requirements (p. 26) *</td>
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<td>Total Credit Hours</td>
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</table>

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

Policies for the BMus Degree Admission

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Academic Standards

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Departmental Transfer Credit Guidelines
Students pursuing the BMus degree should be aware of the following departmental transfer credit guidelines:

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Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu/

Opportunities for the BMus Degree

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

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Other Musical Opportunities

Lectures and Performances
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Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu/

Bachelor of Music (BMus) Degree with a Major in Clarinet Performance

Program Learning Outcomes for the BMus Degree

Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student’s major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

Requirements for the BMus Degree

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BMus degree must complete:

- The requirements for one major offered by the BMus degree program.
- A minimum of 120 credit hours to satisfy degree requirements.

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor, or where applicable, the department's Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

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<th>Title</th>
<th>Credit Hours</th>
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<tbody>
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<td>Total Credit Hours Required for the Major in Clarinet Performance</td>
<td>83</td>
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<tr>
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<td>Total Credit Hours Required for the BMus Degree with a Major in Clarinet Performance</td>
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Degree Requirements

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<tr>
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MUSI 212 THEORY II 3
MUSI 311 THEORETICAL STUDIES III 3
MUSI 312 THEORETICAL STUDIES IV 3
Select 1 course from the following: 3
MUSI 316 / FILM 323 EXPERIMENTAL SOUND AND VIDEO
MUSI 378 / ASIA 378 CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC
MUSI 403 BASIC ELECTRONIC MUSIC
MUSI 404 ELECTRONIC MUSIC COMPOSITION
MUSI 405 MUSIC BUSINESS AND LAW
MUSI 416 ORCHESTRATION
MUSI 417 MUSIC FOR MEDIA
MUSI 512 ANALYTICAL SYSTEMS
MUSI 513 MODAL COUNTERPOINT
MUSI 514 SCORE READING AND THEORY AT THE KEYBOARD
MUSI 517 EARLY MODERN MASTERS
MUSI 613 TONAL COUNTERPOINT
MUSI 617 MUSIC SINCE 1950

Aural Skills and Performance Techniques

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<td>AURAL SKILLS AND PERFORMANCE TECHNIQUE II</td>
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Music History

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<td>MUSI</td>
<td>BAROQUE AND EARLY CLASSICAL ERAS</td>
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<td>MUSI</td>
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<td>UNDERGRADUATE ORCHESTRA (minimum of 8 semesters)</td>
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<td>UNDERGRADUATE CHAMBER MUSIC (minimum of 4 semesters)</td>
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<td>UNDERGRADUATE ORCHESTRAL REPERTOIRE (minimum of 4 semesters)</td>
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Recitals

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Piano Proficiency Exam

Students must complete and pass the Piano Proficiency Exam

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<td>University Graduation Requirements (p. 26)</td>
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Total Credit Hours 120
Footnotes and Additional Information
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Admission
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At the end of each semester, a jury examination in applied music may be given over the material studied during the semester. All degree candidates except BA students must demonstrate keyboard proficiency by examination. If students have little or no knowledge of the keyboard, they should enroll in secondary piano at the beginning of their first semester and continue study until they can meet the examination requirements.

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Students are expected to perform frequently during their residence at Rice. Performance majors must present at least two full recitals. Composition and conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all music majors must participate in the school’s conducted ensembles as assigned.

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Departmental Transfer Credit Guidelines
Students pursuing the BMus degree should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu/

Opportunities for the BMus Degree

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

BMus/MMus Honors Program
Shepherd School students who demonstrate truly exceptional musical and academic accomplishment may apply for the BMus/MMus five-year coordinated program. This program, often referred to in the school as the BMus/MMus Honors Program, allows for the completion and awarding of both the BMus and MMus degrees concurrently. Application to this program is made in the student’s fifth or sixth semester of undergraduate studies.

The same general university requirements apply, but students seeking the combined BMus/MMus degrees must complete a total of at least
150 semester hours by graduation. The number of required hours varies according to major area.

The first five semesters of course work in this program parallel the core curriculum of the bachelor’s degrees. The sixth semester is a transitional semester during which students qualify for admission to the combined program. For further information, including application procedures, see the Shepherd School Student Handbook.

Other Musical Opportunities
Lectures and Performances
A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu/.

Bachelor of Music (BMus) Degree with a Major in Composition

Program Learning Outcomes for the BMus Degree

Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student’s major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

Requirements for the BMus Degree

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BMus degree must complete:

- The requirements for one major offered by the BMus degree program.
- A minimum of 120 credit hours to satisfy degree requirements.

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier.) Students and their academic advisors should identify and clearly document the courses to be taken.

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<tr>
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<td>Total Credit Hours Required for the BMus Degree with a Major in Composition</td>
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### Degree Requirements

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<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
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<tr>
<td>or MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
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<td>MUSI 331</td>
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<td>MUSI 332</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES IV</td>
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<td>BAROQUE AND EARLY CLASSICAL ERAS</td>
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<td>MUSI 401</td>
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<td>MUSI 303</td>
<td>UNDERGRAD COMPOSITION SEMINAR (minimum of 8 semesters)</td>
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<td>MUSI 281</td>
<td>SECONDARY PIANO</td>
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<td>MUSI 381</td>
<td>CONCENTRATION PIANO</td>
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<td>MUSI 441</td>
<td>SENIOR RECITAL</td>
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### Music History

<table>
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<td>BAROQUE AND EARLY CLASSICAL ERAS</td>
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<td>CLASSICAL AND ROMANTIC ERAS</td>
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<tr>
<td>MUSI 421</td>
<td>THE MODERN ERA</td>
<td>3</td>
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<tr>
<td></td>
<td>Composition Study</td>
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<tr>
<td>MUSI 401</td>
<td>COMPOSITION FOR MAJORS (minimum of 8 semesters)</td>
<td>3</td>
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<td>MUSI 303</td>
<td>UNDERGRAD COMPOSITION SEMINAR (minimum of 8 semesters)</td>
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<td>Select a minimum of 5 semesters from the following:</td>
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<td>MUSI 337</td>
<td>UNDERGRADUATE ORCHESTRA</td>
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<tr>
<td>MUSI 441</td>
<td>SENIOR RECITAL</td>
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Piano Proficiency Exam

Students must complete and pass the Piano Proficiency Exam. 

Total Credit Hours Required for the Major in Composition | 94-99
Univeristy Graduation Requirements (p. 26) | 21-26
Total Credit Hours | 120

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAR, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 BMus students majoring in Composition must enroll in MUSI 281 until the piano proficiency exam is passed, and then enroll in MUSI 381 to complete a minimum of 8 semesters of piano study.

Policies for the BMus Degree

Admission

An audition, in person, is required of each undergraduate applicant. A recorded audition may be considered in lieu of a live audition in extreme circumstances. The Shepherd School faculty and the university’s Committee on Admission jointly determine admission, the latter basing its evaluation on successful academic achievement and other standards of college admission. Transfer applicants from other colleges, conservatories, and universities must audition, and take placement exams in both music history and music theory. Once admitted, their prior preparation in music is assessed, which may reduce the required period of study at Rice.

Academic Standards

Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy

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Additional Information

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Opportunities for the BMus Degree

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Bachelor of Music (BMus) Degree with a Major in Double Bass Performance

Program Learning Outcomes for the BMus Degree

Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student’s major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

Requirements for the BMus Degree

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BMus degree must complete:

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<td>THEORY II</td>
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<tr>
<td>MUSI 311</td>
<td>THEORETICAL STUDIES III</td>
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<td>MUSI 312</td>
<td>THEORETICAL STUDIES IV</td>
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Select 1 course from the following: 3

- MUSI 316 / FILM 323 EXPERIMENTAL SOUND AND VIDEO
- MUSI 378 / ASIA 378 CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC
- MUSI 403 BASIC ELECTRONIC MUSIC
- MUSI 404 ELECTRONIC MUSIC COMPOSITION
- MUSI 405 MUSIC BUSINESS AND LAW
- MUSI 416 ORCHESTRATION
- MUSI 417 MUSIC FOR MEDIA
- MUSI 512 ANALYTICAL SYSTEMS
- MUSI 513 MODAL COUNTERPOINT
- MUSI 514 SCORE READING AND THEORY AT THE KEYBOARD
- MUSI 517 EARLY MODERN MASTERS
- MUSI 613 TONAL COUNTERPOINT
- MUSI 617 MUSIC SINCE 1950

**Degree Requirements**

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<tr>
<td>MUSI 316 / FILM 323</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
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</table>
AURAL SKILLS AND PERFORMANCE TECHNIQUES III

MUSI 331  AURAL SKILLS AND PERFORMANCE TECHNIQUES IV

Music History

MEDIEVAL AND RENAISSANCE ERAS

MUSI 222 / MDEM 222

BAROQUE AND EARLY CLASSICAL ERAS

MUSI 321

CLASSICAL AND ROMANTIC ERAS

MUSI 322

THE MODERN ERA

MUSI 421

UNDERGRADUATE ORCHESTRA (minimum of 8 semesters)

MUSI 337

UNDERGRADUATE CHAMBER MUSIC (minimum of 4 semesters)

MUSI 338

UNDERGRADUATE ORCHESTRAL REPERTOIRE (minimum of 4 semesters)

MUSI 339

Individual and Ensemble Study

DOUBLE BASS FOR MAJORS (minimum of 8 semesters)

MUSI 497

UNDERGRADUATE ORCHESTRA (minimum of 8 semesters)

MUSI 337

UNDERGRADUATE CHAMBER MUSIC (minimum of 4 semesters)

MUSI 338

UNDERGRADUATE ORCHESTRAL REPERTOIRE (minimum of 4 semesters)

MUSI 339

Recitals

JUNIOR RECITAL

MUSI 341

SENIOR RECITAL

MUSI 441

Piano Proficiency Exam

Students must complete and pass the Piano Proficiency Exam

Total Credit Hours Required for the Major in Double Bass Performance

83

University Graduation Requirements (p. 26)

37

Total Credit Hours

120

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAR, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

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**Additional Information**

For additional information, please see the Shepherd School of Music website: [https://music.rice.edu/](https://music.rice.edu/)

**Opportunities for the BMus Degree**

**Academic Honors**

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

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**Lectures and Performances**

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**Additional Information**

For additional information, please see the Shepherd School of Music website: [https://music.rice.edu/](https://music.rice.edu/)

**Bachelor of Music (BMus) Degree with a Major in Flute Performance**

**Program Learning Outcomes for the BMus Degree**

Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student's major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

**Requirements for the BMus Degree**

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BMus degree must complete:

- The requirements for one major offered by the BMus degree program.
- A minimum of 120 credit hours to satisfy degree requirements.

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor, or where applicable, the department's Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major's Official Certifier [https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/].) Students and their academic advisors should identify and clearly document the courses to be taken.

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<th>Code</th>
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**Degree Requirements**

<table>
<thead>
<tr>
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<th>Title</th>
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<td>MUSI 212</td>
<td>THEORY II</td>
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<td>MUSI 311</td>
<td>THEORETICAL STUDIES III</td>
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<td>MUSI 312</td>
<td>THEORETICAL STUDIES IV</td>
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<td>EXPERIMENTAL SOUND AND VIDEO</td>
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</tr>
<tr>
<td>FILM 323</td>
<td></td>
<td></td>
</tr>
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</table>
Bachelor of Music (BMus) Degree with a Major in Flute Performance

Policies for the BMus Degree

Admission
An audition, in person, is required of each undergraduate applicant. A recorded audition may be considered in lieu of a live audition in extreme circumstances. The Shepherd School faculty and the university's Committee on Admission jointly determine admission, the latter basing its evaluation on successful academic achievement and other standards of college admission. Transfer applicants from other colleges, conservatories, and universities must audition, and take placement exams in both music history and music theory. Once admitted, their prior preparation in music is assessed, which may reduce the required period of study at Rice.

Academic Standards

Curriculum and Degree Requirements
Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy
A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner:

- A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student's work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.
- If a student receives a second semester of C+ (2.33 grade points) or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a BMus degree seeking student and merit scholarship from the Shepherd School will be discontinued.

Please Note: For music history and musicology majors, a grade of C+ (2.33 grade points) or lower in any music history course is considered unsatisfactory and will be evaluated as noted above. For music theory majors, a grade of C+ (2.33 grade points) or lower in any advanced music theory course is considered unsatisfactory and will be evaluated as noted above.

Leaves of Absence and Voluntary Withdrawal
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean's office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Examinations
At the end of each semester, a jury examination in applied music may be given over the material studied during the semester. All degree candidates except BA students must demonstrate keyboard proficiency by examination. If students have little or no knowledge of the keyboard, they should enroll in secondary piano at the beginning of their first
semester and continue study until they can meet the examination requirements.

**Performance**

Students are expected to perform frequently during their residence at Rice. Performance majors must present at least two full recitals. Composition and conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all music majors must participate in the school’s conducted ensembles as assigned.

**Transfer Credit**

For Rice University’s policy regarding transfer credit, see [Transfer Credit (p. 33)](https://music.rice.edu/). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [https://oaa.rice.edu/](https://oaa.rice.edu/). Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

**Departmental Transfer Credit Guidelines**

Students pursuing the BMus degree should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

**Additional Information**

For additional information, please see the Shepherd School of Music website: [https://music.rice.edu/](https://music.rice.edu/)

**Opportunities for the BMus Degree**

**Academic Honors**

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see [Latin Honors (p. 48)](https://music.rice.edu/) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

**BMus/MMus Honors Program**

Shepherd School students who demonstrate truly exceptional musical and academic accomplishment may apply for the BMus/MMus five-year coordinated program. This program, often referred to in the school as the [BMus/MMus Honors Program](https://music.rice.edu/), allows for the completion and awarding of both the BMus and MMus degrees concurrently. Application to this program is made in the student’s fifth or sixth semester of undergraduate studies.

The same general university requirements apply, but students seeking the combined BMus/MMus degrees must complete a total of at least 150 semester hours by graduation. The number of required hours varies according to major area.

The first five semesters of course work in this program parallel the core curriculum of the bachelor’s degrees. The sixth semester is a transitional semester during which students qualify for admission to the combined program. For further information, including application procedures, see the Shepherd School Student Handbook.

**Other Musical Opportunities**

**Lectures and Performances**

A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

**Additional Information**

For additional information, please see the Shepherd School of Music website: [https://music.rice.edu/](https://music.rice.edu/)

**Bachelor of Music (BMus) Degree with a Major in Harp Performance**

**Program Learning Outcomes for the BMus Degree**

Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student’s major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

**Requirements for the BMus Degree**

For general university requirements, see [Graduation Requirements (p. 26)](https://music.rice.edu/). Students pursuing the BMus degree must complete:

- The requirements for one major offered by the BMus degree program.
- A minimum of 120 credit hours to satisfy degree requirements.

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s [Official Certifier](https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.
**Summary**

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**Degree Requirements**

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<td>EXPERIMENTAL SOUND AND VIDEO</td>
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<td>MUSI 421</td>
<td>THE MODERN ERA</td>
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<td>MUSI 487</td>
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<tr>
<td>MUSI 337</td>
<td>UNDERGRADUATE ORCHESTRA (minimum of 8 semesters)</td>
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**Piano Proficiency Exam**

Students must complete and pass the Piano Proficiency Exam

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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td>MUSI 441</td>
<td>SENIOR RECITAL</td>
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**Footnotes and Additional Information**

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

**Recommended**

It is recommended, though not required, that music students complete FREN 141 in addition to the requirements listed above. MUSI 338 may be recommended at the discretion of the instructor in addition to the requirements listed above.

**Policies for the BMus Degree**

**Admission**

An audition, in person, is required of each undergraduate applicant. A recorded audition may be considered in lieu of a live audition in extreme circumstances. The Shepherd School faculty and the university's Committee on Admission jointly determine admission, the latter basing its evaluation on successful academic achievement and other standards of college admission. Transfer applicants from other colleges, conservatories, and universities must audition, and take placement exams in both music history and music theory. Once admitted, their prior preparation in music is assessed, which may reduce the required period of study at Rice.

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Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu/.

Opportunities for the BMus Degree

Academic Honors
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The first five semesters of course work in this program parallel the core curriculum of the bachelor’s degrees. The sixth semester is a transitional semester during which students qualify for admission to the combined program. For further information, including application procedures, see the Shepherd School Student Handbook.

Other Musical Opportunities

Lectures and Performances
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Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu/.

Bachelor of Music (BMus) Degree with a Major in Horn Performance

Program Learning Outcomes for the BMus Degree
Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student's major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

Requirements for the BMus Degree

For general university requirements, see Graduation Requirements (p. 26).

Students pursuing the BMus degree must complete:

- The requirements for one major offered by the BMus degree program.
- A minimum of 120 credit hours to satisfy degree requirements.

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor, or where applicable, the department's Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major's Official Certifier.) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<th>Code</th>
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Degree Requirements

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<td>MUSI 311</td>
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Music History

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Individual and Ensemble Study

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<td>UNDERGRADUATE ORCHESTRA (minimum of 8 semesters)</td>
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Piano Proficiency Exam

Students must complete and pass the Piano Proficiency Exam

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<tr>
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<td>Performance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>University Graduation Requirements (p. 26) *</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>120</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

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Bachelor of Music (BMus) Degree with a Major in Music History

Program Learning Outcomes for the BMus Degree

Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student’s major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

Requirements for the BMus Degree

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BMus degree must complete:

- The requirements for one major offered by the BMus degree program.
- A minimum of 120 credit hours to satisfy degree requirements.
- All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.
- The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Credit Hours Required for the Major in Music History</td>
<td>76-87</td>
<td></td>
</tr>
<tr>
<td>Total Credit Hours Required for the BMus Degree with a Major in Music History</td>
<td>120</td>
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Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music Theory</td>
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<tr>
<td>MUSI 211</td>
<td>THEORY I</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 212</td>
<td>THEORY II</td>
<td>3</td>
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<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI 311</td>
<td>THEORETICAL STUDIES III</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 312</td>
<td>THEORETICAL STUDIES IV</td>
<td>3</td>
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<tr>
<td>Select 1 course from the following:</td>
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<td>3</td>
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<tr>
<td>MUSI 316 / FILM 323</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
<td></td>
</tr>
<tr>
<td>MUSI 378 / ASIA 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
<td></td>
</tr>
<tr>
<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
<td></td>
</tr>
<tr>
<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
<td></td>
</tr>
<tr>
<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
<td></td>
</tr>
<tr>
<td>MUSI 416</td>
<td>ORCHESTRATION</td>
<td></td>
</tr>
<tr>
<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
<td></td>
</tr>
<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
<td></td>
</tr>
<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
<td></td>
</tr>
<tr>
<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
<td></td>
</tr>
<tr>
<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
<td></td>
</tr>
<tr>
<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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</table>

Aural Skills and Performance Techniques

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
<td>MUSI 231</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUE I</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 232</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUE II</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 311</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES III</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 312</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES IV</td>
<td>2</td>
</tr>
</tbody>
</table>

Music History

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI 222 / MDEM 222</td>
<td>MEDIEVAL AND RENAISSANCE ERAS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 321</td>
<td>BAROQUE AND EARLY CLASSICAL ERAS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 322</td>
<td>CLASSICAL AND ROMANTIC ERAS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 421</td>
<td>THE MODERN ERA</td>
<td>3</td>
</tr>
</tbody>
</table>

Individual and Ensemble Study

Select a minimum of 6 semesters from Concentration Instrument or Voice (see course list below) 12-18
Select a minimum of 5 semesters from the following: 5-10

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>MUSI 335</td>
<td>UNDERGRADUATE CHORUS</td>
<td></td>
</tr>
<tr>
<td>MUSI 337</td>
<td>UNDERGRADUATE ORCHESTRA</td>
<td></td>
</tr>
</tbody>
</table>

Foreign Language

Select 1 year of a foreign language by completing course numbers 141 and 142 from language course offerings or equivalency as determined by university exam. German (GERM) is highly recommended 6

Advanced Musicology Coursework 12
Select 3 courses from Advanced Musicology courses/seminars (see course list below)
Select 1 additional course from Advanced Musicology courses/seminars or 1 Advanced Theory Course (see course list below)

Senior Thesis

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
<td>MUSI 449</td>
<td>UNDERGRADUATE INDEPENDENT STUDY</td>
<td>3</td>
</tr>
<tr>
<td>(2 semesters required, 1st semester)</td>
<td></td>
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</tr>
<tr>
<td>MUSI 449</td>
<td>UNDERGRADUATE INDEPENDENT STUDY</td>
<td>3</td>
</tr>
<tr>
<td>(2 semesters required, 2nd semester)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Piano Proficiency Exam

Students must complete and pass the Piano Proficiency Exam

Total Credit Hours Required for the Major in Music History 76-87

University Graduation Requirements (p. 26)*

Total Credit Hours 120

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAR upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

Instrumental or Vocal Study

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 351</td>
<td>CONCENTRATION FLUTE</td>
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<tr>
<td>MUSI 353</td>
<td>CONCENTRATION OBOE</td>
<td></td>
</tr>
<tr>
<td>MUSI 355</td>
<td>CONCENTRATION CLARINET</td>
<td></td>
</tr>
<tr>
<td>MUSI 357</td>
<td>CONCENTRATION BASSOON</td>
<td></td>
</tr>
<tr>
<td>MUSI 361</td>
<td>CONCENTRATION HORN</td>
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<tr>
<td>MUSI 363</td>
<td>CONCENTRATION TRUMPET</td>
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</tr>
<tr>
<td>MUSI 365</td>
<td>CONCENTRATION TROMBONE</td>
<td></td>
</tr>
<tr>
<td>MUSI 367</td>
<td>CONCENTRATION TUBA</td>
<td></td>
</tr>
<tr>
<td>MUSI 371</td>
<td>CONCENTRATION PERCUSSION</td>
<td></td>
</tr>
<tr>
<td>MUSI 373</td>
<td>CONCENTRATION VOICE</td>
<td></td>
</tr>
<tr>
<td>MUSI 381</td>
<td>CONCENTRATION PIANO</td>
<td></td>
</tr>
<tr>
<td>MUSI 383</td>
<td>CONCENTRATION ORGAN</td>
<td></td>
</tr>
<tr>
<td>MUSI 387</td>
<td>CONCENTRATION HARP</td>
<td></td>
</tr>
<tr>
<td>MUSI 391</td>
<td>CONCENTRATION VIOLIN</td>
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</tr>
<tr>
<td>MUSI 393</td>
<td>CONCENTRATION VIOLA</td>
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</tr>
<tr>
<td>MUSI 395</td>
<td>CONCENTRATION VIOLONCELLO</td>
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</tr>
<tr>
<td>MUSI 397</td>
<td>CONCENTRATION DOUBLE BASS</td>
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</table>

Advanced Musicology Courses

Select 3 courses from the following: 12-18

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
<td></td>
</tr>
<tr>
<td>MUSI 537</td>
<td>SATIE, COCTEAU, &amp; LES SIX: PARIS IN THE 1920s AND BEYOND</td>
<td></td>
</tr>
<tr>
<td>MUSI 543</td>
<td>MUSIC AND MODERNISM IN FRANCE</td>
<td></td>
</tr>
<tr>
<td>MUSI 551</td>
<td>MUSIC OF RICHARD STRAUSS</td>
<td></td>
</tr>
<tr>
<td>MUSI 623</td>
<td>J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION</td>
<td></td>
</tr>
<tr>
<td>MUSI 624</td>
<td>SEMINAR ON A SELECTED COMPOSER</td>
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<tr>
<td>MUSI 625</td>
<td>MOZART OPERAS</td>
<td></td>
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<tr>
<td>MUSI 626</td>
<td>THE CLASSICAL STYLE</td>
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</tr>
<tr>
<td>MUSI 627</td>
<td>ROMANTIC SONGS AND PIANO PIECES</td>
<td></td>
</tr>
<tr>
<td>MUSI 721</td>
<td>MUSIC OF SCHOENBERG</td>
<td></td>
</tr>
<tr>
<td>MUSI 722</td>
<td>MUSIC OF STRAVINSKY</td>
<td></td>
</tr>
</tbody>
</table>

Advanced Theory Courses

Select 1 course from the following (or select an additional Advanced Musicology Course) 3

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
<td></td>
</tr>
<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
<td></td>
</tr>
<tr>
<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
<td></td>
</tr>
<tr>
<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
<td></td>
</tr>
<tr>
<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>MUSI 606</td>
<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
<td></td>
</tr>
<tr>
<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
<td></td>
</tr>
<tr>
<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
<td></td>
</tr>
<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
<td></td>
</tr>
<tr>
<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND COMPOSTION</td>
<td></td>
</tr>
<tr>
<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
<td></td>
</tr>
<tr>
<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
<td></td>
</tr>
<tr>
<td>MUSI 712</td>
<td>SEMINAR IN ADVANCED ANALYSIS</td>
<td></td>
</tr>
<tr>
<td>MUSI 713</td>
<td>SPECIAL TOPICS IN ADVANCED ANALYSIS</td>
<td></td>
</tr>
<tr>
<td>MUSI 723</td>
<td>AESTHETICS OF MUSIC</td>
<td></td>
</tr>
</tbody>
</table>

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**Bachelor of Music (BMus) Degree with a Major in Music Theory**

**Program Learning Outcomes for the BMus Degree**

Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student’s major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

**Requirements for the BMus Degree**

For general university requirements, see [Graduation Requirements](#) (p. 26).

Students pursuing the BMus degree must complete:

- The requirements for one major offered by the BMus degree program.
- A minimum of 120 credit hours to satisfy degree requirements.

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s [Official Certifier](https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

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### Degree Requirements

#### Music Theory

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<td>MUSI 212</td>
<td>THEORY II</td>
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#### Aural Skills and Performance Techniques

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<td>AURAL SKILLS AND PERFORMANCE TECHNIQUE II</td>
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<td>MUSI 332</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES IV</td>
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#### Music History

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<td>BAROQUE AND EARLY CLASSICAL ERAS</td>
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<td>CLASSICAL AND ROMANTIC ERAS</td>
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<td>MUSI 421</td>
<td>THE MODERN ERA</td>
<td>3</td>
</tr>
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</table>

#### Music Academic Elective

- Select 1 music academic elective course (see below for course list) | 3

#### Ensemble

- Select a minimum of 5 semesters from the following: | 5-10
  - MUSI 335 UNDERGRADUATE CHORUS
  - MUSI 337 UNDERGRADUATE ORCHESTRA

#### Piano Study

- MUSI 381 CONCENTRATION PIANO (minimum of 4 semesters) | 2

#### Senior Project

- MUSI 449 UNDERGRADUATE INDEPENDENT STUDY (2 semesters required, 1st semester) | 3
- MUSI 449 UNDERGRADUATE INDEPENDENT STUDY (2 semesters required, 2nd semester) | 3

#### Piano Proficiency Exam

Students must complete and pass the Piano Proficiency Exam

**Total Credit Hours Required for the Major in Music Theory** 63-68  
**University Graduation Requirements** (p. 26) * 52-57

**Total Credit Hours** 120

**Footnotes and Additional Information**

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

#### Music Academic Elective

- Select 1 course from the following:
  - MUSI 422 RENAISSANCE MUSIC
  - MUSI 429 / MDEM 429 MUSIC OF THE MIDDLE AGES

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2019-2020 General Announcements

PDF Generated 1/29/2020
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<tr>
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<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
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<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
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<td>MUSI 525</td>
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<td>TOPICS IN EARLY MUSIC</td>
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<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
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<td>MUSI 529</td>
<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
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<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
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<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
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<td>MUSI 537</td>
<td>SATIE, COCTEAU, &amp; LES SIX: PARIS IN THE 1920s AND BEYOND</td>
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<td>MUSI 543</td>
<td>MUSIC AND MODERNISM IN FRANCE</td>
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<td>MUSI 551</td>
<td>MUSIC OF RICHARD STRAUSS</td>
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<tr>
<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
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<td>MUSI 606</td>
<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
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<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
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<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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<td>MUSI 621</td>
<td>SELECTED STUDIES IN MUSIC HISTORY</td>
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<td>MUSI 623</td>
<td>J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION</td>
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<td>MUSI 624</td>
<td>SEMINAR ON A SELECTED COMPOSER</td>
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<td>MUSI 625</td>
<td>MOZART OPERAS</td>
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<td>MUSI 626</td>
<td>THE CLASSICAL STYLE</td>
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<td>MUSI 627</td>
<td>ROMANTIC SONGS AND PIANO PIECES</td>
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<td>MUSI 721</td>
<td>MUSIC OF SCHOENBERG</td>
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<td>MUSI 722</td>
<td>MUSIC OF STRAVINSKY</td>
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<td>MUSI 723</td>
<td>AESTHETICS OF MUSIC</td>
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**Recommended**

It is recommended, though not required, that music students complete MUSI 338, in addition to the requirements listed above.

**Policies for the BMus Degree**

**Admission**

An audition, in person, is required of each undergraduate applicant. A recorded audition may be considered in lieu of a live audition in extreme circumstances. The Shepherd School faculty and the university’s Committee on Admission jointly determine admission, the latter basing its evaluation on successful academic achievement and other standards of college admission. Transfer applicants from other colleges, conservatories, and universities must audition, and take placement exams in both music history and music theory. Once admitted, their prior preparation in music is assessed, which may reduce the required period of study at Rice.

**Academic Standards**

**Curriculum and Degree Requirements**

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

**Grading Policy**

A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner:

- A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.
- If a student receives a second semester of C+ (2.33 grade points) or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a BMus degree seeking student and merit scholarship from the Shepherd School will be discontinued.

**Please Note:** For music history and musicology majors, a grade of C+ (2.33 grade points) or lower in any music history course is considered unsatisfactory and will be evaluated as noted above. For music theory majors, a grade of C+ (2.33 grade points) or lower in any advanced music theory course is considered unsatisfactory and will be evaluated as noted above.

**Leaves of Absence and Voluntary Withdrawal**

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

**Examinations**

At the end of each semester, a jury examination in applied music may be given over the material studied during the semester. All degree candidates except BA students must demonstrate keyboard proficiency by examination. If students have little or no knowledge of the keyboard, they should enroll in secondary piano at the beginning of their first semester and continue study until they can meet the examination requirements.

**Performance**

Students are expected to perform frequently during their residence at Rice. Performance majors must present at least two full recitals. Composition and conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all music majors must participate in the school's conducted ensembles as assigned.

**Transfer Credit**

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [https://oaa.rice.edu](https://oaa.rice.edu). Students are encouraged to meet with their
academic program’s transfer credit advisor when considering transfer credit possibilities.

**Departmental Transfer Credit Guidelines**

Students pursuing the BMus degree should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

**Additional Information**

For additional information, please see the Shepherd School of Music website: [https://music.rice.edu/](https://music.rice.edu/)

**Opportunities for the BMus Degree**

**Academic Honors**

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

**BMus/MMus Honors Program**

Shepherd School students who demonstrate truly exceptional musical and academic accomplishment may apply for the BMus/MMus five-year coordinated program. This program, often referred to in the school as the BMus/MMus Honors Program, allows for the completion and awarding of both the BMus and MMus degrees concurrently. Application to this program is made in the student’s fifth or sixth semester of undergraduate studies.

The same general university requirements apply, but students seeking the combined BMus/MMus degrees must complete a total of at least 150 semester hours by graduation. The number of required hours varies according to major area.

The first five semesters of course work in this program parallel the core curriculum of the bachelor’s degrees. The sixth semester is a transitional semester during which students qualify for admission to the combined program. For further information, including application procedures, see the Shepherd School Student Handbook.

**Other Musical Opportunities**

**Lectures and Performances**

A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

**Bachelor of Music (BMus) Degree with a Major in Oboe Performance**

**Program Learning Outcomes for the BMus Degree**

Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student’s major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

**Requirements for the BMus Degree**

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BMus degree must complete:

- The requirements for one major offered by the BMus degree program.
- A minimum of 120 credit hours to satisfy degree requirements.

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

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<th>Code</th>
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<th>Credit Hours</th>
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**Degree Requirements**

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<td>MUSI 212</td>
<td>THEORY II</td>
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<td>MUSI 311</td>
<td>THEORETICAL STUDIES III</td>
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<td>MUSI 312</td>
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**Music Theory**

- MUSI 211  THEORY I  3
- MUSI 212  THEORY II  3
- MUSI 311  THEORETICAL STUDIES III  3
- MUSI 312  THEORETICAL STUDIES IV  3

**Bachelor of Music (BMus) Degree with a Major in Oboe Performance**

- [https://music.rice.edu/](https://music.rice.edu/)
### Aural Skills and Performance Techniques

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<td>AURAL SKILLS AND PERFORMANCE TECHNIQUE II</td>
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<tr>
<td>MUSI 331</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES III</td>
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<tr>
<td>MUSI 332</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES IV</td>
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### Music History

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<td>MEDIEVAL AND RENAISSANCE ERAS</td>
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<td>MUSI 321</td>
<td>BAROQUE AND EARLY CLASSICAL ERAS</td>
<td>3</td>
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<td>MUSI 322</td>
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<td>MUSI 421</td>
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### Individual and Ensemble Study

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<td>MUSI 453</td>
<td>OBOE FOR MAJORS (minimum of 8 semesters)</td>
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<tr>
<td>MUSI 337</td>
<td>UNDERGRADUATE ORCHESTRA (minimum of 8 semesters)</td>
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<td>MUSI 338</td>
<td>UNDERGRADUATE CHAMBER MUSIC (minimum of 4 semesters)</td>
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<td>MUSI 339</td>
<td>UNDERGRADUATE ORCHESTRAL REPETTOIRE (minimum of 4 semesters)</td>
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### Recitals

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<td>MUSI 441</td>
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### Piano Proficiency Exam

Students must complete and pass the Piano Proficiency Exam.

### Total Credit Hours Required for the Major in Oboe Performance

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<td>Total Credit Hours</td>
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**Transfer Credit**

For Rice University's policy regarding transfer credit, see [Transfer Credit](https://music.rice.edu/) in the school's conducted ensembles as assigned. Students are expected to attend both faculty and student recitals. In addition, all music majors must participate in the school's conducted ensembles as assigned.

**Departmental Transfer Credit Guidelines**

Students pursuing the BMus degree should be aware of the following departmental transfer credit guidelines:

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**Additional Information**

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**Opportunities for the BMus Degree**

**Academic Honors**

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**Bachelor of Music (BMus) Degree with a Major in Organ Performance**

**Program Learning Outcomes for the BMus Degree**

Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student's major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

**Requirements for the BMus Degree**

For general university requirements, see [Graduation Requirements](https://music.rice.edu/) (p. 26). Students pursuing the BMus degree must complete:

- The requirements for one major offered by the BMus degree program.
- A minimum of 120 credit hours to satisfy degree requirements.

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Bachelor of Music (BMus) Degree with a Major in Organ Performance

Summary

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<th>Code</th>
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<td></td>
<td>Total Credit Hours Required for the Major in Organ Performance</td>
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<td>Total Credit Hours Required for the BMus Degree with a Major in Organ Performance</td>
<td>120</td>
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Degree Requirements

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Total Credit Hours 120

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

Policies for the BMus Degree

Admission

An audition, in person, is required of each undergraduate applicant. A recorded audition may be considered in lieu of a live audition in extreme circumstances. The Shepherd School faculty and the university's Committee on Admission jointly determine admission, the latter basing its evaluation on successful academic achievement and other standards of college admission. Transfer applicants from other colleges, conservatories, and universities must audition, and take placement exams in both music history and music theory. Once admitted, their prior preparation in music is assessed, which may reduce the required period of study at Rice.

Academic Standards

Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy

A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner:

• A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

• If a student receives a second semester of C+ (2.33 grade points) or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a BMus degree seeking student and merit scholarship from the Shepherd School will be discontinued.

Please Note: For music history and musicology majors, a grade of C+ (2.33 grade points) or lower in any music history course is considered unsatisfactory and will be evaluated as noted above. For music theory majors, a grade of C+ (2.33 grade points) or lower in any advanced music theory course is considered unsatisfactory and will be evaluated as noted above.

Leaves of Absence and Voluntary Withdrawal

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked
to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Examinations
At the end of each semester, a jury examination in applied music may be given over the material studied during the semester. All degree candidates except BA students must demonstrate keyboard proficiency by examination. If students have little or no knowledge of the keyboard, they should enroll in secondary piano at the beginning of their first semester and continue study until they can meet the examination requirements.

Performance
Students are expected to perform frequently during their residence at Rice. Performance majors must present at least two full recitals. Composition and conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all music majors must participate in the school’s conducted ensembles as assigned.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the BMus degree should be aware of the following departmental transfer credit guidelines:

• Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu/

Opportunities for the BMus Degree

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

BMus/MMus Honors Program
Shepherd School students who demonstrate truly exceptional musical and academic accomplishment may apply for the BMus/MMus five-year coordinated program. This program, often referred to in the school as the BMus/MMus Honors Program, allows for the completion and awarding of both the BMus and MMus degrees concurrently. Application to this program is made in the student’s fifth or sixth semester of undergraduate studies.

The same general university requirements apply, but students seeking the combined BMus/MMus degrees must complete a total of at least 150 semester hours by graduation. The number of required hours varies according to major area.

The first five semesters of course work in this program parallel the core curriculum of the bachelor’s degrees. The sixth semester is a transitional semester during which students qualify for admission to the combined program. For further information, including application procedures, see the Shepherd School Student Handbook.

Other Musical Opportunities

Lectures and Performances
A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu/

Bachelor of Music (BMus) Degree with a Major in Percussion Performance

Program Learning Outcomes for the BMus Degree
Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student’s major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

Requirements for the BMus Degree
For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BMus degree must complete:

• The requirements for one major offered by the BMus degree program.
• A minimum of 120 credit hours to satisfy degree requirements.

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the
Bachelor of Music (BMus) Degree with a Major in Percussion Performance

The Bachelor of Music (BMus) Degree with a Major in Percussion Performance requires a total of 83 credit hours. Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

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### Degree Requirements

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**Aural Skills and Performance Techniques**

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**Music History**

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### Piano Proficiency Exam

Students must complete and pass the Piano Proficiency Exam.

### University Graduation Requirements

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**Footnotes and Additional Information**

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### Policies for the BMus Degree

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**Additional Information**
For additional information, please see the Shepherd School of Music website: https://music.rice.edu/

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**Opportunities for the BMus Degree**

**Academic Honors**
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**BMus/MMus Honors Program**
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**Other Musical Opportunities**

**Lectures and Performances**
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**Additional Information**
For additional information, please see the Shepherd School of Music website: https://music.rice.edu/

**Bachelor of Music (BMus) Degree with a Major in Piano Performance**

**Program Learning Outcomes for the BMus Degree**
Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student's major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

**Requirements for the BMus Degree**

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BMus degree must complete:

- The requirements for one major offered by the BMus degree program.
- A minimum of 120 credit hours to satisfy degree requirements.

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor, or where applicable, the department's Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks//officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

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**Degree Requirements**

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**Aural Skills and Performance Techniques**

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<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 222 / MDEM 222</td>
<td>MEDIEVAL AND RENAISSANCE ERAS</td>
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<td>MUSI 321</td>
<td>BAROQUE AND EARLY CLASSICAL ERAS</td>
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<td>MUSI 322</td>
<td>CLASSICAL AND ROMANTIC ERAS</td>
<td>3</td>
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<tr>
<td>MUSI 421</td>
<td>THE MODERN ERA</td>
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**Individual and Ensemble Study**

<table>
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<tr>
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<tr>
<td>MUSI 481</td>
<td>PIANO FOR MAJORS (minimum of 8 semesters)</td>
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**Select a minimum of 8 semesters from the following:**

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<th>Code</th>
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<td>MUSI 335</td>
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<td>MUSI 389</td>
<td>COLLABORATIVE PIANO SKILLS</td>
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<td>MUSI 585</td>
<td>SONATA CLASS</td>
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<td>MUSI 642</td>
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<td>UNDERGRADUATE CHAMBER MUSIC</td>
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**Recitals**

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<tr>
<td>MUSI 441</td>
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**Total Credit Hours Required for the Major in Piano Performance**

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<td>Total Credit Hours Required for the Major in Piano Performance</td>
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**University Graduation Requirements (p. 26)**

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<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours</td>
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</table>

**Footnotes and Additional Information**

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

**Policies for the BMus Degree Admission**

An audition, in person, is required of each undergraduate applicant. A recorded audition may be considered in lieu of a live audition in extreme circumstances. The Shepherd School faculty and the university's Committee on Admission jointly determine admission, the latter basing its evaluation on successful academic achievement and other standards of college admission. Transfer applicants from other colleges, conservatories, and universities must audition, and take placement exams in both music history and music theory. Once admitted, their prior preparation in music is assessed, which may reduce the required period of study at Rice.
**Academic Standards**

**Curriculum and Degree Requirements**
Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

**Grading Policy**
A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner:

- A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.
- If a student receives a second semester of C+ (2.33 grade points) or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a BMus degree seeking student and merit scholarship from the Shepherd School will be discontinued.

**Please Note:** For music history and musicology majors, a grade of C+ (2.33 grade points) or lower in any music history course is considered unsatisfactory and will be evaluated as noted above. For music theory majors, a grade of C+ (2.33 grade points) or lower in any advanced music theory course is considered unsatisfactory and will be evaluated as noted above.

**Leaves of Absence and Voluntary Withdrawal**
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

**Examinations**
At the end of each semester, a jury examination in applied music may be given over the material studied during the semester. All degree candidates except BA students must demonstrate keyboard proficiency by examination. If students have little or no knowledge of the keyboard, they should enroll in secondary piano at the beginning of their first semester and continue study until they can meet the examination requirements.

**Performance**
Students are expected to perform frequently during their residence at Rice. Performance majors must present at least two full recitals. Composition and conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all music majors must participate in the school’s conducted ensembles as assigned.

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**Transfer Credit**
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [https://oaa.rice.edu](https://oaa.rice.edu). Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

**Departmental Transfer Credit Guidelines**
Students pursuing the BMus degree should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

**Additional Information**
For additional information, please see the Shepherd School of Music website: [https://music.rice.edu/](https://music.rice.edu/)

**Opportunities for the BMus Degree**

**Academic Honors**
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

**BMus/MMus Honors Program**
Shepherd School students who demonstrate truly exceptional musical and academic accomplishment may apply for the BMus/MMus five-year coordinated program. This program, often referred to in the school as the BMus/MMus Honors Program, allows for the completion and awarding of both the BMus and MMus degrees concurrently. Application to this program is made in the student’s fifth or sixth semester of undergraduate studies.

The same general university requirements apply, but students seeking the combined BMus/MMus degrees must complete a total of at least 150 semester hours by graduation. The number of required hours varies according to major area.

The first five semesters of course work in this program parallel the core curriculum of the bachelor’s degrees. The sixth semester is a transitional semester during which students qualify for admission to the combined program. For further information, including application procedures, see the Shepherd School Student Handbook.

**Other Musical Opportunities**

**Lectures and Performances**
A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.
Bachelor of Music (BMus) Degree with a Major in Trombone Performance

Program Learning Outcomes for the BMus Degree

Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student’s major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

Requirements for the BMus Degree

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BMus degree must complete:

- The requirements for one major offered by the BMus degree program.
- A minimum of 120 credit hours to satisfy degree requirements.

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td></td>
<td>Total Credit Hours Required for the BMus Degree with a Major in Trombone Performance</td>
<td>120</td>
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Degree Requirements

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<tr>
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<td>MUSI 311</td>
<td>THEORETICAL STUDIES III</td>
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<td>THEORETICAL STUDIES IV</td>
<td>3</td>
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<td>MUSI 316 / FILM 323</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
<td>3</td>
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<td>MUSI 378 / ASIA 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
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<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
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<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
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<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
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<td>MUSI 416</td>
<td>ORCHESTRATION</td>
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<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
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<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
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<td>MUSI 513</td>
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<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
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<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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Aural Skills and Performance Techniques

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<td>AURAL SKILLS AND PERFORMANCE TECHNIQUE I</td>
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Music History

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<td>MUSI 321</td>
<td>BAROQUE AND EARLY CLASSICAL ERAS</td>
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<td>MUSI 322</td>
<td>CLASSICAL AND ROMANTIC ERAS</td>
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</tr>
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<td>MUSI 421</td>
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Individual and Ensemble Study

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<td>MUSI 465</td>
<td>TROMBONE FOR MAJORS (minimum of 8 semesters)</td>
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<td>MUSI 337</td>
<td>UNDERGRADUATE ORCHESTRA (minimum of 8 semesters)</td>
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<td>MUSI 338</td>
<td>UNDERGRADUATE CHAMBER MUSIC (minimum of 4 semesters)</td>
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Recitals

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<tr>
<td>MUSI 441</td>
<td>SENIOR RECITAL</td>
<td>0</td>
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Piano Proficiency Exam

Students must complete and pass the Piano Proficiency Exam
Policies for the BMus Degree

Admission
An audition, in person, is required of each undergraduate applicant. A recorded audition may be considered in lieu of a live audition in extreme circumstances. The Shepherd School faculty and the university’s Committee on Admission jointly determine admission, the latter basing its evaluation on successful academic achievement and other standards of college admission. Transfer applicants from other colleges, conservatories, and universities must audition, and take placement exams in both music history and music theory. Once admitted, their prior preparation in music is assessed, which may reduce the required period of study at Rice.

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Curriculum and Degree Requirements
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Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu/

Opportunities for the BMus Degree
Academic Honors
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Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu/.

Bachelor of Music (BMus) Degree with a Major in Trumpet Performance
Program Learning Outcomes for the BMus Degree

Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student's major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

Requirements for the BMus Degree

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BMus degree must complete:

- The requirements for one major offered by the BMus degree program.
- A minimum of 120 credit hours to satisfy degree requirements.

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor, or where applicable, the department's Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

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<th>Code</th>
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**Degree Requirements**

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<td>MUSI 311</td>
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<td>MUSI 312</td>
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<td>MUSI 403</td>
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<td>EARLY MODERN MASTERS</td>
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<td>MUSI 617</td>
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<tr>
<td></td>
<td>Aural Skills and Performance Techniques</td>
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<td>MUSI 331</td>
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<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES IV</td>
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<tr>
<td></td>
<td>Music History</td>
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<td>MUSI 322</td>
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</table>
MUSI 421  THE MODERN ERA  3  

**Individual and Ensemble Study**  
MUSI 463  TRUMPET FOR MAJORS (minimum of 8 semesters)  3  
MUSI 337  UNDERGRADUATE ORCHESTRA (minimum of 8 semesters)  2  
MUSI 338  UNDERGRADUATE CHAMBER MUSIC (minimum of 4 semesters)  1  

**Recitals**  
MUSI 341  JUNIOR RECITAL  0  
MUSI 441  SENIOR RECITAL  0  

**Piano Proficiency Exam**  
Students must complete and pass the Piano Proficiency Exam  

| Total Credit Hours Required for the Major in Trumpet Performance | 79  |
| University Graduation Requirements (p. 26) | 41  |
| Total Credit Hours | 120  |

**Footnotes and Additional Information**  
* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

**Policies for the BMus Degree**  

**Admission**  
An audition, in person, is required of each undergraduate applicant. A recorded audition may be considered in lieu of a live audition in extreme circumstances. The Shepherd School faculty and the university’s Committee on Admission jointly determine admission, the latter basing its evaluation on successful academic achievement and other standards of college admission. Transfer applicants from other colleges, conservatories, and universities must audition, and take placement exams in both music history and music theory. Once admitted, their prior preparation in music is assessed, which may reduce the required period of study at Rice.

**Academic Standards**  

**Curriculum and Degree Requirements**  
Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

**Grading Policy**  
A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner:

- A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

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**Examinations**  
At the end of each semester, a jury examination in applied music may be given over the material studied during the semester. All degree candidates except BA students must demonstrate keyboard proficiency by examination. If students have little or no knowledge of the keyboard, they should enroll in secondary piano at the beginning of their first semester and continue study until they can meet the examination requirements.

**Performance**  
Students are expected to perform frequently during their residence at Rice. Performance majors must present at least two full recitals. Composition and conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all music majors must participate in the school’s conducted ensembles as assigned.

**Transfer Credit**  
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- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

**Additional Information**  
For additional information, please see the Shepherd School of Music website: [https://music.rice.edu](https://music.rice.edu)
Opportunities for the BMus Degree

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

BMus/MMus Honors Program
Shepherd School students who demonstrate truly exceptional musical and academic accomplishment may apply for the BMus/MMus five-year coordinated program. This program, often referred to in the school as the BMus/MMus Honors Program, allows for the completion and awarding of both the BMus and MMus degrees concurrently. Application to this program is made in the student’s fifth or sixth semester of undergraduate studies.

The same general university requirements apply, but students seeking the combined BMus/MMus degrees must complete a total of at least 150 semester hours by graduation. The number of required hours varies according to major area.

The first five semesters of course work in this program parallel the core curriculum of the bachelor’s degrees. The sixth semester is a transitional semester during which students qualify for admission to the combined program. For further information, including application procedures, see the Shepherd School Student Handbook.

Other Musical Opportunities

Lectures and Performances
A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu/.

Bachelor of Music (BMus) Degree with a Major in Tuba Performance

Program Learning Outcomes for the BMus Degree
Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student’s major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

Requirements for the BMus Degree
For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BMus degree must complete:

• The requirements for one major offered by the BMus degree program.
• A minimum of 120 credit hours to satisfy degree requirements.

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<th>Code</th>
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<th>Credit Hours</th>
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<td>Total Credit Hours Required for the Major in Tuba Performance</td>
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<td></td>
<td>Total Credit Hours Required for the BMus Degree with a Major in Tuba Performance</td>
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Degree Requirements

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<td>MUSI 211</td>
<td>THEORY I</td>
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<tr>
<td>MUSI 212</td>
<td>THEORY II</td>
<td>3</td>
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<tr>
<td>MUSI 311</td>
<td>THEORETICAL STUDIES III</td>
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<tr>
<td>MUSI 312</td>
<td>THEORETICAL STUDIES IV</td>
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<td>MUSI 316</td>
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<td>3</td>
</tr>
<tr>
<td>MUSI 378</td>
<td>CLASSICAL, CONTEMPORARY, AND</td>
<td></td>
</tr>
<tr>
<td>ASIA 378</td>
<td>CROSS-CULTURAL ASIAN MUSIC</td>
<td></td>
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<tr>
<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
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<tr>
<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
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<tr>
<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
<td></td>
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<tr>
<td>MUSI 416</td>
<td>ORCHESTRATION</td>
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<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
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<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
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<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
<td></td>
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<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
<td></td>
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<tr>
<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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Recommended
It is recommended, though not required, that music students complete MUSI 305 and MUSI 403, in addition to the requirements listed above.

Policies for the BMus Degree

Admission
An audition, in person, is required of each undergraduate applicant. A recorded audition may be considered in lieu of a live audition in extreme circumstances. The Shepherd School faculty and the university’s Committee on Admission jointly determine admission, the latter basing its evaluation on successful academic achievement and other standards of college admission. Transfer applicants from other colleges, conservatories, and universities must audition, and take placement exams in both music history and music theory. Once admitted, their prior preparation in music is assessed, which may reduce the required period of study at Rice.

Academic Standards

Curriculum and Degree Requirements
Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

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Leaves of Absence and Voluntary Withdrawal
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Examinations
At the end of each semester, a jury examination in applied music may be given over the material studied during the semester. All degree candidates except BA students must demonstrate keyboard proficiency by examination. If students have little or no knowledge of the keyboard, they should enroll in secondary piano at the beginning of their first semester and continue study until they can meet the examination requirements.

Performance
Students are expected to perform frequently during their residence at Rice. Performance majors must present at least two full recitals. Composition and conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all music majors must participate in the school’s conducted ensembles as assigned.
Transfer Credit
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Departmental Transfer Credit Guidelines
Students pursuing the BMus degree should be aware of the following departmental transfer credit guidelines:

• Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu/

Opportunities for the BMus Degree

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

BMus/MMus Honors Program
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The same general university requirements apply, but students seeking the combined BMus/MMus degrees must complete a total of at least 150 semester hours by graduation. The number of required hours varies according to major area.

The first five semesters of course work in this program parallel the core curriculum of the bachelor’s degrees. The sixth semester is a transitional semester during which students qualify for admission to the combined program. For further information, including application procedures, see the Shepherd School Student Handbook.

Other Musical Opportunities

Lectures and Performances
A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

Additional Information
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Bachelor of Music (BMus) Degree with a Major in Viola Performance

Program Learning Outcomes for the BMus Degree
Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student’s major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

Requirements for the BMus Degree
For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BMus degree must complete:

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• A minimum of 120 credit hours to satisfy degree requirements.

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<th>Code</th>
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<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Viola Performance</td>
<td>81</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BMus Degree with a Major in Viola Performance</td>
<td>120</td>
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Degree Requirements

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<td>THEORY I</td>
<td>3</td>
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</table>
Select 1 course from the following:

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- MUSI 378 / ASIA 378 CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC
- MUSI 403 BASIC ELECTRONIC MUSIC
- MUSI 404 ELECTRONIC MUSIC COMPOSITION
- MUSI 405 MUSIC BUSINESS AND LAW
- MUSI 416 ORCHESTRATION
- MUSI 417 MUSIC FOR MEDIA
- MUSI 512 ANALYTICAL SYSTEMS
- MUSI 513 MODAL COUNTERPOINT
- MUSI 514 SCORE READING AND THEORY AT THE KEYBOARD
- MUSI 517 EARLY MODERN MASTERS
- MUSI 613 TONAL COUNTERPOINT
- MUSI 617 MUSIC SINCE 1950

Aural Skills and Performance Techniques

- MUSI 231 AURAL SKILLS AND PERFORMANCE TECHNIQUE I 2
- MUSI 232 AURAL SKILLS AND PERFORMANCE TECHNIQUE II 2
- MUSI 331 AURAL SKILLS AND PERFORMANCE TECHNIQUES III 2
- MUSI 332 AURAL SKILLS AND PERFORMANCE TECHNIQUES IV 2

Music History

- MUSI 222 / MDEM 222 MEDIEVAL AND RENAISSANCE ERAS 3
- MUSI 321 BAROQUE AND EARLY CLASSICAL ERAS 3
- MUSI 322 CLASSICAL AND ROMANTIC ERAS 3
- MUSI 421 THE MODERN ERA 3

Individual and Ensemble Study

- MUSI 493 VIOLA FOR MAJORS (minimum of 8 semesters) 3
- MUSI 337 UNDERGRADUATE ORCHESTRA (minimum of 8 semesters) 2
- MUSI 338 UNDERGRADUATE CHAMBER MUSIC (minimum of 6 semesters) 1

Recitals

- MUSI 341 JUNIOR RECITAL 0
- MUSI 441 SENIOR RECITAL 0

Piano Proficiency Exam

Students must complete and pass the Piano Proficiency Exam

| Total Credit Hours Required for the Major in Viola Performance | 81 |
| University Graduation Requirements (p. 26) * | 39 |
| Total Credit Hours | 120 |

Footnotes and Additional Information

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Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu/

Bachelor of Music (BMus) Degree with a Major in Violin Performance

Program Learning Outcomes for the BMus Degree
Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student’s major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

Requirements for the BMus Degree

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BMus degree must complete:

- The requirements for one major offered by the BMus degree program.
- A minimum of 120 credit hours to satisfy degree requirements.

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s
Students and their academic advisors should identify and clearly document the courses to be taken.

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<th>Credit Hours</th>
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<td>Total Credit Hours Required for the BMus Degree with a Major in Violin Performance</td>
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### Degree Requirements

#### Music Theory

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<td>MUSI 312</td>
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Select 1 course from the following:

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<td>EXPERIMENTAL SOUND AND VIDEO</td>
<td>3</td>
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<td>MUSI 378 / ASIA 378</td>
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<td>MUSI 416</td>
<td>ORCHESTRATION</td>
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</tr>
<tr>
<td>MUSI 417</td>
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<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
<td>3</td>
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<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
<td>3</td>
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<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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<td>MUSIC SINCE 1950</td>
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#### Aural Skills and Performance Techniques

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<tbody>
<tr>
<td>MUSI 231</td>
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<td>MUSI 232</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUE II</td>
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</tr>
<tr>
<td>MUSI 331</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES III</td>
<td>2</td>
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<tr>
<td>MUSI 332</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES IV</td>
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#### Music History

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
<td>MUSI 222 / MDEM 222</td>
<td>MEDIEVAL AND RENAISSANCE ERAS</td>
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<tr>
<td>MUSI 321</td>
<td>BAROQUE AND EARLY CLASSICAL ERAS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 322</td>
<td>CLASSICAL AND ROMANTIC ERAS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 421</td>
<td>THE MODERN ERA</td>
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#### Individual and Ensemble Study

<table>
<thead>
<tr>
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<th>Title</th>
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<tbody>
<tr>
<td>MUSI 491</td>
<td>VIOLIN FOR MAJORS (minimum of 8 semesters)</td>
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<td>MUSI 337</td>
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<td>MUSI 338</td>
<td>UNDERGRADUATE CHAMBER MUSIC (minimum of 6 semesters)</td>
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#### Recitals

<table>
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<tr>
<th>Code</th>
<th>Title</th>
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<tr>
<td>MUSI 341</td>
<td>JUNIOR RECITAL</td>
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<tr>
<td>MUSI 441</td>
<td>SENIOR RECITAL</td>
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#### Piano Proficiency Exam

Students must complete and pass the Piano Proficiency Exam

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<td>Total Credit Hours Required for the Major in Violin Performance</td>
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<tr>
<td></td>
<td>University Graduation Requirements (p. 26) *</td>
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Total Credit Hours 120

#### Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

#### Policies for the BMus Degree

##### Admission

An audition, in person, is required of each undergraduate applicant. A recorded audition may be considered in lieu of a live audition in extreme circumstances. The Shepherd School faculty and the university's Committee on Admission jointly determine admission, the latter basing its evaluation on successful academic achievement and other standards of college admission. Transfer applicants from other colleges, conservatories, and universities must audition, and take placement exams in both music history and music theory. Once admitted, their prior preparation in music is assessed, which may reduce the required period of study at Rice.

##### Academic Standards

#### Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

#### Grading Policy

A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner:

- A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student's work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

- If a student receives a second semester of C+ (2.33 grade points) or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a BMus degree seeking student and merit scholarship from the Shepherd School will be discontinued.
Please Note: For music history and musicology majors, a grade of C+ (2.33 grade points) or lower in any music history course is considered unsatisfactory and will be evaluated as noted above. For music theory majors, a grade of C+ (2.33 grade points) or lower in any advanced music theory course is considered unsatisfactory and will be evaluated as noted above.

Leaves of Absence and Voluntary Withdrawal
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean's office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Examinations
At the end of each semester, a jury examination in applied music may be given over the material studied during the semester. All degree candidates except BA students must demonstrate keyboard proficiency by examination. If students have little or no knowledge of the keyboard, they should enroll in secondary piano at the beginning of their first semester and continue study until they can meet the examination requirements.

Performance
Students are expected to perform frequently during their residence at Rice. Performance majors must present at least two full recitals. Composition and conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all music majors must participate in the school’s conducted ensembles as assigned.

Transfer Credit
For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the BMus degree should be aware of the following departmental transfer credit guidelines:

• Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu/

Opportunities for the BMus Degree

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

BMus/MMus Honors Program
Shepherd School students who demonstrate truly exceptional musical and academic accomplishment may apply for the BMus/MMus five-year coordinated program. This program, often referred to in the school as the BMus/MMus Honors Program, allows for the completion and awarding of both the BMus and MMus degrees concurrently. Application to this program is made in the student’s fifth or sixth semester of undergraduate studies.

The same general university requirements apply, but students seeking the combined BMus/MMus degrees must complete a total of at least 150 semester hours by graduation. The number of required hours varies according to major area.

The first five semesters of course work in this program parallel the core curriculum of the bachelor’s degrees. The sixth semester is a transitional semester during which students qualify for admission to the combined program. For further information, including application procedures, see the Shepherd School Student Handbook.

Other Musical Opportunities

Lectures and Performances
A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu/

Bachelor of Music (BMus) Degree with a Major in Vocal Performance

Program Learning Outcomes for the BMus Degree
Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student’s major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

Requirements for the BMus Degree
For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BMus degree must complete:
• The requirements for one major offered by the BMus degree program.

• A minimum of 120 credit hours to satisfy degree requirements.

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier [https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/].) Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
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<td>MUSI 332</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES IV</td>
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### Music History

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 222 / MDEM 222</td>
<td>MEDIEVAL AND RENAISSANCE ERAS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 321</td>
<td>BAROQUE AND EARLY CLASSICAL ERAS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 322</td>
<td>CLASSICAL AND ROMANTIC ERAS</td>
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</tr>
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<td>MUSI 421</td>
<td>THE MODERN ERA</td>
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### Individual and Ensemble Study

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td>MUSI 473</td>
<td>VOICE FOR MAJORS (minimum of 8 semesters)</td>
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<td>MUSI 335</td>
<td>UNDERGRADUATE CHORUS (minimum of 8 semesters)</td>
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<td>MUSI 336</td>
<td>UNDERGRADUATE OPERA WORKSHOP (minimum of 4 semesters)</td>
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<tr>
<td>MUSI 571</td>
<td>VOCAL COACHING (minimum of 2 semesters)</td>
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### Diction

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<tr>
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<td>MUSI 574</td>
<td>GERMAN DICTION</td>
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<tr>
<td>MUSI 577</td>
<td>ENGLISH DICTION</td>
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<td>MUSI 578</td>
<td>FRENCH DICTION</td>
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### Voice Repertoire

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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 575</td>
<td>VOICE REPERTOIRE I</td>
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</tr>
<tr>
<td>MUSI 576</td>
<td>VOICE REPERTOIRE II</td>
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### Foreign Language

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</tr>
<tr>
<td>GERM 141</td>
<td>FIRST YEAR GERMAN I</td>
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<tr>
<td>ITAL 141</td>
<td>FIRST YEAR ITALIAN I</td>
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Select 1 course from the following:

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<th>Code</th>
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<td>GERM 142</td>
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<tr>
<td>ITAL 142</td>
<td>FIRST YEAR ITALIAN II</td>
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### Recitals

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<th>Code</th>
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<th>Credit Hours</th>
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</tr>
<tr>
<td>MUSI 441</td>
<td>SENIOR RECITAL</td>
<td>0</td>
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</table>

### Piano Proficiency Exam

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<table>
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<tr>
<th>Code</th>
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</thead>
<tbody>
<tr>
<td>MUSI 575</td>
<td>VOICE REPERTOIRE I</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 576</td>
<td>VOICE REPERTOIRE II</td>
<td>2</td>
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</tbody>
</table>

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Additional Information

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Opportunities for the BMus Degree

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Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu/

Doctor of Musical Arts (DMA) Degree in the field of Cello Performance

Program Learning Outcomes for the DMA Degree
Upon completing the DMA degree, students will be able to:

1. Demonstrate technical and musical competence in performance or composition at a professional level.
2. Develop highly developed analytical skills in advanced music theory and a profound understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance with greater familiarity of a wide variety of historical and contemporary performance practices.
4. Develop career development skills that complement their professional-level performance skills.
5. Develop working knowledge of and have experience with both classroom teaching and studio teaching methods at the conservatory and university levels.

Requirements for the DMA Degree
For general university requirements, see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the DMA degree in all fields of study must complete:

- A minimum of 90 credit hours beyond the bachelor’s degree to satisfy degree requirements.

Requirements for the DMA Degree in the field of Cello Performance

Summary

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
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Degree Requirements

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<td>Performance Requirements</td>
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<td>MUSI 695</td>
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<tr>
<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)²</td>
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<td>MUSI 751</td>
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<td>Field of Study Specific Requirements</td>
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<td>MUSI 492</td>
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<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
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<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
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<td>MUSI 733</td>
<td>DOCTORAL SEMINAR I: CAREER SKILLS</td>
<td>3</td>
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<td>MUSI 735</td>
<td>DOCTORAL SEMINAR II: REPERTORY</td>
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<td>MUSI 736</td>
<td>SOLO REPERTORY FOR DOCTORAL STUDENTS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 738</td>
<td>DOCTORAL INDIVIDUAL PROJECT</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 739</td>
<td>PEDAGOGY FOR DOCTORAL STUDENTS</td>
<td>3</td>
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<tr>
<td></td>
<td>Academic Coursework ⁴</td>
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</tr>
<tr>
<td></td>
<td>Select 4 courses from the Music History course offerings (see course list below)</td>
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</tr>
<tr>
<td></td>
<td>Select 2 courses from the Music Theory course offerings (see course list below)</td>
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</tr>
<tr>
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<td></td>
<td>Select 11 credit hours at the 300-level or above ⁵</td>
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<td></td>
<td>Classroom Teaching</td>
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<tr>
<td></td>
<td>Students must complete the Classroom Teaching requirement</td>
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<tr>
<td></td>
<td>Examinations ⁶</td>
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</tr>
<tr>
<td></td>
<td>Students must demonstrate the following proficiencies:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Piano proficiency</td>
<td></td>
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<tr>
<td></td>
<td>Aural skills proficiency</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Written and oral qualifying examinations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Doctoral Document</td>
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<tr>
<td>MUSI 750</td>
<td>DOCTORAL DOCUMENT (minimum of 2 semesters)⁷</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credit Hours 90

Footnotes and Additional Information

¹ At least six of the required eight semesters of MUSI 695 Violoncello for Majors-Advanced must be taken during residency as a DMA student.
² Students pursuing the DMA degree on a string instrument must be enrolled in MUSI 635 Advanced Orchestra during four of their six semesters of residency. Within those four semesters are eight rotations which are generally fulfilled by two chamber orchestra rotations each semester. The student in consultation with their major teacher may choose from Chamber Orchestra, Symphony Orchestra, Opera Orchestra or the Modular Ensemble Framework (MEF) for up to four of the eight rotations. They may also elect to enroll in one or two additional semesters or be required to do so by their major teacher. The student in consultation with their major teacher will choose the semesters for participation.
Five (5) doctoral recitals performed while in residency as a DMA student as follows:

- Two (2) Solo recitals
- One (1) Lecture recital
- One (1) Chamber Music recital
- One (1) Concerto with orchestra

4 courses (3 credit hours each) comprise the 12 credit hours required of Music History coursework.
2 courses (3 credit hours each) comprise the 6 credit hours required of Music Theory coursework.

Graduate academic coursework taken elsewhere may be transferred with the approval of the relevant Department Chair. Additional hours of required performance coursework may not count toward the elective requirement. A maximum of three (3) credit hours of MUSI 649 Graduate Independent Study can count towards degree requirements.

Diagnostic examinations in music history and music theory are given prior to admission to The Shepherd School, and play an important role in the admissions decision. Weaknesses in these areas will be addressed by courses designated by the chairs of the respective departments. These will count within either the Academic Coursework or Elective category. Doctoral students must also pass proficiency exams in aural skills and piano. These exams are scheduled at the beginning of each academic year. If required, MUSI 432 Graduate Aural Skills Review and/or MUSI 281 Secondary Piano must be taken, but neither will count towards the total number of hours required for the degree.

The doctoral document must be publicly defended.

### Academic Coursework

Academic Coursework is comprised of a minimum of 4 courses (12 credit hours) from Music History course offerings and a minimum of 2 courses (6 credit hours) from Music Theory course offerings.

#### Music History Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI 422</td>
<td>RENAISSANCE MUSIC</td>
<td>3</td>
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<tr>
<td>MUSI 429 / MDEM 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
<td>3</td>
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<tr>
<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
<td>3</td>
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<tr>
<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
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<tr>
<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
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<tr>
<td>MUSI 529</td>
<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
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</tr>
<tr>
<td>MUSI 537</td>
<td>SATIE, COCTEAU, &amp; LES SIX: PARIS IN THE 1920s AND BEYOND</td>
<td>3</td>
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<tr>
<td>MUSI 543</td>
<td>MUSIC AND MODERNISM IN FRANCE</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 551</td>
<td>MUSIC OF RICHARD STRAUSS</td>
<td>3</td>
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<tr>
<td>MUSI 621</td>
<td>SELECTED STUDIES IN MUSIC HISTORY</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 623</td>
<td>J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION</td>
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#### Music Theory Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 624</td>
<td>SEMINAR ON A SELECTED COMPOSER</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 625</td>
<td>MOZART OPERAS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 626</td>
<td>THE CLASSICAL STYLE</td>
<td>3</td>
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<tr>
<td>MUSI 627</td>
<td>ROMANTIC SONGS AND PIANO PIECES</td>
<td>3</td>
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<tr>
<td>MUSI 721</td>
<td>MUSIC OF SCHOENBERG</td>
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<tr>
<td>MUSI 722</td>
<td>MUSIC OF STRAVINSKY</td>
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</tbody>
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### Policies for the DMA Degree

#### Shepherd School of Music Graduate Program Handbook

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#### Academic Standards

##### Curriculum and Degree Requirements

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##### Grading Policy

A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from
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Note: For music history and musicology majors a grade of C+ (2.33 grade points) or lower in any music history course is considered unsatisfactory and will be evaluated as above.

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Opportunities for the DMA Degree
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Doctor of Musical Arts (DMA) Degree in the field of Clarinet Performance
Program Learning Outcomes for the DMA Degree
Upon completing the DMA degree, students will be able to:

1. Demonstrate technical and musical competence in performance or composition at a professional level.
2. Develop highly developed analytical skills in advanced music theory and a profound understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance with greater familiarity of a wide variety of historical and contemporary performance practices.
4. Develop career development skills that complement their professional-level performance skills.
5. Develop working knowledge of and have experience with both classroom teaching and studio teaching methods at the conservatory and university levels.

Requirements for the DMA Degree
For general university requirements, see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the DMA degree in all fields of study must complete:

- A minimum of 90 credit hours beyond the bachelor's degree to satisfy degree requirements.

Requirements for the DMA Degree in the field of Clarinet Performance
Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>MUSI 655</td>
<td>CLARINET FOR MAJORS-ADVANCED (minimum of 8 semesters)</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 751</td>
<td>DOCTORAL SOLO RECITAL</td>
<td>0</td>
</tr>
</tbody>
</table>

DMA Core Requirements
MUSI 611 | CLASSROOM PEDAGOGY | 3 |
MUSI 711 | ANALYTICAL APPROACHES | 3 |
MUSI 733 | DOCTORAL SEMINAR I: CAREER SKILLS | 3 |
MUSI 735 | DOCTORAL SEMINAR II: REPERTORY | 3 |
MUSI 736 | SOLO REPERTORY FOR DOCTORAL STUDENTS | 3 |
MUSI 738 | DOCTORAL INDIVIDUAL PROJECT | 3 |
MUSI 739 | PEDAGOGY FOR DOCTORAL STUDENTS | 3 |

Academic Coursework
Select 4 courses from the Music History course offerings (see course list below) | 12 |
Select 2 courses from the Music Theory course offerings (see course list below) | 6 |

Elective Requirements
Select 13 credit hours at the 300-level or above | 13 |

Classroom Teaching
Students must complete the Classroom Teaching requirement

Examinations
Students must demonstrate the following proficiencies:
- Piano proficiency
- Aural skills proficiency
- Written and oral qualifying examinations
Doctoral Document

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI 750</td>
<td>DOCTORAL DOCUMENT (minimum of 2 semesters)</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credit Hours: 90

Footnotes and Additional Information

1. At least six of the required eight semesters of MUSI 655 Clarinet for Majors-Advanced must be taken during residency as a DMA student.

2. Students pursuing the DMA degree on a wind instrument or percussion must be enrolled in MUSI 635 Advanced Orchestra during four of their six semesters of residency. They may elect to enroll in one or two additional semesters or be required to do so by their major teacher. The student in consultation with their major teacher will choose the semesters for participation.

3. Doctoral recital requirements can be fulfilled in any of the following combinations for four (4) total performed while a DMA student:
   - three (3) solo recital and one (1) lecture recital; or
   - two (2) solo recitals, one (1) lecture recital, one (1) mock audition

4. 4 courses (3 credit hours each) comprise the 12 credit hours required of Music History coursework.
   2 courses (3 credit hours each) comprise the 6 credit hours required of Music Theory coursework.

5. Graduate academic coursework taken elsewhere may be transferred with the approval of the relevant Department Chair. Additional hours of required performance coursework may not count toward the elective requirement. A maximum of three (3) credit hours of MUSI 649 Graduate Independent Study can count toward degree requirements.

6. Diagnostic examinations in music history and music theory are given prior to admission to The Shepherd School, and play an important role in the admissions decision. Weaknesses in these areas will be addressed by courses designated by the chairs of the respective departments. These will count within either the Academic Coursework or Elective category. All doctoral students must also pass proficiency exams in aural skills and piano. These exams are scheduled at the beginning of each academic year. If required, MUSI 432 Graduate Aural Skills Review and/or MUSI 281 Secondary Piano must be taken, but neither will count toward the total number of hours required for the degree.

7. The doctoral document must be publicly defended.

Academic Coursework

Academic Coursework is comprised of a minimum of 4 courses (12 credit hours) from Music History course offerings and a minimum of 2 courses (6 credit hours) from Music Theory course offerings.

Music History Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI 422</td>
<td>RENAISSANCE MUSIC</td>
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</tr>
<tr>
<td>MUSI 429 / MDEM 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
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</tr>
<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
<td>3</td>
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</table>

Music Theory Courses

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<tr>
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<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
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<tr>
<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
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</tr>
<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
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<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
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</tr>
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<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 606</td>
<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
<td>3</td>
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<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
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<tr>
<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION</td>
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<tr>
<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
<td>3</td>
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<tr>
<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
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<td>MUSI 712</td>
<td>SEMINAR IN ADVANCED ANALYSIS</td>
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<tr>
<td>MUSI 713</td>
<td>SPECIAL TOPICS IN ADVANCED ANALYSIS</td>
<td>3</td>
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<tr>
<td>MUSI 723</td>
<td>AESTHETICS OF MUSIC</td>
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</table>

Policies for the DMA Degree

Shepherd School of Music Graduate Program Handbook

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Academic Standards

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If a student receives a second semester of C+ (2.33 grade points) or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

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Graduate degree requirement: a minimum overall grade point average of 2.67 is necessary for graduation.

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Opportunities for the DMA Degree

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Additional Information
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Doctor of Musical Arts (DMA) Degree in the field of Composition

Program Learning Outcomes for the DMA Degree
Upon completing the DMA degree, students will be able to:

1. Demonstrate technical and musical competence in performance or composition at a professional level.
2. Develop highly developed analytical skills in advanced music theory and a profound understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance with greater familiarity of a wide variety of historical and contemporary performance practices.
4. Develop career development skills that complement their professional-level performance skills.
5. Develop working knowledge of and have experience with both classroom teaching and studio teaching methods at the conservatory and university levels.

Requirements for the DMA Degree
For general university requirements, see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the DMA degree in all fields of study must complete:

- A minimum of 90 credit hours beyond the bachelor's degree to satisfy degree requirements.

Requirements for the DMA Degree in the field of Composition
Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
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<td>Total Credit Hours Required for the DMA Degree in the field of Composition</td>
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Degree Requirements

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<td></td>
<td>Composition Requirements</td>
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<tr>
<td>MUSI 601</td>
<td>COMPOSITION FOR MAJORS ADVANCED AND GRADUATES (minimum of 6 semesters)</td>
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<tr>
<td>MUSI 603</td>
<td>GRADUATE COMPOSITION SEMINAR (minimum of 6 semesters)</td>
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<tr>
<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
<td>3</td>
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<tr>
<td>MUSI 606</td>
<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 751</td>
<td>DOCTORAL SOLO RECITAL</td>
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</table>

Performance Requirements
Select 8 credit hours from Performance Coursework

<table>
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<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td></td>
<td>DMA Core Requirements</td>
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<tr>
<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
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<td>ANALYTICAL APPROACHES</td>
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<td>MUSI 733</td>
<td>DOCTORAL SEMINAR I: CAREER SKILLS</td>
<td>3</td>
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<tr>
<td>MUSI 735</td>
<td>DOCTORAL SEMINAR II: REPERTORY</td>
<td>3</td>
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</tbody>
</table>
Academic Coursework

Academic Coursework is comprised of a minimum of 6 courses (18 credit hours) from Music History course offerings and a minimum of 4 courses (12 credit hours) from Music Theory course offerings.

Music History Courses

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<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
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<td>MUSI 537</td>
<td>SATIE, COCTEAU &amp; LES SIX: PARIS IN THE 1920s AND BEYOND</td>
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Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudit. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Additional Information

For additional information, please see the Shepherd School of Music website: https://music.rice.edu (https://music.rice.edu/)

Opportunities for the DMA Degree

Other Musical Opportunities

Lectures and Performances

A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

Additional Information

For additional information, please see the Shepherd School of Music website: https://music.rice.edu (https://music.rice.edu/)

Doctor of Musical Arts (DMA) Degree in the field of Double Bass Performance

Program Learning Outcomes for the DMA Degree

Upon completing the DMA degree, students will be able to:

1. Demonstrate technical and musical competence in performance or composition at a professional level.
2. Develop highly developed analytical skills in advanced music theory and a profound understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance with greater familiarity of a wide variety of historical and contemporary performance practices.
4. Develop career development skills that complement their professional-level performance skills.
5. Develop working knowledge of and have experience with both classroom teaching and studio teaching methods at the conservatory and university levels.

Requirements for the DMA Degree

For general university requirements, see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the DMA degree in all fields of study must complete:

- A minimum of 90 credit hours beyond the bachelor’s degree to satisfy degree requirements.

Requirements for the DMA Degree in the field of Double Bass Performance

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
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<td>Total Credit Hours Required for the DMA Degree in the field of Double Bass Performance</td>
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2019-2020 General Announcements

PDF Generated 1/29/2020
# Degree Requirements

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<td><strong>Performance Requirements</strong></td>
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<td>MUSI 697</td>
<td>DOUBLE BASS FOR MAJORS-ADVANCED (minimum of 8 semesters)</td>
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<td>MUSI 635</td>
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<td>MUSI 492</td>
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<td>DOCTORAL SEMINAR II: REPERTORY</td>
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<tr>
<td></td>
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<td></td>
<td>Select 2 courses from the Music Theory course offerings (see course list below)</td>
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<td><strong>Elective Requirements</strong></td>
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<td><strong>Examinations</strong></td>
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<td>MUSI 750</td>
<td>DOCTORAL DOCUMENT (minimum of 2 semesters)</td>
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<td><strong>Total Credit Hours</strong></td>
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## Footnotes and Additional Information

1. At least six of the required eight semesters of MUSI 697 Double Bass for Majors-Advanced must be taken during residency as a DMA student.

2. Students pursuing the DMA degree on a string instrument must be enrolled in MUSI 635 Advanced Orchestra during four of their six semesters of residency. Within those four semesters are eight rotations which are generally fulfilled by two chamber orchestra rotations each semester. The student in consultation with their major teacher may choose from Chamber Orchestra, Symphony Orchestra, Opera Orchestra or the Modular Ensemble Framework (MEF) for up to four of the eight rotations. They may also elect to enroll in one or two additional semesters or be required to do so by their major teacher. The student in consultation with their major teacher will choose the semesters for participation.

3. Four (4) doctoral recitals performed while in residency as a DMA student as follows:
   - Two (2) Solo recitals
   - One (1) Lecture recital
   - One (1) Chamber Music recital

4. 4 courses (3 credit hours each) comprise the 12 credit hours required of Music History coursework.
   2 courses (3 credit hours each) comprise the 6 credit hours required of Music Theory coursework.

5. Graduate academic coursework taken elsewhere may be transferred with the approval of the relevant Department Chair. Additional hours of required performance coursework may not count toward the elective requirement. A maximum of three (3) credit hours of MUSI 649 Graduate Independent Study can count towards degree requirements.

6. Diagnostic examinations in music history and music theory are given prior to admission to The Shepherd School, and play an important role in the admissions decision. Weaknesses in these areas will be addressed by courses designated by the chairs of the respective departments. These will count within either the Academic Coursework or Elective category. Doctoral students must also pass proficiency exams in aural skills and piano. These exams are scheduled at the beginning of each academic year. If required, MUSI 432 Graduate Aural Skills Review and/or MUSI 281 Secondary Piano must be taken, but neither will count towards the total number of hours required for the degree.

7. The doctoral document must be publicly defended.

## Academic Coursework

Academic Coursework is comprised of a minimum of 4 courses (12 credit hours) from Music History course offerings and a minimum of 2 courses (6 credit hours) from Music Theory course offerings.

### Music History Courses

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 422</td>
<td>RENAISSANCE MUSIC</td>
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<td>MUSI 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
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<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
<td>3</td>
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<tr>
<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
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<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
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<tr>
<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
<td>3</td>
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<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
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<td>MUSI 529</td>
<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
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<tr>
<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
<td>3</td>
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<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
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<tr>
<td>MUSI 537</td>
<td>SATIE, COCTEAU, &amp; LES SIX: PARIS IN THE 1920s AND BEYOND</td>
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<tr>
<td>MUSI 543</td>
<td>MUSIC AND MODERNISM IN FRANCE</td>
<td>3</td>
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<td>MUSI 551</td>
<td>MUSIC OF RICHARD STRAUSS</td>
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<tr>
<td>MUSI 621</td>
<td>SELECTED STUDIES IN MUSIC HISTORY</td>
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<tr>
<td>MUSI 623</td>
<td>J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION</td>
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<td>MUSI 624</td>
<td>SEMINAR ON A SELECTED COMPOSER</td>
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MUSI 625  MOZART OPERAS  3
MUSI 626  THE CLASSICAL STYLE  3
MUSI 627  ROMANTIC SONGS AND PIANO PIECES  3
MUSI 721  MUSIC OF SCHOENBERG  3
MUSI 722  MUSIC OF STRAVINSKY  3

Music Theory Courses

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<td>ANALYTICAL SYSTEMS</td>
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<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
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<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
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<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
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<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
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<td>MUSI 606</td>
<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
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<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
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<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
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<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
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<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION</td>
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<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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<td>MUSI 712</td>
<td>SEMINAR IN ADVANCED ANALYSIS</td>
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<tr>
<td>MUSI 723</td>
<td>AESTHETICS OF MUSIC</td>
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</table>

If a student receives a second semester of C+ (2.33 grade points) or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors a grade of C+ (2.33 grade points) or lower in any music history course is considered unsatisfactory and will be evaluated as above.

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Additional Information
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Opportunities for the DMA Degree

Other Musical Opportunities

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Additional Information
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Doctor of Musical Arts (DMA) Degree in the field of Flute Performance

Program Learning Outcomes for the DMA Degree

Upon completing the DMA degree, students will be able to:

1. Demonstrate technical and musical competence in performance or composition at a professional level.
2. Develop highly developed analytical skills in advanced music theory and a profound understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance with greater familiarity of a wide variety of historical and contemporary performance practices.
4. Develop career development skills that complement their professional-level performance skills.
5. Develop working knowledge of and have experience with both classroom teaching and studio teaching methods at the conservatory and university levels.

Requirements for the DMA Degree

For general university requirements, see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the DMA degree in all fields of study must complete:

- A minimum of 90 credit hours beyond the bachelor’s degree to satisfy degree requirements.

Requirements for the DMA Degree in the field of Flute Performance

Summary

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<th>Code</th>
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<td>Total Credit Hours Required for the DMA Degree in the field of Flute Performance</td>
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Degree Requirements

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<td>Performance Requirements</td>
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<td>MUSI 651</td>
<td>FLUTE FOR MAJORS-ADVANCED (minimum of 8 semesters)</td>
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<tr>
<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
<td>2</td>
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<tr>
<td>MUSI 751</td>
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<td>DMA Core Requirements</td>
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<tr>
<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
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<td>ANALYTICAL APPROACHES</td>
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<tr>
<td>MUSI 733</td>
<td>DOCTORAL SEMINAR I: CAREER SKILLS</td>
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<td>MUSI 735</td>
<td>DOCTORAL SEMINAR II: REPERTORY</td>
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<td>Select 2 courses from the Music Theory course offerings (see course list below)</td>
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<tr>
<td></td>
<td>Doctoral Document</td>
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</table>

Footnotes and Additional Information

1. At least six of the required eight semesters of MUSI 651 Flute for Majors-Advanced must be taken during residency as a DMA student.

2. Students pursuing the DMA degree on a wind instrument or percussion must be enrolled in MUSI 635 Advanced Orchestra during four of their six semesters of residency. They may elect to enroll in one or two additional semesters or be required to do so by their major teacher. The student in consultation with their major teacher will choose the semesters for participation.

3. Doctoral recital requirements can be fulfilled in any of the following combinations for four (4) total performed while a DMA student:
   - three (3) solo recitals and one (1) lecture recital; or
   - two (2) solo recitals, one (1) lecture recital, one (1) mock audition

4. 4 courses (3 credit hours each) comprise the 12 credit hours required of Music History coursework.

5. 2 courses (3 credit hours each) comprise the 6 credit hours required of Music Theory coursework.

6. Graduate academic coursework taken elsewhere may be transferred with the approval of the relevant Department Chair. Additional hours of required performance coursework may not count toward the elective requirement. A maximum of three (3) credit hours of MUSI 649 Graduate Independent Study can count towards degree requirements.

7. The doctoral document must be publicly defended.

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<td>MUSI 429 / MDEM 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
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<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
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<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
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<td>PERFORMANCE PRACTICES SEMINAR</td>
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</table>
Policies for the DMA Degree

Shepherd School of Music Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Shepherd School of Music publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/


Academic Standards

Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy

A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of C+ (2.33 grade points) or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

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Opportunities for the DMA Degree

Other Musical Opportunities

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Additional Information

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Doctor of Musical Arts (DMA) Degree in the field of Oboe Performance


The University of Houston is an equal opportunity/affirmative action employer and does not discriminate on the basis of race, color, ethnicity, national origin, gender, age, religion, sexual orientation, gender identity, gender expression, disability status, or veteran status. For more information, visit the Equal Opportunity/Title IX Office at https://hr.uh.edu/equal-opportunity-title-ix-office.
Program Learning Outcomes for the DMA Degree

Upon completing the DMA degree, students will be able to:

1. Demonstrate technical and musical competence in performance or composition at a professional level.
2. Develop highly developed analytical skills in advanced music theory and a profound understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance with greater familiarity of a wide variety of historical and contemporary performance practices.
4. Develop career development skills that complement their professional-level performance skills.
5. Develop working knowledge of and have experience with both classroom teaching and studio teaching methods at the conservatory and university levels.

Requirements for the DMA Degree

For general university requirements, see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the DMA degree in all fields of study must complete:

- A minimum of 90 credit hours beyond the bachelor's degree to satisfy degree requirements.

Requirements for the DMA Degree in the field of Oboe Performance

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the DMA Degree in the field of Oboe Performance</td>
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Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>Performance Requirements</td>
<td></td>
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<tr>
<td>MUSI 653</td>
<td>OBOE FOR MAJORS-ADVANCED (minimum of 8 semesters)</td>
<td>3</td>
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<tr>
<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
<td>2</td>
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<tr>
<td>MUSI 751</td>
<td>DOCTORAL SOLO RECITAL</td>
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<td></td>
<td>DMA Core Requirements</td>
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<td>CLASSROOM PEDAGOGY</td>
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<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
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<tr>
<td>MUSI 733</td>
<td>DOCTORAL SEMINAR I: CAREER SKILLS</td>
<td>3</td>
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<td>MUSI 735</td>
<td>DOCTORAL SEMINAR II: REPERTORY</td>
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<td>MUSI 736</td>
<td>SOLO REPERTORY FOR DOCTORAL STUDENTS</td>
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<td>DOCTORAL INDIVIDUAL PROJECT</td>
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<td>MUSI 739</td>
<td>PEdAGOGY FOR DOCTORAL STUDENTS</td>
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<td></td>
<td>Academic Coursework</td>
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<tr>
<td></td>
<td>Select 4 courses from the Music History course offerings (see course list below)</td>
<td>12</td>
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Select 2 courses from the Music Theory course offerings (see course list below)

<table>
<thead>
<tr>
<th>Elective Requirements</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>Select 13 credit hours at the 300-level or above</td>
<td>13</td>
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</table>

Classroom Teaching

Students must complete the Classroom Teaching requirement

Examinations

Students must demonstrate the following proficiencies:

- Piano proficiency
- Aural skills proficiency
- Written and oral qualifying examinations

Doctoral Document

| MUSI 750 | DOCTORAL DOCUMENT (minimum of 2 semesters) | 3 |

Total Credit Hours 90

Footnotes and Additional Information

1 At least six of the required eight semesters of MUSI 653 Oboe for Majors-Advanced must be taken during residency as a DMA student.
2 Students pursuing the DMA degree on a wind instrument or percussion must be enrolled in MUSI 635 Advanced Orchestra during four of their six semesters of residency. They may enroll in one or two additional semesters or be required to do so by their major teacher. The student in consultation with their major teacher will choose the semesters for participation.
3 Four (4) doctoral recitals performed while in residency as a DMA student as follows:
   - Two (2) Solo recitals
   - One (1) Lecture recital
   - One (1) Mock Audition
4 4 courses (3 credit hours each) comprise the 12 credit hours required of Music History coursework.
   2 courses (3 credit hours each) comprise the 6 credit hours required of Music Theory coursework.
5 Graduate academic coursework taken elsewhere may be transferred with the approval of the relevant Department Chair. Additional hours of required performance coursework may not count toward the elective requirement. A maximum of three (3) credit hours of MUSI 649 Graduate independent Study can count towards degree requirements.
6 Diagnostic examinations in music history and music theory are given prior to admission to The Shepherd School, and play an important role in the admissions decision. Weaknesses in these areas will be addressed by courses designated by the chairs of the respective departments. These will count within either the Academic Coursework or Elective category. Doctoral students must also pass proficiency exams in aural skills and piano. These exams are scheduled at the beginning of each academic year. If required, MUSI 432 Graduate Aural Skills Review and/or MUSI 281 Secondary Piano must be taken, but neither will count towards the total number of hours required for the degree.
7 The doctoral document must be publicly defended.

Academic Coursework

Academic Coursework is comprised of a minimum of 4 courses (12 credit hours) from Music History course offerings and a minimum of 2 courses (6 credit hours) from Music Theory course offerings.
Music History Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<td>RENAISSANCE MUSIC</td>
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<td>MUSI 429 / MDEM 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
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<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
<td>3</td>
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<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
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<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
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<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
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<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
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<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
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<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
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<td>MUSI 534</td>
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<td>MUSI 537</td>
<td>SATIE, COCTEAU, &amp; LES SIX: PARIS IN THE 1920s AND BEYOND</td>
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<td>MUSI 543</td>
<td>MUSIC AND MODERNISM IN FRANCE</td>
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<td>MUSIC OF RICHARD STRAUSS</td>
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<td>MUSI 621</td>
<td>SELECTED STUDIES IN MUSIC HISTORY</td>
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<td>MUSI 623</td>
<td>J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION</td>
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<td>MUSI 624</td>
<td>SEMINAR ON A SELECTED COMPOSER</td>
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<td>MUSI 625</td>
<td>MOZART OPERAS</td>
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<td>MUSI 626</td>
<td>THE CLASSICAL STYLE</td>
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<td>MUSI 627</td>
<td>ROMANTIC SONGS AND PIANO PIECES</td>
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<td>MUSI 721</td>
<td>MUSIC OF SCHOENBERG</td>
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<td>MUSI 722</td>
<td>MUSIC OF STRAVINSKY</td>
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Music Theory Courses

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<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
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<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
<td>3</td>
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<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
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</tr>
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<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
<td>3</td>
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<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
<td>3</td>
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<td>MUSI 606</td>
<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
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<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
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<tr>
<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
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<td>MUSI 712</td>
<td>SEMINAR IN ADVANCED ANALYSIS</td>
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</table>

Policies for the DMA Degree

Shepherd School of Music Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Shepherd School of Music publishes a graduate program handbook, which can be found here: [https://gradhandbooks.rice.edu/2019_20/Shepherd_School_of_Music_Graduate_Handbook.pdf](https://gradhandbooks.rice.edu/2019_20/Shepherd_School_of_Music_Graduate_Handbook.pdf)

Academic Standards

Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy

A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student's work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of C+ (2.33 grade points) or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors a grade of C+ (2.33 grade points) or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum overall grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean's office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Additional Information

For additional information, please see the Shepherd School of Music website: [https://music.rice.edu](https://music.rice.edu/)

Rice University
Opportunities for the DMA Degree

Other Musical Opportunities

Lectures and Performances
A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

Additional Information
For additional information, please see the Shepherd School of Music website: [https://music.rice.edu](https://music.rice.edu)

Doctor of Musical Arts (DMA) Degree in the field of Organ Performance

Program Learning Outcomes for the DMA Degree

Upon completing the DMA degree, students will be able to:

1. Demonstrate technical and musical competence in performance or composition at a professional level.
2. Develop highly developed analytical skills in advanced music theory and a profound understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance with greater familiarity of a wide variety of historical and contemporary performance practices.
4. Develop career development skills that complement their professional-level performance skills.
5. Develop working knowledge of and have experience with both classroom teaching and studio teaching methods at the conservatory and university levels.

Requirements for the DMA Degree

For general university requirements, see [Doctoral Degrees](p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see [All Graduate Students](p. 55). Students pursuing the DMA degree in all fields of study must complete:

- A minimum of 90 credit hours beyond the bachelor's degree to satisfy degree requirements.

Requirements for the DMA Degree in the field of Organ Performance

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 683</td>
<td>ORGAN FOR MAJORS-ADVANCED (minimum of 8 semesters)</td>
<td>3</td>
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<tr>
<td>MUSI 736</td>
<td>SOLO REPERTORY FOR DOCTORAL STUDENTS</td>
<td>3</td>
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<tr>
<td>MUSI 285</td>
<td>SECONDARY HARPSICHORD</td>
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<tr>
<td>MUSI 751</td>
<td>DOCTORAL SOLO RECITAL</td>
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Field of Study Specific Coursework

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<tr>
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<tbody>
<tr>
<td>MUSI 725</td>
<td>ORGAN LITERATURE SEMINAR</td>
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<td>MUSI 608</td>
<td>IMPROVISATION AT THE ORGAN (minimum of 2 semesters)</td>
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DMA Core Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
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<tr>
<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 733</td>
<td>DOCTORAL SEMINAR I: CAREER SKILLS</td>
<td>3</td>
</tr>
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<td>MUSI 735</td>
<td>DOCTORAL SEMINAR II: REPERTORY</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 736</td>
<td>SOLO REPERTORY FOR DOCTORAL STUDENTS</td>
<td>3</td>
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<tr>
<td>MUSI 738</td>
<td>DOCTORAL INDIVIDUAL PROJECT</td>
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<tr>
<td>MUSI 739</td>
<td>PEDAGOGY FOR DOCTORAL STUDENTS</td>
<td>3</td>
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</table>

Academic Coursework

- Select 4 courses from the Music History course offerings (see course list below) | 12 |
- Select 2 courses from the Music Theory course offerings (see course list below) | 6  |

Elective Requirements

- Select 11 credit hours at the 300-level or above | 11 |

Classroom Teaching

- Students must complete the Classroom Teaching requirement

Examinations

- Students must demonstrate the following proficiencies:
  - Aural skills proficiency
  - Written and oral qualifying examinations

Doctoral Document

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 750</td>
<td>DOCTORAL DOCUMENT (minimum of 2 semesters)</td>
<td>3</td>
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</tbody>
</table>

Total Credit Hours | 92

Footnotes and Additional Information

1. At least six of the required eight semesters of MUSI 683 Organ for Majors-Advanced must be taken during residency as a DMA student.
2. MUSI 736 Solo Repertory for Doctoral Students is required for a minimum of 2 semesters (1 semester as a Performance Requirement and 1 semester as a DMA Core Requirement).
3. Four (4) doctoral recitals performed while in residency as a DMA student as follows:
   - Two (2) Solo recitals
   - One (1) Lecture recital
   - One (1) Chamber recital
4 courses (3 credit hours each) comprise the 12 credit hours required of Music History coursework.
2 courses (3 credit hours each) comprise the 6 credit hours required of Music Theory coursework.
Graduate academic coursework taken elsewhere may be transferred with the approval of the relevant Department Chair. Additional hours of required performance coursework may not count toward the elective requirement. A maximum of three (3) credit hours of MUSI 649 Graduate Independent Study can count towards degree requirements.
Diagnostic examinations in music history and music theory are given prior to admission to The Shepherd School, and play an important role in the admissions decision. Weaknesses in these areas will be addressed by courses designated by the chairs of the respective departments. These will count within either the Academic Coursework or Elective category. Doctoral students must also pass proficiency exams in aural skills and piano. These exams are scheduled at the beginning of each academic year. If required, MUSI 432 Graduate Aural Skills Review and/or MUSI 281 Secondary Piano must be taken, but neither will count towards the total number of hours required for the degree. DMA students in the field of Organ Performance do not have to demonstrate piano proficiency.
The doctoral document must be publicly defended.

Academic Coursework
Academic Coursework is comprised of a minimum of 4 courses (12 credit hours) from Music History course offerings and a minimum of 2 courses (6 credit hours) from Music Theory course offerings.

Music History Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>MUSI 422</td>
<td>RENAISSANCE MUSIC</td>
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<tr>
<td>MUSI 429 / MDEM 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
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</tr>
<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
<td>3</td>
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<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
<td>3</td>
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<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
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<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
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<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
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<td>MUSI 529</td>
<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
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<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
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<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
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<tr>
<td>MUSI 537</td>
<td>SATIE, COCTEAU, &amp; LES SIX: PARIS IN THE 1920s AND BEYOND</td>
<td>3</td>
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<tr>
<td>MUSI 543</td>
<td>MUSIC AND MODERNISM IN FRANCE</td>
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<tr>
<td>MUSI 551</td>
<td>MUSIC OF RICHARD STRAUSS</td>
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<tr>
<td>MUSI 621</td>
<td>SELECTED STUDIES IN MUSIC HISTORY</td>
<td>3</td>
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<tr>
<td>MUSI 623</td>
<td>J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION</td>
<td>3</td>
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<td>MUSI 624</td>
<td>SEMINAR ON A SELECTED COMPOSER</td>
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<td>MUSI 625</td>
<td>MOZART OPERAS</td>
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<td>MUSI 626</td>
<td>THE CLASSICAL STYLE</td>
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<tr>
<td>MUSI 627</td>
<td>ROMANTIC SONGS AND PIANO PIECES</td>
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Music Theory Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>MUSI 721</td>
<td>MUSIC OF SCHOENBERG</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 722</td>
<td>MUSIC OF STRAVINSKY</td>
<td>3</td>
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</tbody>
</table>

Policies for the DMA Degree

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Academic Standards
Curriculum and Degree Requirements

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If a student receives a second semester of C+ (2.33 grade points) or lower in their major applied area, whether for consecutive semesters or not, the
Doctor of Musical Arts (DMA) Degree in the field of Percussion Performance

Program Learning Outcomes for the DMA Degree

Upon completing the DMA degree, students will be able to:

1. Demonstrate technical and musical competence in performance or composition at a professional level.
2. Develop highly developed analytical skills in advanced music theory and a profound understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance with greater familiarity of a wide variety of historical and contemporary performance practices.
4. Develop career development skills that complement their professional-level performance skills.
5. Develop working knowledge of and have experience with both classroom teaching and studio teaching methods at the conservatory and university levels.

Requirements for the DMA Degree

For general university requirements, see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the DMA degree in all fields of study must complete:

- A minimum of 90 credit hours beyond the bachelor’s degree to satisfy degree requirements.

Requirements for the DMA Degree in the field of Percussion Performance

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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</tr>
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<tbody>
<tr>
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<td>Total Credit Hours Required for the DMA Degree in the field of Percussion Performance</td>
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Degree Requirements

Performance Requirements

<table>
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<th>Credit Hours</th>
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<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
<td>2</td>
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<td>MUSI 751</td>
<td>DOCTORAL SOLO RECITAL</td>
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DMA Core Requirements

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
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<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
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<td>MUSI 733</td>
<td>DOCTORAL SEMINAR I: CAREER SKILLS</td>
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<td>MUSI 735</td>
<td>DOCTORAL SEMINAR II: REPERTORY</td>
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<td>MUSI 736</td>
<td>SOLO REPERTORY FOR DOCTORAL STUDENTS</td>
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<td>MUSI 739</td>
<td>PEDAGOGY FOR DOCTORAL STUDENTS</td>
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</tbody>
</table>

Academic Coursework

Select 4 courses from the Music History course offerings (see course list below) | 12
Select 2 courses from the Music Theory course offerings (see course list below) | 6

Elective Requirements

Select 13 credit hours at the 300-level or above | 13

Classroom Teaching

Students must complete the Classroom Teaching requirement

Examinations

Students must demonstrate the following proficiencies:

- Piano proficiency
- Aural skills proficiency
- Written and oral qualifying examinations

Doctoral Document
### Footnotes and Additional Information

1. At least 6 of the required 8 semesters of MUSI 671 *Percussion for Majors-Advanced* must be taken during residency as a DMA student.

2. Students pursuing the DMA degree on a wind instrument or percussion must be enrolled in MUSI 635 *Advanced Orchestra* during four of their six semesters of residency. They may elect to enroll in one or two additional semesters or be required to do so by their major teacher. The student in consultation with their major teacher will choose the semesters for participation.

3. Four (4) doctoral recitals performed while in residence as a DMA student as follows:
   - Two (2) Solo recitals
   - One (1) Chamber Music recital
   - One (1) Lecture recital

4. 4 courses (3 credit hours each) comprise the 12 credit hours required of Music History coursework. 2 courses (3 credit hours each) comprise the 6 credit hours required of Music Theory coursework.

5. Graduate academic coursework taken elsewhere may be transferred with the approval of the relevant Department Chair. Additional hours of required performance coursework may not count toward the elective requirement. A maximum of three (3) credit hours of MUSI 649 *Graduate Independent Study* can count towards degree requirements.

6. Diagnostic examinations in music history and music theory are given prior to admission to The Shepherd School, and play an important role in the admissions decision. Weaknesses in these areas will be addressed by courses designated by the chairs of the respective departments. These will count within either the Academic Coursework or Elective category. Doctoral students must also pass proficiency exams in aural skills and piano. These exams are scheduled at the beginning of each academic year. If required, MUSI 432 *Graduate Aural Skills Review* and/or MUSI 281 *Secondary Piano* must be taken, but neither will count towards the total number of hours required for the degree.

7. The doctoral document must be publicly defended.

### Academic Coursework

Academic Coursework is comprised of a minimum of 4 courses (12 credit hours) from Music History course offerings and a minimum of 2 courses (6 credit hours) from Music Theory course offerings.

#### Music History Courses

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<td>MUSI 429 / MDEM 429</td>
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<td>MUSI 523</td>
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<td>MUSI 524</td>
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<td>PERFORMANCE PRACTICES SEMINAR</td>
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<td>TOPICS IN EARLY MUSIC</td>
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<td>MUSI 528</td>
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<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
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<td>MUSI 621</td>
<td>SELECTED STUDIES IN MUSIC HISTORY</td>
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<td>J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION</td>
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<td>SEMINAR ON A SELECTED COMPOSER</td>
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<td>ROMANTIC SONGS AND PIANO PIECES</td>
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<td>MUSI 722</td>
<td>MUSIC OF STRAVINSKY</td>
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<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
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<td>CLASSROOM PEDAGOGY</td>
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<td>MUSI 723</td>
<td>AESTHETICS OF MUSIC</td>
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### Policies for the DMA Degree

#### Shepherd School of Music Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Shepherd School of Music publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Shepherd_School_of_Music_Graduate_Handbook.pdf

#### Academic Standards

### Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.
Grading Policy
A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner:

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If a student receives a second semester of C+ (2.33 grade points) or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors a grade of C+ (2.33 grade points) or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum overall grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal
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Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu

Opportunities for the DMA Degree

Other Musical Opportunities

Lectures and Performances
A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu

Doctor of Musical Arts (DMA) Degree in the field of Piano Performance

Program Learning Outcomes for the DMA Degree

Upon completing the DMA degree, students will be able to:

1. Demonstrate technical and musical competence in performance or composition at a professional level.
2. Develop highly developed analytical skills in advanced music theory and a profound understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance with greater familiarity of a wide variety of historical and contemporary performance practices.
4. Develop career development skills that complement their professional-level performance skills.
5. Develop working knowledge of and have experience with both classroom teaching and studio teaching methods at the conservatory and university levels.

Requirements for the DMA Degree

For general university requirements, see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the DMA degree in all fields of study must complete:

- A minimum of 90 credit hours beyond the bachelor’s degree to satisfy degree requirements.

Requirements for the DMA Degree in the field of Piano Performance

Summary

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<tr>
<th>Code</th>
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Degree Requirements

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<td></td>
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<td>(minimum of 8 semesters)</td>
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<td>MUSI 736 SOLO REPERTORY FOR DOCTORAL</td>
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<td>STUDENTS (minimum of 2 semesters)</td>
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<td>DMA Core Requirements</td>
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<td>MUSI 711 ANALYTICAL APPROACHES</td>
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<td>MUSI 733 DOCTORAL SEMINAR I: CAREER SKILLS</td>
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<td></td>
<td>Academic Coursework</td>
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<tr>
<td></td>
<td>Select 4 courses from the Music History course offerings (see course list below)</td>
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</table>

Select 4 courses from the Music History course offerings (see course list below)
Select 2 courses from the Music Theory course offerings (see course list below)

Elective Requirements
Select 15 credit hours at the 300-level or above

Classroom Teaching
Students must complete the Classroom Teaching requirement

Examinations
Students must demonstrate the following proficiencies:
- Aural skills proficiency
- Written and oral qualifying examinations

Doctoral Document
MUSI 750 DOCTORAL DOCUMENT (minimum of 2 semesters)

Total Credit Hours

Footnotes and Additional Information
1 At least six of the required eight semesters of MUSI 681 Piano for Majors-Advanced must be taken during residency as a DMA student.
2 MUSI 736 Solo Repertoire for Doctoral Students is required for a total of 3 semesters (2 semesters for Performance Requirements and 1 semester for DMA Core Requirements).
3 Five (5) doctoral recitals performed while in residence as a DMA student as follows:
   - Two (2) Solo recitals
   - One (1) Lecture recital
   - One (1) Chamber Music recital
   - One (1) Concerto with Orchestra
4 4 courses (3 credit hours each) comprise the 12 credit hours required of Music History coursework.
   2 courses (3 credit hours each) comprise the 6 credit hours required of Music Theory coursework.
5 Graduate academic coursework taken elsewhere may be transferred with the approval of the relevant Department Chair. Additional hours of required performance coursework may not count toward the elective requirement. A maximum of three (3) credit hours of MUSI 649 Graduate Independent Study can count towards degree requirements.
6 Diagnostic examinations in music history and music theory are given prior to admission to The Shepherd School, and play an important role in the admissions decision. Weaknesses in these areas will be addressed by courses designated by the chairs of the respective departments. These will count within either the Academic Coursework or Elective category. Doctoral students must also pass proficiency exams in aural skills and piano. These exams are scheduled at the beginning of each academic year. If required, MUSI 432 Graduate Aural Skills Review and/or MUSI 281 Secondary Piano must be taken, but neither will count towards the total number of hours required for the degree. DMA students in the field of Piano Performance do not have to demonstrate piano proficiency.
7 The doctoral document must be publicly defended.

Academic Coursework
Academic Coursework is comprised of a minimum of 4 courses (12 credit hours) from Music History course offerings and a minimum of 2 courses (6 credit hours) from Music Theory course offerings.

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<tr>
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<td>PERFORMANCE PRACTICES SEMINAR</td>
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</table>
Doctor of Musical Arts (DMA) Degree in the field of Viola Performance

MUSI 713 SPECIAL TOPICS IN ADVANCED ANALYSIS 3
MUSI 723 AESTHETICS OF MUSIC 3

Policies for the DMA Degree
Shepherd School of Music Graduate Program Handbook

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A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

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Graduate degree requirement: a minimum overall grade point average of 2.67 is necessary for graduation.

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Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

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Opportunities for the DMA Degree
Other Musical Opportunities
Lectures and Performances
A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu (https://music.rice.edu/)

Doctor of Musical Arts (DMA) Degree in the field of Viola Performance
Program Learning Outcomes for the DMA Degree
Upon completing the DMA degree, students will be able to:

1. Demonstrate technical and musical competence in performance or composition at a professional level.
2. Develop highly developed analytical skills in advanced music theory and a profound understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance with greater familiarity of a wide variety of historical and contemporary performance practices.
4. Develop career development skills that complement their professional-level performance skills.
5. Develop working knowledge of and have experience with both classroom teaching and studio teaching methods at the conservatory and university levels.

Requirements for the DMA Degree
For general university requirements, see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the DMA degree in all fields of study must complete:

- A minimum of 90 credit hours beyond the bachelor’s degree to satisfy degree requirements.

Requirements for the DMA Degree in the field of Viola Performance
Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
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**Degree Requirements**

**Performance Requirements**

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**Field of Study Specific Requirements**

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**DMA Core Requirements**

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<tr>
<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
<td>3</td>
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<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 733</td>
<td>DOCTORAL SEMINAR I: CAREER SKILLS</td>
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<tr>
<td>MUSI 735</td>
<td>DOCTORAL SEMINAR II: REPERTORY</td>
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<tr>
<td>MUSI 736</td>
<td>SOLO REPERTORY FOR DOCTORAL STUDENTS</td>
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<td>MUSI 738</td>
<td>DOCTORAL INDIVIDUAL PROJECT</td>
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<td>MUSI 739</td>
<td>PEDAGOGY FOR DOCTORAL STUDENTS</td>
<td>3</td>
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</tbody>
</table>

**Academic Coursework**

Select 4 courses from the Music History course offerings (see course list below)  
Select 2 courses from the Music Theory course offerings (see course list below)  

**Elective Requirements**

Select 11 credit hours at the 300-level or above  

**Classroom Teaching**

Students must complete the Classroom Teaching requirement

**Examinations**

Students must demonstrate the following proficiencies:

- Piano proficiency
- Aural skills proficiency
- Written and oral qualifying examinations

**Examinations**

Students must demonstrate the following proficiencies:

- Piano proficiency
- Aural skills proficiency
- Written and oral qualifying examinations

**Doctoral Document**

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<td>MUSI 750</td>
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**Total Credit Hours**

90

**Footnotes and Additional Information**

1. At least 6 of the required 8 semesters of MUSI 693 Viola for Majors-Advanced must be taken during residency as a DMA student.

2. Students pursuing the DMA degree on a string instrument must be enrolled in MUSI 635 Advanced Orchestra during four of their six semesters of residency. Within those four semesters are eight rotations which are generally fulfilled by two chamber orchestra rotations each semester. The student in consultation with their major teacher may choose from Chamber Orchestra, Symphony Orchestra, Opera Orchestra or the Modular Ensemble Framework (MEF) for up to four of the eight rotations. They may also elect to enroll in one or two additional semesters or be required to do so by their major teacher. The student in consultation with their major teacher will choose the semesters for participation.

3. Doctoral recital requirements can be fulfilled in any of the following combinations for five (5) total performed while a DMA student:
   - two (2) solo recitals, one (1) lecture recital, one (1) chamber music recital, and one (1) concerto with orchestra; or
   - three (3) solo recitals, one (1) lecture recital, one (1) chamber music recital; or
   - two (2) solo recitals, one (1) lecture recital, two (2) chamber music recitals

4. 4 courses (3 credit hours each) comprise the 12 credit hours required of Music History coursework.

5. 2 courses (3 credit hours each) comprise the 6 credit hours required of Music Theory coursework.

6. Diagnostic examinations in music history and music theory are given prior to admission to The Shepherd School, and play an important role in the admissions decision. Weaknesses in these areas will be addressed by courses designated by the chairs of the respective departments. These will count within either the Academic Coursework or Elective category. Doctoral students must also pass proficiency exams in aural skills and piano. These exams are scheduled at the beginning of each academic year. If required, MUSI 432 Graduate Aural Skills Review and/or MUSI 281 Secondary Piano must be taken, but neither will count towards the total number of hours required for the degree.

7. The doctoral document must be publicly defended.

**Academic Coursework**

Academic Coursework is comprised of a minimum of 4 courses (12 credit hours) from Music History course offerings and a minimum of 2 courses (6 credit hours) from Music Theory course offerings.

**Music History Courses**

<table>
<thead>
<tr>
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<th>Credit Hours</th>
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<tbody>
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<td>MUSI 429 / MDEM 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
<td>3</td>
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<tr>
<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
<td>3</td>
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<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
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<tr>
<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
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<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
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<td>MUSI 530</td>
<td>MUSIC, MUSIC, AND SCIENCE IN THE MODERN WORLD</td>
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<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
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<td>SATIE, COCTEAU, &amp; LES SIX: PARIS IN THE 1920s AND BEYOND</td>
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<td>MUSI 543</td>
<td>MUSIC AND MODERNISM IN FRANCE</td>
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<td>MUSI 551</td>
<td>MUSIC OF RICHARD STRAUSS</td>
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<tr>
<td>MUSI 621</td>
<td>SELECTED STUDIES IN MUSIC HISTORY</td>
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MUSI 623  J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION  3
MUSI 624  SEMINAR ON A SELECTED COMPOSER  3
MUSI 625  MOZART OPERAS  3
MUSI 626  THE CLASSICAL STYLE  3
MUSI 627  ROMANTIC SONGS AND PIANO PIECES  3
MUSI 721  MUSIC OF SCHOENBERG  3
MUSI 722  MUSIC OF STRAVINSKY  3

Music Theory Courses

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<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
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</tr>
<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
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<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
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<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
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<td>TONAL COUNTERPOINT</td>
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<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
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<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION</td>
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<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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<td>SEMINAR IN ADVANCED ANALYSIS</td>
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<td>SPECIAL TOPICS IN ADVANCED ANALYSIS</td>
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<tr>
<td>MUSI 723</td>
<td>AESTHETICS OF MUSIC</td>
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</table>

Policies for the DMA Degree

Shepherd School of Music Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Shepherd School of Music publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Shepherd_School_of_Music_Graduate_Handbook.pdf

Academic Standards

Curriculum and Degree Requirements
Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy
A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of C+ (2.33 grade points) or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors a grade of C+ (2.33 grade points) or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum overall grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/re-audition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu

Opportunities for the DMA Degree

Other Musical Opportunities
Lectures and Performances
A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

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Doctor of Musical Arts (DMA) Degree in the field of Violin Performance

Program Learning Outcomes for the DMA Degree

Upon completing the DMA degree, students will be able to:

1. Demonstrate technical and musical competence in performance or composition at a professional level.
2. Develop highly developed analytical skills in advanced music theory and a profound understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance with greater familiarity of a wide variety of historical and contemporary performance practices.

4. Develop career development skills that complement their professional-level performance skills.

5. Develop working knowledge of and have experience with both classroom teaching and studio teaching methods at the conservatory and university levels.

Requirements for the DMA Degree

For general university requirements, see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the DMA degree in all fields of study must complete:

- A minimum of 90 credit hours beyond the bachelor's degree to satisfy degree requirements.

Requirements for the DMA Degree in the field of Violin Performance

Summary

<table>
<thead>
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<th>Code</th>
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Degree Requirements

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<tr>
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<td>Performance Requirements</td>
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<tr>
<td>MUSI 691</td>
<td>VIOLIN FOR MAJORS-ADVANCED (minimum of 8 semesters)</td>
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<td>ANALYTICAL APPROACHES</td>
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<td>DOCTORAL SEMINAR I: CAREER SKILLS</td>
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<td>DOCTORAL SEMINAR II: REPERTORY</td>
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<tr>
<td>MUSI 738</td>
<td>DOCTORAL INDIVIDUAL PROJECT</td>
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<tr>
<td>Select 2 courses from the Music Theory course offerings (see course list below)</td>
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<td>Examinations 6</td>
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Students must demonstrate the following proficiencies:

- Piano proficiency
- Aural skills proficiency
- Written and oral qualifying examinations

Doctoral Document

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Total Credit Hours: 90

Footnotes and Additional Information

1. At least 6 of the required 8 semesters of MUSI 691 Violin for Majors-Advanced must be taken during residency as a DMA student.

2. Students pursuing the DMA degree on a string instrument must be enrolled in MUSI 635 Advanced Orchestra during four of their six semesters of residency. Within those four semesters are eight rotations which are generally fulfilled by two chamber orchestra rotations each semester. The student in consultation with their major teacher may choose from Chamber Orchestra, Symphony Orchestra, Opera Orchestra or the Modular Ensemble Framework (MEF) for up to four of the eight rotations. They may also elect to enroll in one or two additional semesters or be required to do so by their major teacher. The student in consultation with their major teacher will choose the semesters for participation.

3. Five (5) doctoral recitals performed while in residency as a DMA student as follows:
   - Two (2) Solo recitals
   - One (1) Lecture recital
   - One (1) Chamber Music recital
   - One (1) Concerto with orchestra

4. 4 courses (3 credit hours each) comprise the 12 credit hours required of Music History coursework.

5. 2 courses (3 credit hours each) comprise the 6 credit hours required of Music Theory coursework.

6. Graduate academic coursework taken elsewhere may be transferred with the approval of the relevant Department Chair. Additional hours of required performance coursework may not count toward the elective requirement. A maximum of three (3) credit hours of MUSI 649 Graduate Independent Study can count towards degree requirements.

7. Diagnostic examinations in music history and music theory are given prior to admission to The Shepherd School, and play an important role in the admissions decision. Weaknesses in these areas will be addressed by courses designated by the chairs of the respective departments. These will count within either the Academic Coursework or Elective category. Doctoral students must also pass proficiency exams in aural skills and piano. These exams are scheduled at the beginning of each academic year. If required, MUSI 432 Graduate Aural Skills Review and/or MUSI 281 Secondary Piano must be taken, but neither will count towards the total number of hours required for the degree.

8. The doctoral document must be publicly defended.

Academic Coursework

Academic Coursework is comprised of a minimum of 4 courses (12 credit hours) from Music History course offerings and a minimum of 2 courses (6 credit hours) from Music Theory course offerings.
## Doctor of Musical Arts (DMA) Degree in the field of Violin Performance

### Music History Courses

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<td>MUSI 429 / MDEM 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
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<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
<td>3</td>
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<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
<td>3</td>
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<tr>
<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
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<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
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<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
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<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
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<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
<td>3</td>
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<tr>
<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
<td>3</td>
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<td>3</td>
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<td>MUSIC AND MODERNISM IN FRANCE</td>
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<td>MUSI 551</td>
<td>MUSIC OF RICHARD STRAUSS</td>
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<tr>
<td>MUSI 621</td>
<td>SELECTED STUDIES IN MUSIC HISTORY</td>
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<td>SEMINAR ON A SELECTED COMPOSER</td>
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<tr>
<td>MUSI 722</td>
<td>MUSIC OF STRAVINSKY</td>
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### Music Theory Courses

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<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
<td>3</td>
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<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
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<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
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<tr>
<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
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<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
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<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
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<tr>
<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION</td>
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<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
<td>3</td>
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<td>MUSI 713</td>
<td>SPECIAL TOPICS IN ADVANCED ANALYSIS</td>
<td>3</td>
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<tr>
<td>MUSI 723</td>
<td>AESTHETICS OF MUSIC</td>
<td>3</td>
</tr>
</tbody>
</table>

### Policies for the DMA Degree

**Shepherd School of Music Graduate Program Handbook**

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Shepherd School of Music publishes a graduate program handbook, which can be found here: [https://gradhandbooks.rice.edu/2019_20/Shepherd_School_of_Music_Graduate_Handbook.pdf](https://gradhandbooks.rice.edu/2019_20/Shepherd_School_of_Music_Graduate_Handbook.pdf)

### Academic Standards

#### Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

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A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of C+ (2.33 grade points) or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

**Note:** For music history and musicology majors a grade of C+ (2.33 grade points) or lower in any music history course is considered unsatisfactory and will be evaluated as above.

**Graduate degree requirement:** a minimum overall grade point average of 2.67 is necessary for graduation.

#### Leases of Absence and Voluntary Withdrawal

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

### Additional Information

For additional information, please see the Shepherd School of Music website: [https://music.rice.edu/](https://.music.rice.edu/)
Opportunities for the DMA Degree

Other Musical Opportunities

Lectures and Performances

A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

Additional Information

For additional information, please see the Shepherd School of Music website: https://music.rice.edu

Doctor of Musical Arts (DMA) Degree in the field of Vocal Performance

Program Learning Outcomes for the DMA Degree

Upon completing the DMA degree, students will be able to:

1. Demonstrate technical and musical competence in performance or composition at a professional level.
2. Develop highly developed analytical skills in advanced music theory and a profound understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance with greater familiarity of a wide variety of historical and contemporary performance practices.
4. Develop career development skills that complement their professional-level performance skills.
5. Develop working knowledge of and have experience with both classroom teaching and studio teaching methods at the conservatory and university levels.

Requirements for the DMA Degree

For general university requirements, see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the DMA degree in all fields of study must complete:

- A minimum of 90 credit hours beyond the bachelor's degree to satisfy degree requirements.

Requirements for the DMA Degree in the field of Vocal Performance

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the DMA Degree in the field of Vocal Performance</td>
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Degree Requirements

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td></td>
<td>Performance Requirements</td>
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<tr>
<td>MUSI 673</td>
<td>VOICE FOR MAJORS-ADVANCED (minimum of 8 semesters)</td>
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<tr>
<td>MUSI 751</td>
<td>DOCTORAL SOLO RECITAL</td>
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<td>Field of Study Specific Requirements</td>
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<tr>
<td>MUSI 570</td>
<td>ADVANCED OPERA STUDIES (minimum of 2 semesters)</td>
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<tr>
<td>MUSI 572</td>
<td>GRADUATE OPERA PERFORMANCE (minimum of 2 semesters)</td>
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<tr>
<td></td>
<td>DMA Core Requirements</td>
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<tr>
<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
<td>3</td>
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<tr>
<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 733</td>
<td>DOCTORAL SEMINAR I: CAREER SKILLS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 735</td>
<td>DOCTORAL SEMINAR II: REPERTORY</td>
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<tr>
<td>MUSI 736</td>
<td>SOLO REPERTORY FOR DOCTORAL STUDENTS</td>
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<tr>
<td>MUSI 738</td>
<td>DOCTORAL INDIVIDUAL PROJECT</td>
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<td>MUSI 739</td>
<td>PEDAGOGY FOR DOCTORAL STUDENTS</td>
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<tr>
<td></td>
<td>Academic Coursework</td>
<td></td>
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<tr>
<td></td>
<td>Select 4 courses from the Music History course offerings (see course list below)</td>
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</tr>
<tr>
<td></td>
<td>Select 2 courses from the Music Theory course offerings (see course list below)</td>
<td>6</td>
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<tr>
<td></td>
<td>Elective Requirements</td>
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<td></td>
<td>Select 15-17 credit hours at the 300-level or above</td>
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<td>Students must complete the Classroom Teaching requirement</td>
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<tr>
<td></td>
<td>Examinations</td>
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</tr>
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<td></td>
<td>Students must demonstrate the following proficiencies:</td>
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</tr>
<tr>
<td></td>
<td>Piano proficiency</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aural skills proficiency</td>
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</tr>
<tr>
<td></td>
<td>Written and oral qualifying examinations</td>
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<td></td>
<td>Doctoral Document</td>
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<tr>
<td>MUSI 750</td>
<td>DOCTORAL DOCUMENT (minimum of 2 semesters)</td>
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<tr>
<td></td>
<td>Total Credit Hours</td>
<td>90</td>
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</table>

Footnotes and Additional Information

1. At least 6 of the required 8 semesters of MUSI 673 Voice for Majors-Advanced must be taken during residency as a DMA student.
2. Four (4) doctoral recitals performed while in residency as a DMA student as follows:
   - Two (2) Solo recitals
   - One (1) Lecture recital
   - One (1) Chamber recital
3. 4 courses (3 credit hours each) comprise the 12 credit hours required of Music History coursework.
   2 courses (3 credit hours each) comprise the 6 credit hours required of Music Theory coursework.
Graduate academic coursework taken elsewhere may be transferred with the approval of the relevant Department Chair. Additional hours of required performance coursework may not count toward the elective requirement. A maximum of three (3) credit hours of MUSI 649 Graduate Independent Study can count towards degree requirements.

Diagnostic examinations in music history and music theory are given prior to admission to The Shepherd School, and play an important role in the admissions decision. Weaknesses in these areas will be addressed by courses designated by the chairs of the respective departments. These will count within either the Academic Coursework or Elective category. Doctoral students must also pass proficiency exams in aural skills and piano. These exams are scheduled at the beginning of each academic year. If required, MUSI 432 Graduate Aural Skills Review and/or MUSI 281 Secondary Piano must be taken, but neither will count towards the total number of hours required for the degree.

The doctoral document must be publicly defended.

**Academic Coursework**

Academic Coursework is comprised of a minimum of 4 courses (12 credit hours) from Music History course offerings and a minimum of 2 courses (6 credit hours) from Music Theory course offerings.

**Music History Courses**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI 422</td>
<td>RENAISSANCE MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 429 / MDEM 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 530</td>
<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 532</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 537</td>
<td>SATIE, COCTEAU, &amp; LES SIX: PARIS IN THE 1920s AND BEYOND</td>
<td>3</td>
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<tr>
<td>MUSI 543</td>
<td>MUSIC AND MODERNISM IN FRANCE</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 551</td>
<td>MUSIC OF RICHARD STRAUSS</td>
<td>3</td>
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<tr>
<td>MUSI 621</td>
<td>SELECTED STUDIES IN MUSIC HISTORY</td>
<td>3</td>
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<tr>
<td>MUSI 623</td>
<td>J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION</td>
<td>3</td>
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<tr>
<td>MUSI 624</td>
<td>SEMINAR ON A SELECTED COMPOSER</td>
<td>3</td>
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<tr>
<td>MUSI 625</td>
<td>MOZART OPERAS</td>
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<tr>
<td>MUSI 626</td>
<td>THE CLASSICAL STYLE</td>
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<tr>
<td>MUSI 627</td>
<td>ROMANTIC SONGS AND PIANO PIECES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 721</td>
<td>MUSIC OF SCHOENBERG</td>
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<tr>
<td>MUSI 722</td>
<td>MUSIC OF STRAVINSKY</td>
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**Music Theory Courses**

<table>
<thead>
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<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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</tr>
<tr>
<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
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<td>MUSI 606</td>
<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
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<tr>
<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
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<tr>
<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
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</tr>
<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
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</tr>
<tr>
<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION</td>
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<tr>
<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
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<td>MUSI 712</td>
<td>SEMINAR IN ADVANCED ANALYSIS</td>
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<td>MUSI 713</td>
<td>SPECIAL TOPICS IN ADVANCED ANALYSIS</td>
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**Policies for the DMA Degree**

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**Academic Standards**

**Curriculum and Degree Requirements**

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

**Grading Policy**

A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

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Note: For music history and musicology majors a grade of C+ (2.33 grade points) or lower in any music history course is considered unsatisfactory and will be evaluated as above.

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Leaves of Absence and Voluntary Withdrawal
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

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Opportunities for the DMA Degree
Other Musical Opportunities
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Additional Information
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Master of Music (MMus) Degree in the field of Bassoon Performance

Program Learning Outcomes for the MMus Degree
Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.

Requirements for the MMus Degree
The MMus degree in the field of Bassoon Performance is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate

Students (p. 55). Students pursuing the MMus degree in the field of Bassoon Performance must complete:

- A minimum of 44 credit hours to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree.

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
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<td>Total Credit Hours Required for the MMus Degree in the field of Bassoon Performance</td>
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Degree Requirements

Performance Requirements

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<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
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<td>MUSI 636</td>
<td>ADVANCED CHAMBER MUSIC (minimum of 4 semesters)</td>
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<td>MUSI 531</td>
<td>ORCHESTRAL REPERTOIRE (minimum of 4 semesters)</td>
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<td>MUSI 641</td>
<td>MASTER'S RECITAL I</td>
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<td>MUSI 741</td>
<td>MASTER'S RECITAL II</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>or MUSI 631</td>
<td>MOCK AUDITION</td>
</tr>
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</table>

Academic Coursework

Select 1 course from the Approved Music Theory course offerings (see course list below) 3

Select 1 additional course from Music Theory or Music History course offerings (see course lists below) 3

Select 2 courses from the Music Career and Skills Enhancement course offerings (see course list below) 4
Select 6 credit hours from the Elective Requirements (see course list below)  6
Proficiencies  2
Students must demonstrate the following proficiencies:
  Piano proficiency
  Aural skills proficiency

Total Credit Hours  44

Footnotes and Additional Information
  1 No more than three (3) credit hours of Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.
  2 Deficiencies in these areas will result in remedial coursework being added to a student's degree plan.

Academic Coursework
Academic Coursework is comprised of at least 1 course (3 credit hours) from the Approved (or Additional) Music Theory course offerings, 1 course (3 credit hours) from the Music Theory or Music History course offerings, 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings, and 6 credit hours from the Elective Requirements.

Approved Music Theory Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
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<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
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<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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Additional Music Theory Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 316 / FILM 323</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
<td>3</td>
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<tr>
<td>MUSI 378 / ASIA 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
<td>3</td>
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<tr>
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<td>ELECTRONIC MUSIC COMPOSITION</td>
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<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
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<td>MUSI 416</td>
<td>ORCHESTRATION</td>
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<td>MUSIC FOR MEDIA</td>
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<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
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<tr>
<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
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<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
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<td>MUSI 611</td>
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<td>ANALYTICAL APPROACHES</td>
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<td>MUSI 713</td>
<td>SPECIAL TOPICS IN ADVANCED ANALYSIS</td>
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Music History Courses

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<td>RENAISSANCE MUSIC</td>
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<td>MUSI 429 / MDEM 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
<td>3</td>
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<tr>
<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
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<td>MUSI 722</td>
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Music Career and Skills Enhancement Courses

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<td>MGMT 625</td>
<td>DESIGN THINKING</td>
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<td>MGMT 629</td>
<td>BUSINESS PLAN DEVELOPMENT</td>
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<td>MGMT 676</td>
<td>SOCIAL ENTERPRISE</td>
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<td>MUSI 413</td>
<td>INTRODUCTION TO DALCROZE EURHYTHMICS</td>
<td>2</td>
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<td>MUSI 500</td>
<td>IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES</td>
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<tr>
<td>MUSI 501</td>
<td>ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING</td>
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<tr>
<td>MUSI 502</td>
<td>CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS</td>
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MUSI 503 MUSIC AND PERFORMANCE: THE MIND/ BODY CONNECTION 2
MUSI 507 TECHNOLOGY FOR MUSICIANS 2
MUSI 508 FUNDAMENTALS OF PRIVATE TEACHING 2
MUSI 509 THE ALEXANDER TECHNIQUE FOR MUSICIANS 2
MUSI 510 PROFESSIONAL DEVELOPMENT FOR MUSICIANS 2
MUSI 515 MUSIC ENTREPRENEURSHIP 2
MUSI 518 THE ART AND BUSINESS OF STUDIO TEACHING 2
MUSI 519 THEMATIC PROGRAMMING: THE ART OF THE RECITAL 2
MUSI 532 THE FELDENKRAIS METHOD AND THE MUSICIAN'S BODY 2
MUSI 538 THE ART OF PERFORMANCE: PRESENCE ON STAGE 2
MUSI 540 APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM 2

Elective Requirements
Code    Title                                      Credit Hours

Select 6 credit hours from the following: 1

Any course at the 300-level or above
Any language course at the 100-level or above
Any additional Music Theory, Music History, or Music Career and Skills Enhancement course
Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)
MUSI 342 RICE JAZZ ENSEMBLE
MUSI 345 APPLIED STUDIES IN JAZZ
MUSI 381 CONCENTRATION PIANO
MUSI 436 / MDEM 456 COLLEGIUM MUSICUM
MUSI 444 PRACTICUM IN CONTEMPORARY MUSIC
MUSI 585 SONATA CLASS
MUSI 649 GRADUATE INDEPENDENT STUDY

Footnotes and Additional Information
1 No more than three (3) credit hours of MUSI 649 Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

Admission
For Instrumental Performance, Vocal Performance, and Orchestral Conducting applicants, an audition is required. Composition applicants must submit portfolios, and Musicology applicants must provide samples of their written work. Musicology applicants must also complete advanced music tests as well as the Graduate Record Examination for admission consideration.

Academic Standards
Curriculum and Degree Requirements
Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy
A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student's work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of C+ (2.33 grade points) or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors a grade of C+ (2.33 grade points) or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum overall grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean's office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Performance
Students are expected to perform frequently during their residency at Rice. MMus students in any of the performance fields of study must present at least two full recitals. Composition and Conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all MMus students must participate in the school's conducted ensembles as assigned.

Thesis
A thesis is required for MMus students in the field of Musicology. In lieu of a thesis, MMus students in the field of Composition must produce an
original work of extended scope. Both thesis and original work must be publicly defended.

Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu

Opportunities for the MMus Degree
Other Musical Opportunities
Lectures and Performances
A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu

Master of Music (MMus) Degree in the field of Cello Performance

Program Learning Outcomes for the MMus Degree
Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.

Requirements for the MMus Degree
The MMus degree in the field of Cello Performance is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MMus degree in the field of Cello Performance must complete:

- A minimum of 44 credit hours to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree.

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
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Degree Requirements

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<td>VIOLONCELLO FOR MAJORS-ADVANCED (minimum of 4 semesters)</td>
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<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
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<td>MUSI 636</td>
<td>ADVANCED CHAMBER MUSIC (minimum of 4 semesters)</td>
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<td>MUSI 531</td>
<td>ORCHESTRAL REPERTOIRE (minimum of 4 semesters)</td>
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<td>or MUSI 631</td>
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Academic Coursework

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<tr>
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<td>Select 1 course from the Approved Music Theory course offerings (see course list below)</td>
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<tr>
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<td>Select 1 additional course from the Music Theory or Music History course offerings (see course lists below)</td>
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<tr>
<td></td>
<td>Select 2 courses from the Music Career and Skills Enhancement course offerings (see course list below)</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Select 6 credit hours as Elective Requirements (see course list below)</td>
<td>6</td>
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</table>

Proficiencies

Students must demonstrate the following proficiencies:

- Piano proficiency
- Aural skills proficiency

Total Credit Hours

44
Footnotes and Additional Information

1. No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

2. Deficiencies in these areas will result in remedial coursework being added to a student’s degree plan.

Academic Coursework

Academic Coursework is comprised of at least 1 course (3 credit hours) from the Approved Music Theory course offerings, 1 course (3 credit hours) from the Music Theory or Music History course offerings, 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings, and 6 credit hours from the Elective Requirements.

Approved Music Theory Courses

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<tr>
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<td>MODAL COUNTERPOINT</td>
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<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
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<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
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<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
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<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION</td>
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<tr>
<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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Additional Music Theory Courses

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<td>MUSI 316 / FILM 323</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
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<tr>
<td>MUSI 378 / ASIA 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
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<tr>
<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
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<tr>
<td>MUSI 507</td>
<td>TECHNOLOGY FOR MUSICIANS</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 508</td>
<td>FUNDAMENTALS OF PRIVATE TEACHING</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 509</td>
<td>THE ALEXANDER TECHNIQUE FOR MUSICIANS</td>
<td>2</td>
</tr>
</tbody>
</table>
PROFESSIONAL DEVELOPMENT FOR MUSICIANS
MUSI 510  2
MUSIC ENTREPRENEURSHIP
MUSI 515  2
THE ART AND BUSINESS OF STUDIO TEACHING
MUSI 518  2
THEMATIC PROGRAMMING: THE ART OF THE RECITAL
MUSI 519  2
THE FELDENKRAIS METHOD AND THE MUSICIAN’S BODY
MUSI 532  2
THE ART OF PERFORMANCE: PRESENCE ON STAGE
MUSI 538  2
APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM
MUSI 540  2

Elective Requirements

Select 6 credit hours from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI 342</td>
<td>RICE JAZZ ENSEMBLE</td>
</tr>
<tr>
<td>MUSI 345</td>
<td>APPLIED STUDIES IN JAZZ</td>
</tr>
<tr>
<td>MUSI 381</td>
<td>CONCENTRATION PIANO</td>
</tr>
<tr>
<td>MUSI 436 / MDEM 456</td>
<td>COLLEGIUM MUSICUM</td>
</tr>
<tr>
<td>MUSI 444</td>
<td>PRACTICUM IN CONTEMPORARY MUSIC</td>
</tr>
<tr>
<td>MUSI 585</td>
<td>SONATA CLASS</td>
</tr>
<tr>
<td>MUSI 649</td>
<td>GRADUATE INDEPENDENT STUDY</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1 No more than three (3) credit hours of MUSI 649 Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

Academic Standards

Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy

A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of C+ (2.33 grade points) or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors a grade of C+ (2.33 grade points) or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum overall grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

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Students are expected to perform frequently during their residency at Rice. MMus students in any of the performance fields of study must present at least two full recitals. Composition and Conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all MMus students must participate in the school’s conducted ensembles as assigned.

Thesis

A thesis is required for MMus students in the field of Musicology. In lieu of a thesis, MMus students in the field of Composition must produce an original work of extended scope. Both thesis and original work must be publicly defended.

Additional Information

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Policies for the MMus Degree

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The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Shepherd School of Music publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/


Admission

For Instrumental Performance, Vocal Performance, and Orchestral Conducting applicants, an audition is required. Composition applicants must submit portfolios, and Musicology applicants must provide samples of their written work. Musicology applicants must also complete advanced music tests as well as the Graduate Record Examination for admission consideration.

2019-2020 General Announcements
PDF Generated 1/29/2020
Opportunities for the MMus Degree

Other Musical Opportunities

Lectures and Performances
A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

Additional Information
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Master of Music (MMus) Degree in the field of Clarinet Performance

Program Learning Outcomes for the MMus Degree

Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.

Requirements for the MMus Degree

The MMus degree in the field of Clarinet Performance is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MMus degree in the field of Clarinet Performance must complete:

- A minimum of 44 credit hours to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree.

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MMus Degree in the field of Clarinet Performance</td>
<td>44</td>
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</table>

Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI 655</td>
<td>CLARINET FOR MAJORS-ADVANCED (minimum of 4 semesters)</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 636</td>
<td>ADVANCED CHAMBER MUSIC (minimum of 4 semesters)</td>
<td>1</td>
</tr>
<tr>
<td>MUSI 531</td>
<td>ORCHESTRAL REPERTOIRE (minimum of 4 semesters)</td>
<td>1</td>
</tr>
<tr>
<td>MUSI 641</td>
<td>MASTER’S RECITAL I</td>
<td>0</td>
</tr>
<tr>
<td>MUSI 741</td>
<td>MASTER’S RECITAL II</td>
<td>0</td>
</tr>
<tr>
<td>or MUSI 631</td>
<td>MOCK AUDITION</td>
<td></td>
</tr>
</tbody>
</table>

Academic Coursework

Select 1 course from the Approved Music Theory course offerings (see course list below)
Select 1 additional course from the Music Theory or Music History course offerings (see course lists below)
Select 2 courses from the Music Career and Skills Enhancement course offerings (see course list below)
Select 6 credit hours from the Elective Requirements (see course list below)

Proficiencies

Students must demonstrate the following proficiencies:

- Piano proficiency
- Aural skills proficiency

Total Credit Hours: 44

Footnotes and Additional Information

1. No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

2. Deficiencies in these areas will result in remedial coursework being added to a student’s degree plan.
Academic Coursework
Academic Coursework is comprised of at least 1 course (3 credit hours) from the Approved Music Theory course offerings, 1 course (3 credit hours) from the Music Theory or Music History course offerings, 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings, and 6 credit hours from the Elective Requirements.

Approved Music Theory Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MUSIC THEORY COMPOSITION</td>
<td></td>
</tr>
<tr>
<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>COMPOSITION</td>
<td></td>
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<tr>
<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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</table>

Additional Music Theory Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>MUSI 316</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
<td>3</td>
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<tr>
<td></td>
<td>FILM 323</td>
<td></td>
</tr>
<tr>
<td>MUSI 378</td>
<td>CLASSICAL, CONTEMPORARY, AND</td>
<td>3</td>
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<tr>
<td>ASIA 378</td>
<td>CROSS-CULTURAL ASIAN MUSIC</td>
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<tr>
<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 416</td>
<td>ORCHESTRATION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>KEYBOARD</td>
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<tr>
<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
<td>3</td>
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<tr>
<td>MUSI 606</td>
<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
<td>3</td>
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<tr>
<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
<td>3</td>
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<tr>
<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
<td>3</td>
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<tr>
<td>MUSI 712</td>
<td>SEMINAR IN ADVANCED ANALYSIS</td>
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<tr>
<td>MUSI 713</td>
<td>SPECIAL TOPICS IN ADVANCED ANALYSIS</td>
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Music History Courses

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<th>Code</th>
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<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 422</td>
<td>RENAISSANCE MUSIC</td>
<td>3</td>
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<tr>
<td>MUSI 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
<td>3</td>
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<tr>
<td>MDMA 429</td>
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<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
<td>3</td>
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<tr>
<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
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<tr>
<td>MUSI 529</td>
<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
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<tr>
<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
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<tr>
<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
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<tr>
<td>MUSI 537</td>
<td>SATIE, COCTEAU &amp; LES SIX: PARIS IN THE</td>
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<tr>
<td></td>
<td>1920s AND BEYOND</td>
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<td>MUSI 543</td>
<td>MUSIC AND MODERNISM IN FRANCE</td>
<td>3</td>
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<tr>
<td>MUSI 551</td>
<td>MUSIC OF RICHARD STRAUSS</td>
<td>3</td>
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<tr>
<td>MUSI 621</td>
<td>SELECTED STUDIES IN MUSIC HISTORY</td>
<td>3</td>
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<tr>
<td>MUSI 623</td>
<td>J.S. BACH: CAREER, WORKS, AND</td>
<td>3</td>
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<tr>
<td></td>
<td>CRITICAL RECEPTION</td>
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<tr>
<td>MUSI 624</td>
<td>SEMINAR ON A SELECTED COMPOSER</td>
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<tr>
<td>MUSI 625</td>
<td>MOZART OPERAS</td>
<td>3</td>
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<td>MUSI 626</td>
<td>THE CLASSICAL STYLE</td>
<td>3</td>
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<td>MUSI 627</td>
<td>ROMANTIC SONGS AND PIANO PIECES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 721</td>
<td>MUSIC OF SCHOPENBERG</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 722</td>
<td>MUSIC OF STRAVINSKY</td>
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<tr>
<td>LPCR 200</td>
<td>ADVANCED MENTAL TRAINING</td>
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<tr>
<td>MGMT 620</td>
<td>THE NEW ENTERPRISE</td>
<td>3</td>
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<tr>
<td>MGMT 625</td>
<td>DESIGN THINKING</td>
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<td>MGMT 629</td>
<td>BUSINESS PLAN DEVELOPMENT</td>
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<td>MGMT 676</td>
<td>SOCIAL ENTERPRISE</td>
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<tr>
<td>MUSI 413</td>
<td>INTRODUCTION TO DALCROZE EURHYTHMICS</td>
<td>2</td>
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<tr>
<td>MUSI 500</td>
<td>IMAGINATION AND COMMUNICATION: DEVELOPING</td>
<td>2</td>
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<tr>
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<td>MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES</td>
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<tr>
<td>MUSI 501</td>
<td>ENHANCED PERFORMANCE: WRITING, SPEAKING,</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>PLAYING</td>
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<td>MUSI 502</td>
<td>CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS</td>
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<tr>
<td>MUSI 503</td>
<td>MUSIC AND PERFORMANCE: THE MIND/ BODY</td>
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<tr>
<td></td>
<td>CONNECTION</td>
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<tr>
<td>MUSI 507</td>
<td>TECHNOLOGY FOR MUSICIANS</td>
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<td>MUSI 515</td>
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<td>THEMATIC PROGRAMMING: THE ART OF THE RECITAL</td>
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<td>THE FELDENKRAIS METHOD AND THE MUSICIAN'S BODY</td>
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<tr>
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<td>THE ART OF PERFORMANCE: PRESENCE ON STAGE</td>
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</table>
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<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI 540</td>
<td>APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM</td>
<td>2</td>
</tr>
</tbody>
</table>

Select 6 credit hours from the following:

- Any course at the 300-level or above
- Any language course at the 100-level or above
- Any additional Music Theory, Music History, or Music Career and Skills Enhancement course
- Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)
- MUSI 342   RICE JAZZ ENSEMBLE
- MUSI 345   APPLIED STUDIES IN JAZZ
- MUSI 381   CONCENTRATION PIANO
- MUSI 436 / MDEM 456   COLLEGIUM MUSICUM
- MUSI 444   PRACTICUM IN CONTEMPORARY MUSIC
- MUSI 585   SONATA CLASS
- MUSI 649   GRADUATE INDEPENDENT STUDY

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Curriculum and Degree Requirements

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Additional Information

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Opportunities for the MMus Degree

Other Musical Opportunities

Lectures and Performances

A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.
Additional Information
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Master of Music (MMus) Degree in the field of Composition

Program Learning Outcomes for the MMus Degree

Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.

Requirements for the MMus Degree

The MMus degree in the field of Composition is a thesis master's degree. For general university requirements, please see Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MMus degree in the field of Composition must complete:

- A minimum of 48-52 credit hours, depending on course selection, to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the thesis master's degree.

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
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<td>Total Credit Hours Required for the MMus Degree in the field of Composition</td>
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Degree Requirements

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<td></td>
<td>Composition Requirements</td>
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<tr>
<td>MUSI 601</td>
<td>COMPOSITION FOR MAJORS ADVANCED AND GRADUATES (minimum of 4 semesters)</td>
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<tr>
<td>MUSI 603</td>
<td>GRADUATE COMPOSITION SEMINAR (minimum of 4 semesters)</td>
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<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
<td>3</td>
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<tr>
<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
<td>3</td>
</tr>
<tr>
<td>or MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
<td></td>
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<tr>
<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
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<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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<tr>
<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC 1</td>
<td>3</td>
</tr>
<tr>
<td>or MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION 1</td>
<td>3</td>
</tr>
<tr>
<td>or MUSI 606</td>
<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
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<tr>
<td>MUSI 641</td>
<td>MASTER’S RECITAL I</td>
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<tr>
<td>MUSI 647</td>
<td>MASTER’S THESIS 2</td>
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Other Requirements

Select 6 credit hours from the Elective Requirements (see course lists below)
Select 2 courses from Performance Coursework (see course lists below)

Proficiencies

Students must demonstrate the following proficiencies:

- Piano proficiency
- Aural skills proficiency

Total Credit Hours Required for the MMus Degree in the field of Composition: 48-52

Footnotes and Additional Information

1 Electronic Music courses are chosen following faculty advisement.
2 The master’s thesis must be publicly defended.
3 No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.
4 Piano lessons are strongly recommended as the Performance Coursework for MMus students in the field of Composition until piano proficiency is proven. Performance hours may be satisfied by any combination of private instrumental or vocal study, classes in conducting or score reading, or performance in sonata class or large ensembles. Please Note: Some of these courses may result in additional fees.
5. Deficiencies in these areas will result in remedial coursework being added to a student's degree plan.

Other Requirements
Students must complete 6 credit hours from the Elective Requirements, and 2 courses (2-6 credit hours, depending on course selection) from the Performance Coursework lists below.

Elective Requirements

<table>
<thead>
<tr>
<th>Code</th>
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<tr>
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<td>Select 6 credit hours from the following:</td>
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<tr>
<td></td>
<td>Any course at the 300-level or above</td>
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<tr>
<td></td>
<td>Any language course at the 100-level or above</td>
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<tr>
<td></td>
<td>Any additional Music Theory, Music History, or Music Career and Skills Enhancement course</td>
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<tr>
<td></td>
<td>Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)</td>
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<tr>
<td>MUSI 342</td>
<td>RICE JAZZ ENSEMBLE</td>
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<td>MUSI 345</td>
<td>APPLIED STUDIES IN JAZZ</td>
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<td>MUSI 381</td>
<td>CONCENTRATION PIANO</td>
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<tr>
<td>MUSI 436 / MDEM 456</td>
<td>COLLEGIUM MUSICUM</td>
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</tr>
<tr>
<td>MUSI 444</td>
<td>PRACTICUM IN CONTEMPORARY MUSIC</td>
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</tr>
<tr>
<td>MUSI 585</td>
<td>SONATA CLASS</td>
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<tr>
<td>MUSI 649</td>
<td>GRADUATE INDEPENDENT STUDY</td>
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Footnotes and Additional Information

1. Piano lessons are strongly recommended as the Performance Coursework for MMus students in the field of Composition until piano proficiency is proven. Performance hours may be satisfied by any combination of private instrumental or vocal study, classes in conducting or score reading, or performance in sonata class or large ensembles. Please Note: Some of these courses may result in additional fees.

Course Lists to Satisfy Requirements

Additional Music Theory Courses

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<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 316 / FILM 323</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
<td>3</td>
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<tr>
<td>MUSI 378 / ASIA 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CULTURAL ASIAN MUSIC</td>
<td>3</td>
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<td>BASIC ELECTRONIC MUSIC</td>
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<tr>
<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
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<tr>
<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
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<td>MUSI 416</td>
<td>ORCHESTRATION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
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</tr>
<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
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<td>MUSI 605</td>
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<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
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<td>CLASSROOM PEDAGOGY</td>
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<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
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<td>MUSI 712</td>
<td>SEMINAR IN ADVANCED ANALYSIS</td>
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<tr>
<td>MUSI 713</td>
<td>SPECIAL TOPICS IN ADVANCED ANALYSIS</td>
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Music History Courses

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<tbody>
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<td>RENAISSANCE MUSIC</td>
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<td>MUSI 429 / MDEM 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
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<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
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<td>AMERICAN MUSIC</td>
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<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
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<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
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<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
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<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
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<tr>
<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
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<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
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<tr>
<td>MUSI 537</td>
<td>SATIE, COCTEAU, &amp; LES SIX: PARIS IN THE 1920s AND BEYOND</td>
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<tr>
<td>MUSI 543</td>
<td>MUSIC AND MODERNISM IN FRANCE</td>
<td>3</td>
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<tr>
<td>MUSI 551</td>
<td>MUSIC OF RICHARD STRAUSS</td>
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<tr>
<td>MUSI 621</td>
<td>SELECTED STUDIES IN MUSIC HISTORY</td>
<td>3</td>
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</table>
Policies for the MMus Degree

Shepherd School of Music Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Shepherd School of Music publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Shepherd_School_of_Music_Graduate_Handbook.pdf

Admission

For Instrumental Performance, Vocal Performance, and Orchestral Conducting applicants, an audition is required. Composition applicants must submit portfolios, and Musicology applicants must provide samples of their written work. Musicology applicants must also complete advanced music tests as well as the Graduate Record Examination for admission consideration.

Academic Standards

Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy

A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student's work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of C+ (2.33 grade points) or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors a grade of C+ (2.33 grade points) or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum overall grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean's office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Performance

Students are expected to perform frequently during their residency at Rice. MMus students in any of the performance fields of study must present at least two full recitals. Composition and Conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all MMus students must participate in the school's conducted ensembles as assigned.

Thesis

A thesis is required for MMus students in the field of Musicology. In lieu of a thesis, MMus students in the field of Composition must produce an
original work of extended scope. Both thesis and original work must be publicly defended.

Additional Information
For additional information, please see the Shepherd School of Music website at: https://music.rice.edu

Opportunities for the MMus Degree
Other Musical Opportunities
Lectures and Performances
A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

Additional Information
For additional information, please see the Shepherd School of Music website at: https://music.rice.edu

Master of Music (MMus) Degree in the field of Double Bass Performance

Program Learning Outcomes for the MMus Degree

Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.

Requirements for the MMus Degree

The MMus degree in the field of Double Bass Performance is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MMus degree in the field of Double Bass Performance must complete:

- A minimum of 44 credit hours to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master's degree.

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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Degree Requirements

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<td>Performance Requirements</td>
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<td>MUSI 697</td>
<td>DOUBLE BASS FOR MAJORS-ADVANCED (minimum of 4 semesters)</td>
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<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
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<td>MUSI 636</td>
<td>ADVANCED CHAMBER MUSIC (minimum of 2 semesters)</td>
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<td>MUSI 531</td>
<td>ORCHESTRAL REPERTOIRE (minimum of 4 semesters)</td>
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<td>MUSI 599</td>
<td>STRING PEDAGOGY</td>
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<td>MUSI 641</td>
<td>MASTER'S RECITAL I</td>
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<td>MUSI 741 or MUSI 631</td>
<td>MASTER'S RECITAL II</td>
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Academic Coursework

Select 1 course from the Approved Music Theory course offerings (see course list below) | 3 |
Select 1 additional course from the Music Theory or Music History course offerings (see course lists below) | 3 |
Select 2 courses from the Music Career and Skills Enhancement course offerings (see course list below) | 4 |
Select 6 credit hours from the Elective Requirements (see course list below) | 6 |

Proficiencies

Students must demonstrate the following proficiencies:

- Piano proficiency
- Aural skills proficiency

Total Credit Hours | 44

2019-2020 General Announcements
PDF Generated 1/29/2020
Footnotes and Additional Information

1 No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

2 Deficiencies in these areas will result in remedial coursework being added to a student’s degree plan.

Academic Coursework

Academic Coursework is comprised of at least 1 course (3 credit hours) from the Approved Music Theory course offerings, 1 course (3 credit hours) from the Music Theory or Music History course offerings, 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings, and 6 credit hours from the Elective Requirements.

Approved Music Theory Courses

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
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<td>ANALYTICAL SYSTEMS</td>
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<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
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<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
<td>3</td>
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<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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<tr>
<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
<td>3</td>
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<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
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<tr>
<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION</td>
<td>3</td>
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<tr>
<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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Additional Music Theory Courses

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 316 / FILM 323</td>
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<td>MUSI 378 / ASIA 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
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<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
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<td>ELECTRONIC MUSIC COMPOSITION</td>
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<td>MUSIC BUSINESS AND LAW</td>
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<td>MUSI 416</td>
<td>ORCHESTRATION</td>
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<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
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<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
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<td>MUSI 605</td>
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<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
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<td>CLASSROOM PEDAGOGY</td>
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<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
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<td>MUSI 712</td>
<td>SEMINAR IN ADVANCED ANALYSIS</td>
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<td>MUSI 713</td>
<td>SPECIAL TOPICS IN ADVANCED ANALYSIS</td>
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Music History Courses

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<tbody>
<tr>
<td>MUSI 422</td>
<td>RENAISSANCE MUSIC</td>
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<td>MUSI 429 / MDEM 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
<td>3</td>
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<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
<td>3</td>
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<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
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<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
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<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
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<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
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<tr>
<td>MUSI 537</td>
<td>SATIE, COCTEAU &amp; LES SIX: PARIS IN THE 1920s AND BEYOND</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 543</td>
<td>MUSIC AND MODERNISM IN FRANCE</td>
<td>3</td>
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<tr>
<td>MUSI 551</td>
<td>MUSIC OF RICHARD STRAUSS</td>
<td>3</td>
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<tr>
<td>MUSI 621</td>
<td>SELECTED STUDIES IN MUSIC HISTORY</td>
<td>3</td>
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<tr>
<td>MUSI 623</td>
<td>J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION</td>
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<td>MUSI 624</td>
<td>SEMINAR ON A SELECTED COMPOSER</td>
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<td>MUSI 625</td>
<td>MOZART OPERAS</td>
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<td>MUSI 626</td>
<td>THE CLASSICAL STYLE</td>
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<td>MUSI 721</td>
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<tr>
<td>MUSI 722</td>
<td>MUSIC OF STRAVINSKY</td>
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Music Career and Skills Enhancement Courses

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<thead>
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<th>Credit Hours</th>
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<td>LPCR 200</td>
<td>ADVANCED MENTAL TRAINING</td>
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<td>MGMT 621</td>
<td>THE NEW ENTERPRISE</td>
<td>3</td>
</tr>
<tr>
<td>MGMT 625</td>
<td>DESIGN THINKING</td>
<td>1.5</td>
</tr>
<tr>
<td>MGMT 629</td>
<td>BUSINESS PLAN DEVELOPMENT</td>
<td>1.5</td>
</tr>
<tr>
<td>MGMT 676</td>
<td>SOCIAL ENTERPRISE</td>
<td>1.5</td>
</tr>
<tr>
<td>MUSI 413</td>
<td>INTRODUCTION TO DALCROZE EURHYTHMICS</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 500</td>
<td>IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 501</td>
<td>ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 502</td>
<td>CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS</td>
<td>2</td>
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<td>MUSI 503</td>
<td>MUSIC AND PERFORMANCE: THE MIND/ BODY CONNECTION</td>
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<td>TECHNOLOGY FOR MUSICIANS</td>
<td>2</td>
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MUSI 510  PROFESSIONAL DEVELOPMENT FOR MUSICIANS  2
MUSI 515  MUSIC ENTREPRENEURSHIP  2
MUSI 518  THE ART AND BUSINESS OF STUDIO TEACHING  2
MUSI 519  THEMATIC PROGRAMMING: THE ART OF THE RECITAL  2
MUSI 532  THE FELDENKRAIS METHOD AND THE MUSICIAN’S BODY  2
MUSI 538  THE ART OF PERFORMANCE: PRESENCE ON STAGE  2
MUSI 540  APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM  2

Elective Requirements

Select 6 credit hours from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI 342</td>
<td>RICE JAZZ ENSEMBLE</td>
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</tr>
<tr>
<td>MUSI 345</td>
<td>APPLIED STUDIES IN JAZZ</td>
<td></td>
</tr>
<tr>
<td>MUSI 381</td>
<td>CONCENTRATION PIANO</td>
<td></td>
</tr>
<tr>
<td>MUSI 436 / MDEM 456</td>
<td>COLLEGIUM MUSICUM</td>
<td></td>
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<tr>
<td>MUSI 444</td>
<td>PRACTICUM IN CONTEMPORARY MUSIC</td>
<td></td>
</tr>
<tr>
<td>MUSI 585</td>
<td>SONATA CLASS</td>
<td></td>
</tr>
<tr>
<td>MUSI 649</td>
<td>GRADUATE INDEPENDENT STUDY</td>
<td></td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1 No more than three (3) credit hours of MUSI 649 Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 342, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

Academic Standards

Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy

A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

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Note: For music history and musicology majors a grade of C+ (2.33 grade points) or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum overall grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

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Thesis

A thesis is required for MMus students in the field of Musicology. In lieu of a thesis, MMus students in the field of Composition must produce an original work of extended scope. Both thesis and original work must be publicly defended.

Additional Information

For additional information, please see the Shepherd School of Music website: https://music.rice.edu
Opportunities for the MMus Degree

Other Musical Opportunities

Lectures and Performances

A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

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Master of Music (MMus) Degree in the field of Flute Performance

Program Learning Outcomes for the MMus Degree

Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.

Requirements for the MMus Degree

The MMus degree in the field of Flute Performance is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MMus degree in the field of Flute Performance must complete:

- A minimum of 44 credit hours to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master's degree.

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<tr>
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<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 651</td>
<td>FLUTE FOR MAJORS-ADVANCED</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>(minimum of 4 semesters)</td>
<td></td>
</tr>
<tr>
<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 636</td>
<td>ADVANCED CHAMBER MUSIC (minimum of 4 semesters)</td>
<td>1</td>
</tr>
<tr>
<td>MUSI 531</td>
<td>ORCHESTRAL REPertoire (minimum of 4 semesters)</td>
<td>1</td>
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<tr>
<td>MUSI 641</td>
<td>MASTER’S RECITAL I</td>
<td>0</td>
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<td>MUSI 741</td>
<td>MASTER’S RECITAL II</td>
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<tr>
<td></td>
<td>or MUSI 631 MOCK AUDITION</td>
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</table>

Performance Requirements

Academic Coursework

Select 1 course from the Approved Music Theory course offerings (see course list below) 3

Select 1 additional course from the Music Theory or Music History course offerings (see course lists below) 3

Select 2 courses from the Music Career and Skills Enhancement course offerings (see course list below) 4

Select 6 credit hours from the Elective Requirements (see course list below) 1

Proficiencies 2

Students must demonstrate the following proficiencies:

- Piano proficiency
- Aural skills proficiency

Total Credit Hours

44

Footnotes and Additional Information

1 No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

2 Deficiencies in these areas will result in remedial coursework being added to a student’s degree plan.
**Academic Coursework**

Academic Coursework is comprised of at least 1 course (3 credit hours) from the Approved Music Theory course offerings, 1 course (3 credit hours) from the Music Theory or Music History course offerings, 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings, and 6 credit hours from the Elective Requirements.

### Approved Music Theory Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MUSIC THEORY COMPOSITION</td>
<td></td>
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<tr>
<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND</td>
<td>3</td>
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<tr>
<td></td>
<td>COMPOSITION</td>
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<tr>
<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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### Additional Music Theory Courses

<table>
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<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>MUSI 316 / FILM 323</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
<td>3</td>
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<tr>
<td>MUSI 378 / ASIA 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
<td>3</td>
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<tr>
<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
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<tr>
<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
<td>3</td>
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<tr>
<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
<td>3</td>
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<tr>
<td>MUSI 416</td>
<td>ORCHESTRATION</td>
<td>3</td>
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<tr>
<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
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<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE</td>
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<td>KEYBOARD</td>
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<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER</td>
<td>3</td>
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<tr>
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<td>MUSIC SYSTEMS</td>
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<td>MUSI 606</td>
<td>ADVANCED COMPUTER SOUND</td>
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<td></td>
<td>SYNTHESIS</td>
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<tr>
<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
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<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
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<td>MUSI 712</td>
<td>SEMINAR IN ADVANCED ANALYSIS</td>
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<tr>
<td>MUSI 713</td>
<td>SPECIAL TOPICS IN ADVANCED ANALYSIS</td>
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### Music History Courses

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<tr>
<td>MUSI 422</td>
<td>RENAISSANCE MUSIC</td>
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<tr>
<td>MUSI 429 / MDEM 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
<td>3</td>
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<tr>
<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
<td>3</td>
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<tr>
<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
<td>3</td>
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<tr>
<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
<td>3</td>
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<tr>
<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
<td>3</td>
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<tr>
<td>MUSI 529</td>
<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
<td>3</td>
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<tr>
<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE</td>
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<td>MODERN WORLD</td>
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<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
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Opportunities for the MMus Degree
Other Musical Opportunities
Lectures and Performances
A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.
**Master of Music (MMus) Degree in the field of Harp Performance**

**Program Learning Outcomes for the MMus Degree**

Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.

**Requirements for the MMus Degree**

The MMus degree in the field of Harp Performance is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MMus degree in the field of Harp Performance must complete:

- A minimum of 44 credit hours to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A minimum overall GPA of 2.67 or higher in all Rice coursework. Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

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<thead>
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<td>Code</td>
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<table>
<thead>
<tr>
<th>Degree Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code</td>
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<tr>
<td></td>
</tr>
<tr>
<td>MUSI 687</td>
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<td>MUSI 635</td>
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<td>MUSI 636</td>
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<tr>
<td>MUSI 531</td>
</tr>
<tr>
<td>MUSI 641</td>
</tr>
<tr>
<td>MUSI 741</td>
</tr>
<tr>
<td>or MUSI 631</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Select 1 course from the Approved Music Theory course offerings (see course list below)</td>
</tr>
<tr>
<td>Select 1 additional course from the Music Theory or Music History course offerings (see course lists below)</td>
</tr>
<tr>
<td>Select 2 courses from the Music Career and Skills Enhancement course offerings (see course list below)</td>
</tr>
<tr>
<td>Select 6 credit hours from the Elective Requirements (see course list below)</td>
</tr>
<tr>
<td></td>
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<tr>
<td>Students must demonstrate the following proficiencies:</td>
</tr>
<tr>
<td>Piano proficiency</td>
</tr>
<tr>
<td>Aural skills proficiency</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Footnotes and Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.</td>
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<table>
<thead>
<tr>
<th>Academic Coursework</th>
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<tbody>
<tr>
<td>Academic Coursework is comprised of at least 1 course (3 credit hours) from the Approved Music Theory course offerings, 1 course (3 credit hours) from the Music Theory or Music History course offerings, 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings, and 6 credit hours from the Elective Requirements.</td>
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### Approved Music Theory Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MUSIC THEORY COMPOSITION</td>
<td></td>
</tr>
<tr>
<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION</td>
<td>3</td>
</tr>
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</table>

### Additional Music Theory Courses

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI 316 / FILM 323</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 378 / ASIA 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 416</td>
<td>ORCHESTRATION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 606</td>
<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 712</td>
<td>SEMINAR IN ADVANCED ANALYSIS</td>
<td>3</td>
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<tr>
<td>MUSI 713</td>
<td>SPECIAL TOPICS IN ADVANCED ANALYSIS</td>
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### Music History Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 422</td>
<td>RENAISSANCE MUSIC</td>
<td>3</td>
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<tr>
<td>MUSI 429 / MDEM 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 529</td>
<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 537</td>
<td>SATIE, COCTEAU &amp; LES SIX: PARIS IN THE 1920s AND BEYOND</td>
<td>3</td>
</tr>
</tbody>
</table>

### Music Career and Skills Enhancement Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>LPCR 200</td>
<td>ADVANCED MENTAL TRAINING</td>
<td>2</td>
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<tr>
<td>MGMT 621</td>
<td>THE NEW ENTERPRISE</td>
<td>3</td>
</tr>
<tr>
<td>MGMT 625</td>
<td>DESIGN THINKING</td>
<td>1.5</td>
</tr>
<tr>
<td>MGMT 629</td>
<td>BUSINESS PLAN DEVELOPMENT</td>
<td>1.5</td>
</tr>
<tr>
<td>MGMT 676</td>
<td>SOCIAL ENTERPRISE</td>
<td>1.5</td>
</tr>
<tr>
<td>MUSI 413</td>
<td>INTRODUCTION TO DALCROZE EURHYTHMICS</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 500</td>
<td>IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 501</td>
<td>ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 502</td>
<td>CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 503</td>
<td>MUSIC AND PERFORMANCE: THE MIND/ BODY CONNECTION</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 507</td>
<td>TECHNOLOGY FOR MUSICIANS</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 508</td>
<td>FUNDAMENTALS OF PRIVATE TEACHING</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 509</td>
<td>THE ALEXANDER TECHNIQUE FOR MUSICIANS</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 510</td>
<td>PROFESSIONAL DEVELOPMENT FOR MUSICIANS</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 515</td>
<td>MUSIC ENTREPRENEURSHIP</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 518</td>
<td>THE ART AND BUSINESS OF STUDIO TEACHING</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 519</td>
<td>THEMATIC PROGRAMMING: THE ART OF THE RECITAL</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 532</td>
<td>THE FELDENKRAIS METHOD AND THE MUSICIAN'S BODY</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 538</td>
<td>THE ART OF PERFORMANCE: PRESENCE ON STAGE</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 540</td>
<td>APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM</td>
<td>2</td>
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### Elective Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td><strong>Select 6 credit hours from the following:</strong></td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Any course at the 300-level or above</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Any language course at the 100-level or above</td>
<td></td>
</tr>
</tbody>
</table>
Any additional Music Theory, Music History, or Music Career and Skills Enhancement course

Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)

MUSI 342 RICE JAZZ ENSEMBLE
MUSI 345 APPLIED STUDIES IN JAZZ
MUSI 381 CONCENTRATION PIANO
MUSI 436 / COLLEGIUM MUSICUM
MUSI 444 PRACTICUM IN CONTEMPORARY MUSIC
MUSI 585 SONATA CLASS
MUSI 649 GRADUATE INDEPENDENT STUDY

Footnotes and Additional Information

1 No more than three (3) credit hours of MUSI 649 Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

Policies for the MMus Degree

Shepherd School of Music Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Shepherd School of Music publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Shepherd_School_of_Music_Graduate_Handbook.pdf

Admission

For Instrumental Performance, Vocal Performance, and Orchestral Conducting applicants, an audition is required. Composition applicants must submit portfolios, and Musicology applicants must provide samples of their written work. Musicology applicants must also complete advanced music tests as well as the Graduate Record Examination for admission consideration.

Academic Standards

Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy

A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student's work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of C+ (2.33 grade points) or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors a grade of C+ (2.33 grade points) or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum overall grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean's office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Performance

Students are expected to perform frequently during their residency at Rice. MMus students in any of the performance fields of study must present at least two full recitals. Composition and Conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all MMus students must participate in the school's conducted ensembles as assigned.

Thesis

A thesis is required for MMus students in the field of Musicology. In lieu of a thesis, MMus students in the field of Composition must produce an original work of extended scope. Both thesis and original work must be publicly defended.

Additional Information

For additional information, please see the Shepherd School of Music website: https://music.rice.edu

Opportunities for the MMus Degree

Other Musical Opportunities

Lectures and Performances

A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

Additional Information

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Master of Music (MMus) Degree in the field of Horn Performance
Program Learning Outcomes for the MMus Degree

Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.

Requirements for the MMus Degree

The MMus degree in the field of Horn Performance is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MMus degree in the field of Horn Performance must complete:

- A minimum of 44 credit hours to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree.

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/degeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

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</table>

Total Credit Hours Required for the MMus Degree in the field of Horn Performance 44

Degree Requirements

<table>
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<tr>
<th>Code</th>
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<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Performance Requirements</td>
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<tr>
<td>MUSI 661</td>
<td>HORN FOR MAJORS-ADVANCED (minimum of 4 semesters)</td>
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</tr>
<tr>
<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 636</td>
<td>ADVANCED CHAMBER MUSIC (minimum of 4 semesters)</td>
<td>1</td>
</tr>
<tr>
<td>MUSI 531</td>
<td>ORCHESTRAL REPERTOIRE (minimum of 4 semesters)</td>
<td>1</td>
</tr>
<tr>
<td>MUSI 641</td>
<td>MASTER'S RECITAL I</td>
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<td>MUSI 741</td>
<td>MASTER'S RECITAL II</td>
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<td>or MUSI 631</td>
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<tr>
<td></td>
<td>MOCK AUDITION</td>
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</tbody>
</table>

| Academic Coursework | Select 1 course from the Approved Music Theory course offerings (see course list below) | 3 |
|                     | Select 1 additional course from the Music Theory or Music History course offerings (see course lists below) | 3 |
|                     | Select 2 courses from the Music Career and Skills Enhancement course offerings (see course list below) | 4 |
|                     | Select 6 credit hours from the Elective Requirements (see course list below) | 6 |

<table>
<thead>
<tr>
<th>Proficiencies</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Piano proficiency</td>
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Total Credit Hours 44

Footnotes and Additional Information

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2 Deficiencies in these areas will result in remedial coursework being added to a student’s degree plan.

Academic Coursework

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<td>MODAL COUNTERPOINT</td>
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<td>ADVANCED ORCHESTRATION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 613</td>
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<td>SPECIAL TOPICS IN MUSIC THEORY COMPOSITION</td>
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<tr>
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<td>3</td>
</tr>
<tr>
<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 416</td>
<td>ORCHESTRATION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 606</td>
<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 712</td>
<td>SEMINAR IN ADVANCED ANALYSIS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 713</td>
<td>SPECIAL TOPICS IN ADVANCED ANALYSIS</td>
<td>3</td>
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</tbody>
</table>

### Music History Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 422</td>
<td>RENAISSANCE MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 429/ MDEM 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
<td>3</td>
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<tr>
<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 529</td>
<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
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<tr>
<td>MUSI 537</td>
<td>SATIE, COCTEAU, &amp; LES SIX: PARIS IN THE 1920s AND BEYOND</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 543</td>
<td>MUSIC AND MODERNISM IN FRANCE</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 551</td>
<td>MUSIC OF RICHARD STRAUSS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 621</td>
<td>SELECTED STUDIES IN MUSIC HISTORY</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 623</td>
<td>J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 624</td>
<td>SEMINAR ON A SELECTED COMPOSER</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 625</td>
<td>MOZART OPERAS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 626</td>
<td>THE CLASSICAL STYLE</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 627</td>
<td>ROMANTIC SONGS AND PIANO PIECES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 721</td>
<td>MUSIC OF SCHOENBERG</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 722</td>
<td>MUSIC OF STRAVINSKY</td>
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### Music Career and Skills Enhancement Courses

<table>
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<th>Title</th>
<th>Credit Hours</th>
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<td>LPCR 200</td>
<td>ADVANCED MENTAL TRAINING</td>
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</tr>
<tr>
<td>MGMT 621</td>
<td>THE NEW ENTERPRISE</td>
<td>3</td>
</tr>
<tr>
<td>MGMT 625</td>
<td>DESIGN THINKING</td>
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</tr>
<tr>
<td>MGMT 629</td>
<td>BUSINESS PLAN DEVELOPMENT</td>
<td>1.5</td>
</tr>
<tr>
<td>MGMT 676</td>
<td>SOCIAL ENTERPRISE</td>
<td>1.5</td>
</tr>
<tr>
<td>MUSI 413</td>
<td>IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 500</td>
<td>ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 501</td>
<td>PROFESSIONAL DEVELOPMENT FOR MUSICIANS</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 502</td>
<td>TECHNOLOGY FOR MUSICIANS</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 503</td>
<td>FUNDAMENTALS OF PRIVATE TEACHING</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 504</td>
<td>THE ALEXANDER TECHNIQUE FOR MUSICIANS</td>
<td>2</td>
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<tr>
<td>MUSI 505</td>
<td>PROFESSIONAL DEVELOPMENT FOR MUSICIANS</td>
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</tr>
<tr>
<td>MUSI 506</td>
<td>MUSIC ENTREPRENEURSHIP</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 518</td>
<td>THE ART AND BUSINESS OF STUDIO TEACHING</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 519</td>
<td>THEMATIC PROGRAMMING: THE ART OF THE RECITAL</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 532</td>
<td>THE FELDENKRAIS METHOD AND THE MUSICIAN'S BODY</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 538</td>
<td>THE ART OF PERFORMANCE: PRESENCE ON STAGE</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 540</td>
<td>APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM</td>
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### Elective Requirements

<table>
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<td>Select 6 credit hours from the following:</td>
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<td>Any course at the 300-level or above</td>
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</tr>
<tr>
<td>Any language course at the 100-level or above</td>
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</tr>
<tr>
<td>Any additional Music Theory, Music History, or Music Career and Skills Enhancement course</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUSI 342</td>
<td>RICE JAZZ ENSEMBLE</td>
<td></td>
</tr>
<tr>
<td>MUSI 345</td>
<td>APPLIED STUDIES IN JAZZ</td>
<td></td>
</tr>
<tr>
<td>MUSI 381</td>
<td>CONCENTRATION PIANO</td>
<td></td>
</tr>
<tr>
<td>MUSI 436/ MDEM 456</td>
<td>COLLEGIUM MUSICUM</td>
<td></td>
</tr>
</tbody>
</table>
PRACTICUM IN CONTEMPORARY MUSIC
SONATA CLASS
GRADUATE INDEPENDENT STUDY

Footnotes and Additional Information

1 No more than three (3) credit hours of MUSI 649 Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

Policies for the MMus Degree
Shepherd School of Music Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Shepherd School of Music publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Shepherd_School_of_Music_Graduate_Handbook.pdf

Admission

For Instrumental Performance, Vocal Performance, and Orchestral Conducting applicants, an audition is required. Composition applicants must submit portfolios, and Musicology applicants must provide samples of their written work. Musicology applicants must also complete advanced music tests as well as the Graduate Record Examination for admission consideration.

Academic Standards
Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy

A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation.

Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from any public function not directly a part of a degree program.

If a student receives a second semester of C+ (2.33 grade points) or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors a grade of C+ (2.33 grade points) or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum overall grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Performance

Students are expected to perform frequently during their residency at Rice. MMus students in any of the performance fields of study must present at least two full recitals. Composition and Conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all MMus students must participate in the school’s conducted ensembles as assigned.

Thesis

A thesis is required for MMus students in the field of Musicology. In lieu of a thesis, MMus students in the field of Composition must produce an original work of extended scope. Both thesis and original work must be publicly defended.

Additional Information

For additional information, please see the Shepherd School of Music website: https://music.rice.edu

Opportunities for the MMus Degree

Other Musical Opportunities

Lectures and Performances

A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

Additional Information

For additional information, please see the Shepherd School of Music website: https://music.rice.edu

Master of Music (MMus) Degree in the field of Musicology

Program Learning Outcomes for the MMus Degree

Upon completing the MMUs degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.
Requirements for the MMus Degree

The MMus degree in the field of Musicology is a thesis master’s degree. For general university requirements, please see Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MMus degree in the field of Musicology must complete:

- A minimum of 50-54 credit hours, depending on course selection, to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the thesis master’s degree.

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MMus Degree in the field of Musicology</td>
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</table>

Degree Requirements

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<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Musicology and Music Theory Coursework</td>
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</tr>
<tr>
<td>MUSI 429 / MDEM 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
<td>3</td>
</tr>
<tr>
<td>or MUSI 422</td>
<td>RENAISSANCE MUSIC</td>
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</tr>
<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 647</td>
<td>MASTER’S THESIS (minimum of 2 semesters)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Select 7 courses from Advanced Musicology course offerings (see course list below)</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Other Requirements</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Select 15 credit hours from Elective Requirements (see course list below)</td>
<td></td>
</tr>
</tbody>
</table>

Proficiencies

Students must demonstrate the following proficiencies:

- Piano
- Aural Skills
- German Language

Total Credit Hours 2019-2020 General Announcements

Footnotes and Additional Information

1. Graduate-level Music Theory coursework may replace MUSI 512 and/ or some of the seven (7) required Advanced Musicology courses with faculty approval.

2. The master’s thesis must be publicly defended.

3. No more than three (3) credit hours of MUSI 649 Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) will not fulfill this requirement.

4. Please Note: Some instrumental/vocal lessons may result in additional fees.

5. Deficiencies in these areas will result in remedial coursework being added to a student’s degree plan. German language proficiency may be met by one of the following experiences:
   - 4 years of German language instruction at the high-school level;
   - 2 year of German language instruction at the college-level;
   - GERM 141 and GERM 142 at Rice (or an equivalent accelerated course);
   - Passage of a proficiency exam (300 words, 3 hours, with dictionary).

Advanced Musicology

Students must complete a minimum of 7 courses (21 credit hours) from Advanced Musicology course offerings. Additional Advanced Musicology course offerings may also be selected to fulfill Elective Requirements.

Select 7 courses from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
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</tr>
<tr>
<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
<td></td>
</tr>
<tr>
<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
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<tr>
<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
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</tr>
<tr>
<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
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<tr>
<td>MUSI 529</td>
<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
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</tr>
<tr>
<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
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<tr>
<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
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<tr>
<td>MUSI 537</td>
<td>SATIE, COCTEAU &amp; LES SIX: PARIS IN THE 1920s AND BEYOND</td>
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<tr>
<td>MUSI 543</td>
<td>MUSIC AND MODERNISM IN FRANCE</td>
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</tr>
<tr>
<td>MUSI 551</td>
<td>MUSIC OF RICHARD STRAUSS</td>
<td></td>
</tr>
<tr>
<td>MUSI 623</td>
<td>J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION</td>
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<tr>
<td>MUSI 624</td>
<td>SEMINAR ON A SELECTED COMPOSER</td>
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</tr>
<tr>
<td>MUSI 625</td>
<td>MOZART OPERAS</td>
<td></td>
</tr>
<tr>
<td>MUSI 626</td>
<td>THE CLASSICAL STYLE</td>
<td></td>
</tr>
</tbody>
</table>

2-6
**Master of Music (MMus) Degree in the field of Musicology**

**MUSI 627** ROMANTIC SONGS AND PIANO PIECES  
**MUSI 721** MUSIC OF SCHOENBERG  
**MUSI 722** MUSIC OF STRAVINSKY

**Other Requirements**

Students must complete 15 credit hours from the Elective Requirements, and 2 courses (2-6 credit hours, depending on course selection) from the Performance Coursework lists below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td><strong>Elective Requirements</strong> 3</td>
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<td>Any course at the 300-level or above</td>
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<tr>
<td>Any language course at the 100-level or above</td>
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</tr>
<tr>
<td>Any additional Advanced Musicology course (see course list above)</td>
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<tr>
<td>Any Music Theory or Music Career and Skills Enhancement course (see course lists below)</td>
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<tr>
<td>Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)</td>
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<tr>
<td>MUSI 342 RICE JAZZ ENSEMBLE</td>
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<tr>
<td>MUSI 345 APPLIED STUDIES IN JAZZ</td>
<td></td>
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<tr>
<td>MUSI 381 CONCENTRATION PIANO</td>
<td></td>
<td></td>
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<tr>
<td>MUSI 436 COLLEGIUM MUSICUM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUSI 502 CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS</td>
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<tr>
<td>MUSI 514 SCORE READING AND THEORY AT THE KEYBOARD</td>
<td></td>
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<tr>
<td>MUSI 649 GRADUATE INDEPENDENT STUDY</td>
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**Performance Coursework** 4

Select 2 courses from the following: 2-6

<table>
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<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)</td>
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<td>Concentration Lessons (any course between MUSI 351 and MUSI 373)</td>
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<tr>
<td>Concentration Lessons (any course between MUSI 381 and MUSI 397)</td>
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<tr>
<td>MUSI 334 CAMPANILE ORCHESTRA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUSI 436 COLLEGIUM MUSICUM</td>
<td></td>
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<tr>
<td>MUSI 444 PRACTICUM IN CONTEMPORARY MUSIC</td>
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<tr>
<td>MUSI 502 CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS</td>
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<td>MUSI 514 SCORE READING AND THEORY AT THE KEYBOARD</td>
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<tr>
<td>MUSI 636 ADVANCED CHAMBER MUSIC</td>
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<tr>
<td>MUSI 640 RICE CHORALE - ADVANCED</td>
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**Course Lists to Satisfy Requirements**

**Approved Music Theory Courses**

<table>
<thead>
<tr>
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<th>Title</th>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
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</tr>
<tr>
<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
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**Additional Music Theory Courses**

<table>
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<th>Code</th>
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<tbody>
<tr>
<td>MUSI 316</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 378</td>
<td>CLASSICAL, CONTEMPORARY, AND ASIA</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
<td>3</td>
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<tr>
<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
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</tr>
<tr>
<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
<td>3</td>
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<td>MUSI 416</td>
<td>ORCHESTRATION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
<td>3</td>
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<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
<td>3</td>
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<tr>
<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
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<td>MUSI 606</td>
<td>ADVANCED COMPUTER SOUND SYNTHESES</td>
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<tr>
<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
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<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
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<td>MUSI 712</td>
<td>SEMINAR IN ADVANCED ANALYSIS</td>
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<tr>
<td>MUSI 713</td>
<td>SPECIAL TOPICS IN ADVANCED ANALYSIS</td>
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**Music Career and Skills Enhancement Courses**

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<th>Code</th>
<th>Title</th>
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<td>LPCR 200</td>
<td>ADVANCED MENTAL TRAINING</td>
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<tr>
<td>MGMT 621</td>
<td>THE NEW ENTERPRISE</td>
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<tr>
<td>MGMT 625</td>
<td>DESIGN THINKING</td>
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<td>MGMT 629</td>
<td>BUSINESS PLAN DEVELOPMENT</td>
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<tr>
<td>MGMT 676</td>
<td>SOCIAL ENTERPRISE</td>
<td>1.5</td>
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<tr>
<td>MUSI 413</td>
<td>INTRODUCTION TO DALCROZE EURHYTHMICS</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 500</td>
<td>IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 501</td>
<td>ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 502</td>
<td>CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 503</td>
<td>MUSIC AND PERFORMANCE: THE MIND/ BODY CONNECTION</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 507</td>
<td>TECHNOLOGY FOR MUSICIANS</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 508</td>
<td>FUNDAMENTALS OF MUSICIANS</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 509</td>
<td>THE ALEXANDER TECHNIQUE FOR MUSICIANS</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 510</td>
<td>PROFESSIONAL DEVELOPMENT FOR MUSICIANS</td>
<td>2</td>
</tr>
</tbody>
</table>
Policies for the MMus Degree

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Thesis

A thesis is required for MMus students in the field of Musicology. In lieu of a thesis, MMus students in the field of Composition must produce an original work of extended scope. Both thesis and original work must be publicly defended.

Additional Information

For additional information, please see the Shepherd School of Music website at: https://music.rice.edu

Opportunities for the MMus Degree

Other Musical Opportunities

Lectures and Performances

A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

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Master of Music (MMus) Degree in the field of Oboe Performance

Program Learning Outcomes for the MMus Degree

Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.

Requirements for the MMus Degree

The MMus degree in the field of Oboe Performance is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MMus degree in the field of Oboe Performance must complete:

- A minimum of 44 credit hours to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master's degree.

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MMus Degree in the field of Oboe Performance</td>
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Degree Requirements

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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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Performance Requirements

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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td>MUSI 653</td>
<td>OBOE FOR MAJORS-ADVANCED (minimum of 4 semesters)</td>
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<tr>
<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
<td>2</td>
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<tr>
<td>MUSI 636</td>
<td>ADVANCED CHAMBER MUSIC (minimum of 4 semesters)</td>
<td>1</td>
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<tr>
<td>MUSI 531</td>
<td>ORCHESTRAL REPertoire (minimum of 4 semesters)</td>
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<tr>
<td>MUSI 641</td>
<td>MASTER'S RECITAL I</td>
<td>0</td>
</tr>
<tr>
<td>MUSI 741</td>
<td>MASTER'S RECITAL II</td>
<td>0</td>
</tr>
</tbody>
</table>

or MUSI 631 MOCK AUDITION

Academic Coursework

Select 1 course from the Approved Music Theory course offerings

Select 1 additional course from the Music Theory or Music History course offerings

Select 2 courses from the Music Career and Skills Enhancement course offerings

Select 6 credit hours from the Elective Requirements

Proficiencies

Students must demonstrate the following proficiencies:

- Piano proficiency
- Aural skills proficiency

Total Credit Hours 44

Footnotes and Additional Information

1. No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

2. Deficiencies in these areas will result in remedial coursework being added to a student's degree plan.

Academic Coursework

Academic Coursework is comprised of at least 1 course (3 credit hours) from the Approved Music Theory course offerings, 1 course (3 credit hours) from the Music Theory or Music History course offerings, 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings, and 6 credit hours from the Elective Requirements.

Approved Music Theory Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
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<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
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<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
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<td>MUSI 516</td>
<td>ADVANCED ORCHESTRA</td>
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<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
<td>3</td>
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<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
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</tr>
<tr>
<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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Additional Music Theory Courses

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<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>MUSI 316 / FILM 323</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
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<tr>
<td>MUSI 378 / ASIA 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
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<tr>
<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
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<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
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<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
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<td>MUSI 416</td>
<td>ORCHESTRATION</td>
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<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
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<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
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<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
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<td>MUSI 606</td>
<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
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<td>CLASSROOM PEDAGOGY</td>
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<td>ANALYTICAL APPROACHES</td>
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<td>SEMINAR IN ADVANCED ANALYSIS</td>
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<td>MUSI 713</td>
<td>SPECIAL TOPICS IN ADVANCED ANALYSIS</td>
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<td>MUSI 422</td>
<td>RENAISSANCE MUSIC</td>
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<td>MUSI 429 / MDEM 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
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<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
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<tr>
<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
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<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
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<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
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<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
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<tr>
<td>MUSI 529</td>
<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
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<tr>
<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
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<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
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<tr>
<td>MUSI 537</td>
<td>SATIE, COCTEAU, &amp; LES SIX: PARIS IN THE 1920s AND BEYOND</td>
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<tr>
<td>MUSI 543</td>
<td>MUSIC AND MODERNISM IN FRANCE</td>
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<td>MUSI 551</td>
<td>MUSIC OF RICHARD STRAUSS</td>
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<tr>
<td>MUSI 621</td>
<td>SELECTED STUDIES IN MUSIC HISTORY</td>
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<tr>
<td>MUSI 623</td>
<td>J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION</td>
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<tr>
<td>MUSI 624</td>
<td>SEMINAR ON A SELECTED COMPOSER</td>
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<tr>
<td>MUSI 625</td>
<td>MOZART OPERAS</td>
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<td>MUSI 626</td>
<td>THE CLASSICAL STYLE</td>
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<td>MUSI 627</td>
<td>ROMANTIC SONGS AND PIANO PIECES</td>
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<td>MUSI 721</td>
<td>MUSIC OF SCHOENBERG</td>
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<td>MUSI 722</td>
<td>MUSIC OF STRAVINSKY</td>
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<td>MUSI 500</td>
<td>IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES</td>
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<tr>
<td>MUSI 501</td>
<td>ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING</td>
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<tr>
<td>MUSI 502</td>
<td>CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 503</td>
<td>MUSIC AND PERFORMANCE: THE MIND/ BODY CONNECTION</td>
<td>2</td>
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<tr>
<td>MUSI 507</td>
<td>TECHNOLOGY FOR MUSICIANS</td>
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</tr>
<tr>
<td>MUSI 508</td>
<td>FUNDAMENTALS OF PRIVATE TEACHING</td>
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<tr>
<td>MUSI 509</td>
<td>THE ALEXANDER TECHNIQUE FOR MUSICIANS</td>
<td>2</td>
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<tr>
<td>MUSI 510</td>
<td>PROFESSIONAL DEVELOPMENT FOR MUSICIANS</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 515</td>
<td>MUSIC ENTREPRENEURSHIP</td>
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<tr>
<td>MUSI 518</td>
<td>THE ART AND BUSINESS OF STUDIO TEACHING</td>
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<td>MUSI 519</td>
<td>THEMATIC PROGRAMMING: THE ART OF THE RECITAL</td>
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<tr>
<td>MUSI 532</td>
<td>THE FELDENKRAIS METHOD AND THE MUSICIAN'S BODY</td>
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<tr>
<td>MUSI 538</td>
<td>THE ART OF PERFORMANCE: PRESENCE ON STAGE</td>
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<tr>
<td>MUSI 540</td>
<td>APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM</td>
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**Elective Requirements**

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<tr>
<td></td>
<td>Any course at the 300-level or above</td>
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<tr>
<td></td>
<td>Any language course at the 100-level or above</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Any additional Music Theory, Music History, or Music Career and Skills Enhancement course</td>
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</tr>
<tr>
<td></td>
<td>Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)</td>
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</tr>
<tr>
<td>MUSI 342</td>
<td>RICE JAZZ ENSEMBLE</td>
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<tr>
<td>MUSI 345</td>
<td>APPLIED STUDIES IN JAZZ</td>
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<td>MUSI 381</td>
<td>CONCENTRATION PIANO</td>
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</tr>
<tr>
<td>MUSI 436 / MDEM 456</td>
<td>COLLEGIUM MUSICUM</td>
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<td>MUSI 444</td>
<td>PRACTICUM IN CONTEMPORARY MUSIC</td>
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<td>MUSI 585</td>
<td>SONATA CLASS</td>
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<tr>
<td>MUSI 649</td>
<td>GRADUATE INDEPENDENT STUDY</td>
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</tbody>
</table>

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Students are expected to perform frequently during their residency at Rice. MMus students in any of the performance fields of study must present at least two full recitals. Composition and Conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all MMus students must participate in the school's conducted ensembles as assigned.

Thesis
A thesis is required for MMus students in the field of Musicology. In lieu of a thesis, MMus students in the field of Composition must produce an original work of extended scope. Both thesis and original work must be publicly defended.

Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu

Opportunities for the MMus Degree
Other Musical Opportunities
Lectures and Performances
A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu

Master of Music (MMus) Degree in the field of Orchestral Conducting
Program Learning Outcomes for the MMus Degree

Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.

Requirements for the MMus Degree

The MMus degree in the field of Orchestral Conducting is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MMus degree in the field of Orchestral Conducting must complete:

• A minimum of 47 credit hours to satisfy degree requirements.
• A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
• A minimum of 24 credit hours must be taken at Rice University.
• A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
• A minimum overall GPA of 2.67 or higher in all Rice coursework.
• A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree.

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MMus Degree in the field of Orchestral Conducting</td>
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Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>Conducting Requirements</td>
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<tr>
<td>MUSI 637</td>
<td>ADVANCED CONDUCTING FOR MAJORS (minimum of 4 semesters)</td>
<td>3</td>
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<tr>
<td>MUSI 533</td>
<td>GRADUATE CONDUCTING SEMINAR (minimum of 4 semesters)</td>
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<tr>
<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 2 semesters)</td>
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<td></td>
<td>Performance Technique Coursework</td>
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<td>Select 4 courses from the following:</td>
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<tr>
<td>MUSI 475</td>
<td>THEORY OF VOCAL PERFORMANCE TECHNIQUES</td>
<td></td>
</tr>
<tr>
<td>MUSI 531</td>
<td>ORCHESTRAL REPERTOIRE (001 Violin)</td>
<td></td>
</tr>
<tr>
<td>MUSI 531</td>
<td>ORCHESTRAL REPERTOIRE (005 Woodwind)</td>
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<tr>
<td>MUSI 531</td>
<td>ORCHESTRAL REPERTOIRE (006 Brass)</td>
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<tr>
<td>MUSI 531</td>
<td>ORCHESTRAL REPERTOIRE (007 Percussion)</td>
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<td></td>
<td>Academic Coursework</td>
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<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
<td>3</td>
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<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Other Requirements</td>
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</table>

Select 6 credit hours from Elective Requirements (see course list below) 6

Select 8 credit hours (minimum of 4 semesters) from Concentration Lessons (see course list below) 8

Proficiencies 3

Students must demonstrate the following proficiencies:

- Orchestration
- Piano proficiency
- Aural skills proficiency

Total Credit Hours 47

Footnotes and Additional Information

1 Recitals for the MMus degree in the field of Orchestral Conducting are optional. Conducting experience with the orchestra replaces the recital requirements typically found in the MMus degree for other fields of study.
2 No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.
3 Deficiencies in these areas will result in remedial coursework being added to a student’s degree plan. Proficiency in Orchestration is defined as MUSI 416 or the equivalent.

Other Requirements

Students must complete 6 credit hours from the Elective Requirements, and 2 courses (8 credit hours) from the Concentration Lessons lists below.

Elective Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td>MUSI 475</td>
<td>THEORY OF VOCAL PERFORMANCE TECHNIQUES</td>
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<tr>
<td>MUSI 342</td>
<td>RICE JAZZ ENSEMBLE</td>
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<td>MUSI 345</td>
<td>APPLIED STUDIES IN JAZZ</td>
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<tr>
<td>MUSI 381</td>
<td>CONCENTRATION PIANO</td>
<td></td>
</tr>
<tr>
<td>MUSI 436 / MDEM 456</td>
<td>COLLEGIUM MUSICUM</td>
<td></td>
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<tr>
<td>MUSI 444</td>
<td>PRACTICUM IN CONTEMPORARY MUSIC</td>
<td></td>
</tr>
<tr>
<td>MUSI 585</td>
<td>SONATA CLASS</td>
<td></td>
</tr>
<tr>
<td>MUSI 649</td>
<td>GRADUATE INDEPENDENT STUDY</td>
<td></td>
</tr>
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</table>

Footnotes and Additional Information

1 No more than three (3) credit hours of MUSI 649 Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.
**Concentration Lessons (private vocal and/or instrumental study)**

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<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
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<td>Select 8 credit hours from the following:</td>
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<tr>
<td></td>
<td>Any course between MUSI 351 and MUSI 373</td>
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<tr>
<td></td>
<td>Any course between MUSI 381 and MUSI 398</td>
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**Course Lists to Satisfy Requirements**

### Approved Music Theory Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
<td>3</td>
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### Additional Music Theory Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 316</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
<td>3</td>
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<tr>
<td>ASIA 378</td>
<td>BASIC ELECTRONIC MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 403</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 416</td>
<td>ORCHESTRATION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
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</tr>
<tr>
<td>MUSI 606</td>
<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
<td>3</td>
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<tr>
<td>MUSI 712</td>
<td>SEMINAR IN ADVANCED ANALYSIS</td>
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</tr>
<tr>
<td>MUSI 713</td>
<td>SPECIAL TOPICS IN ADVANCED ANALYSIS</td>
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**Music History Courses**

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<th>Code</th>
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<tbody>
<tr>
<td>MUSI 422</td>
<td>RENAISSANCE MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 429/MDEM 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 527</td>
<td>Topical in early music</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 528</td>
<td>Topics in the 17th and 18th centuries</td>
<td>3</td>
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<tr>
<td>MUSI 529</td>
<td>Topics in the 19th and 20th centuries</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
<td>3</td>
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<tr>
<td>MUSI 537</td>
<td>SATIE, COCTEAU, &amp; LES SIX: PARIS IN THE 1920s AND BEYOND</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 540</td>
<td>MUSIC AND MODERNISM IN FRANCE</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 551</td>
<td>MUSIC OF RICHARD STRAUSS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 620</td>
<td>SELECTED STUDIES IN MUSIC HISTORY</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 623</td>
<td>J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION</td>
<td>3</td>
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<tr>
<td>MUSI 624</td>
<td>SEMINAR ON A SELECTED COMPOSER</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 625</td>
<td>MOZART OPERAS</td>
<td>3</td>
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<tr>
<td>MUSI 626</td>
<td>THE CLASSICAL STYLE</td>
<td>3</td>
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<tr>
<td>MUSI 627</td>
<td>ROMANTIC SONGS AND PIANO PIECES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 721</td>
<td>MUSIC OF SCHOENBERG</td>
<td>3</td>
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<tr>
<td>MUSI 722</td>
<td>MUSIC OF STRAVinsky</td>
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**Music Career and Skills Enhancement Courses**

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<tbody>
<tr>
<td>LPCR 200</td>
<td>ADVANCED MENTAL TRAINING</td>
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<tr>
<td>MGMT 621</td>
<td>THE NEW ENTERPRISE</td>
<td>3</td>
</tr>
<tr>
<td>MGMT 625</td>
<td>DESIGN THINKING</td>
<td>1.5</td>
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<tr>
<td>MGMT 629</td>
<td>BUSINESS PLAN DEVELOPMENT</td>
<td>1.5</td>
</tr>
<tr>
<td>MGMT 676</td>
<td>SOCIAL ENTERPRISE</td>
<td>1.5</td>
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<tr>
<td>MUSI 413</td>
<td>INTRODUCTION TO Dalcroze EURHYTHMICS</td>
<td>2</td>
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<tr>
<td>MUSI 500</td>
<td>IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES</td>
<td>2</td>
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<tr>
<td>MUSI 501</td>
<td>ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 502</td>
<td>CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 503</td>
<td>MUSIC AND PERFORMANCE: THE MIND/ BODY CONNECTION</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 507</td>
<td>TECHNOLOGY FOR MUSICIANS</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 508</td>
<td>FUNDAMENTALS OF PRIVATE TEACHING</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 509</td>
<td>THE ALEXANDER TECHNIQUE FOR MUSICIANS</td>
<td>2</td>
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<tr>
<td>MUSI 510</td>
<td>PROFESSIONAL DEVELOPMENT FOR MUSICIANS</td>
<td>2</td>
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<tr>
<td>MUSI 515</td>
<td>MUSIC ENTREPRENEURSHIP</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 518</td>
<td>THE ART AND BUSINESS OF STUDIO TEACHING</td>
<td>2</td>
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<tr>
<td>MUSI 519</td>
<td>THEMATIC PROGRAMMING: THE ART OF THE RECITAL</td>
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<tr>
<td>MUSI 532</td>
<td>THE FELDENKRAIS METHOD AND THE MUSICIAN'S BODY</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 538</td>
<td>THE ART OF PERFORMANCE: PRESENCE ON STAGE</td>
<td>2</td>
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</tbody>
</table>
Additional Information
For additional information, please see the Shepherd School of Music website at: https://music.rice.edu

Opportunities for the MMus Degree
Other Musical Opportunities
Lectures and Performances
A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

Additional Information
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Master of Music (MMus) Degree in the field of Organ Performance
Program Learning Outcomes for the MMus Degree
Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.

Requirements for the MMus Degree
The MMus degree in the field of Organ Performance is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MMus degree in the field of Organ Performance must complete:

• A minimum of 51 credit hours to satisfy degree requirements.
• A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
• A minimum of 24 credit hours must be taken at Rice University.
• A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
• A minimum overall GPA of 2.67 or higher in all Rice coursework.
• A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree.

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each
semester they are enrolled as an MMus degree candidate; private or
group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this degree
program. In certain instances, courses not on this official list may
be substituted upon approval of the program's academic advisor, or
where applicable, the department or program's Director of Graduate
Studies. Course substitutions must be formally applied and entered into
Degree Works by the department or program's Official Certifier (https://
registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally,
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Summary

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
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Degree Requirements

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<tr>
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<th>Title</th>
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<tbody>
<tr>
<td>MUSI 683</td>
<td>ORGAN FOR MAJORS-ADVANCED</td>
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<tr>
<td>MUSI 640</td>
<td>RICE CHORALE - ADVANCED (minimum of 2 semesters)</td>
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<tr>
<td>MUSI 641</td>
<td>MASTER'S RECITAL I</td>
<td>0</td>
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<td>MUSI 642</td>
<td>MASTER'S RECITAL II</td>
<td>0</td>
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<tr>
<td>MUSI 545</td>
<td>LITURGICAL ORGAN PLAYING</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 547</td>
<td>CHURCH MUSIC SEMINAR I</td>
<td>3</td>
</tr>
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<td>MUSI 548</td>
<td>CHURCH MUSIC SEMINAR II</td>
<td>3</td>
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<td>MUSI 608</td>
<td>IMPROVISATION AT THE ORGAN</td>
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<td>MUSI 645</td>
<td>ORGAN LITERATURE BEFORE 1750</td>
<td>3</td>
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<tr>
<td>MUSI 646</td>
<td>ORGAN LITERATURE SINCE 1750</td>
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Field of Study Specific Coursework

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<tr>
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Academic Coursework

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<tr>
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<tbody>
<tr>
<td>MUSI 514</td>
<td>charge of Study Specific Coursework</td>
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Select 1 course from the Approved Music Theory course offerings (see course list below)

Select 2 courses from the Music Career and Skills Enhancement course offerings (see course list below)

Select 6 credit hours from the Elective Requirements (see course list below)

Proficiencies

Students must demonstrate the following proficiency:

- Aural skills proficiency

Total Credit Hours 51

Footnotes and Additional Information

1 No more than three (3) credit hours of MUSI 649 - Independent
Study may fulfill this requirement. Remedial courses (such as
MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra
hours of required Performance Coursework (such as extra private
instrumental or vocal study, ensembles, chamber music, vocal
coaching, or repertoire classes) will not fulfill this requirement.

2 Deficiencies in this area will result in remedial coursework being
added to a student's degree plan. MMus students in the field of
Organ Performance do not have to demonstrate piano proficiency.

Academic Coursework

Academic Coursework is comprised of at least 2 courses (6 credit hours)
from the Music Theory course offerings, 2 courses (4 credit hours) from
the Music Career and Skills Enhancement course offerings, and 6 credit
hours from the Elective Requirements.

Approved Music Theory Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
<td>3</td>
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<tr>
<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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</tr>
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<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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Additional Music Theory Courses

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<tr>
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<tr>
<td>MUSI 316 / FILM 323</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
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<td>MUSI 378 / ASIA 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
<td>3</td>
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<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
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<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
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<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
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<td>MUSI 416</td>
<td>ORCHESTRATION</td>
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<td>MUSIC FOR MEDIA</td>
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<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
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<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
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<td>MUSI 606</td>
<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
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<td>CLASSROOM PEDAGOGY</td>
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<td>ANALYTICAL APPROACHES</td>
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<td>MUSI 712</td>
<td>SEMINAR IN ADVANCED ANALYSIS</td>
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<td>MUSI 713</td>
<td>SPECIAL TOPICS IN ADVANCED ANALYSIS</td>
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2019-2020 General Announcements
PDF Generated 1/29/2020
### Music Career and Skills Enhancement Courses

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<td>THE NEW ENTERPRISE</td>
<td>3</td>
</tr>
<tr>
<td>MGMT 625</td>
<td>DESIGN THINKING</td>
<td>1.5</td>
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<tr>
<td>MGMT 629</td>
<td>BUSINESS PLAN DEVELOPMENT</td>
<td>1.5</td>
</tr>
<tr>
<td>MGMT 676</td>
<td>SOCIAL ENTERPRISE</td>
<td>1.5</td>
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<tr>
<td>MUSI 413</td>
<td>INTRODUCTION TO Dalcroze Eurhythmics</td>
<td>2</td>
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<tr>
<td>MUSI 500</td>
<td>IMAGINATION AND COMMUNICATION:</td>
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<td></td>
<td>DEVELOPING MUSICAL SKILLS THROUGH</td>
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<td></td>
<td>THEATRICAL TECHNIQUES</td>
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<tr>
<td>MUSI 501</td>
<td>ENHANCED PERFORMANCE: WRITING, SPEAKING,</td>
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<td></td>
<td>PLAYING</td>
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<td>MUSI 502</td>
<td>CONDUCTING: AN OVERVIEW OF PRactical</td>
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<td>SKILLS</td>
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<td>MUSI 503</td>
<td>MUSIC AND PERFORMANCE: THE MIND/</td>
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<td>BODY CONNECTION</td>
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<td>MUSI 507</td>
<td>TECHNOLOGY FOR MUSICIANS</td>
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<td>MUSI 508</td>
<td>FUNDAMENTALS OF PRIVATE TEACHING</td>
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<td>MUSI 509</td>
<td>THE ALEXANDER TECHNIQUE FOR MUSICIANS</td>
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<td>MUSI 510</td>
<td>PROFESSIONAL DEVELOPMENT FOR MUSICIANS</td>
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<td>MUSI 515</td>
<td>MUSIC ENTREPRENEURSHIP</td>
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<td>MUSI 518</td>
<td>THE ART AND BUSINESS OF STUDIO</td>
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<td>TEACHING</td>
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<td>MUSI 519</td>
<td>THEMATIC PROGRAMMING: THE ART OF THE</td>
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<td>MUSI 532</td>
<td>THE FELDENKRAIS METHOD AND THE</td>
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<td></td>
<td>MUSICIAN'S BODY</td>
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<tr>
<td>MUSI 538</td>
<td>THE ART OF PERFORMANCE: PRESENCE ON STAGE</td>
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<td>MUSI 540</td>
<td>APPLIED JAZZ IMPROVISATION: DEVELOPING</td>
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<td>SOLO IMPROVISATIONAL SKILLS IN THE JAZZ</td>
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### Elective Requirements

Select 6 credit hours from the following:

1. Any course at the 300-level or above
2. Any language course at the 100-level or above
3. Any additional Music Theory, Music History, or Music Career and Skills Enhancement course
4. Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)

<table>
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<tr>
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<tr>
<td>MUSI 342</td>
<td>RICE JAZZ ENSEMBLE</td>
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<td>MUSI 345</td>
<td>APPLIED STUDIES IN JAZZ</td>
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<td>MUSI 381</td>
<td>CONCENTRATION PIANO</td>
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<tr>
<td>MUSI 436 / MDEM 456</td>
<td>COLLEGIAL MUSICUM</td>
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<tr>
<td>MUSI 444</td>
<td>PRACTICUM IN CONTEMPORARY MUSIC</td>
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</table>

### Footnotes and Additional Information

1. No more than three (3) credit hours of MUSI 649 Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

### Music History Courses

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<td>MUSI 429 / MDEM 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
<td>3</td>
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<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
<td>3</td>
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<tr>
<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
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<tr>
<td>MUSI 529</td>
<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
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<tr>
<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
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<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
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<tr>
<td>MUSI 537</td>
<td>SATIE, COCTEAU, &amp; LES SIX: PARIS IN THE 1920s AND BEYOND</td>
<td>3</td>
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<tr>
<td>MUSI 543</td>
<td>MUSIC AND MODERNISM IN FRANCE</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 551</td>
<td>MUSIC OF RICHARD STRAUSS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 621</td>
<td>SELECTED STUDIES IN MUSIC HISTORY</td>
<td>3</td>
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<tr>
<td>MUSI 623</td>
<td>J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION</td>
<td>3</td>
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<tr>
<td>MUSI 624</td>
<td>SEMINAR ON A SELECTED COMPOSER</td>
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<tr>
<td>MUSI 625</td>
<td>MOZART OPERAS</td>
<td>3</td>
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<tr>
<td>MUSI 626</td>
<td>THE CLASSICAL STYLE</td>
<td>3</td>
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<tr>
<td>MUSI 627</td>
<td>ROMANTIC SONGS AND PIANO PIECES</td>
<td>3</td>
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<tr>
<td>MUSI 721</td>
<td>MUSIC OF SCHOENBERG</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 722</td>
<td>MUSIC OF STRAVINSKY</td>
<td>3</td>
</tr>
</tbody>
</table>

### Policies for the MMus Degree

#### Shepherd School of Music Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Shepherd School of Music publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Shepherd_School_of_Music_Graduate_Handbook.pdf

#### Admission

For Instrumental Performance, Vocal Performance, and Orchestral Conducting applicants, an audition is required. Composition applicants must submit portfolios, and Musicology applicants must provide samples of their written work. Musicology applicants must also complete...
opportunities for the MMus degree
other musical opportunities
lectures and performances
A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

additional information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu

master of music (MMus) degree in the field of percussion performance
program learning outcomes for the MMus degree
Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.

requirements for the MMus degree
The MMus degree in the field of Percussion Performance is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MMus degree in the field of Percussion Performance must complete:

- A minimum of 48 credit hours to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master's degree.

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music or large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may...
be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
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<td>Total Credit Hours Required for the MMus Degree in the field of Percussion Performance</td>
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**Degree Requirements**

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<tr>
<td>MUSI 671</td>
<td>PERCUSSION FOR MAJORS-ADVANCED (minimum of 4 semesters)</td>
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<tr>
<td>MUSI 472</td>
<td>GENERAL PERCUSSION STUDIES (minimum of 4 semesters)</td>
<td>1</td>
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<tr>
<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
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<td>MUSI 636</td>
<td>ADVANCED CHAMBER MUSIC (minimum of 4 semesters)</td>
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<tr>
<td>MUSI 531</td>
<td>ORCHESTRAL REPERTOIRE (minimum of 4 semesters)</td>
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<tr>
<td>MUSI 641</td>
<td>MASTER’S RECITAL I</td>
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<td>or MUSI 631</td>
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**Academic Coursework**

**Approved Music Theory Courses**

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<td>PERFORMANCE PRACTICES SEMINAR</td>
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<td>MUSI 527</td>
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2. Deficiencies in these areas will result in remedial coursework being added to a student’s degree plan.
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</tr>
<tr>
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<td>2</td>
</tr>
<tr>
<td>MUSI 502</td>
<td>CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS</td>
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<td>MUSI 503</td>
<td>MUSIC AND PERFORMANCE: THE MIND/ BODY CONNECTION</td>
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<td>MUSI 507</td>
<td>TECHNOLOGY FOR MUSICIANS</td>
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<tr>
<td>MUSI 508</td>
<td>FUNDAMENTALS OF PRIVATE TEACHING</td>
<td>2</td>
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<tr>
<td>MUSI 509</td>
<td>THE ALEXANDER TECHNIQUE FOR MUSICIANS</td>
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<tr>
<td>MUSI 510</td>
<td>PROFESSIONAL DEVELOPMENT FOR MUSICIANS</td>
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<tr>
<td>MUSI 515</td>
<td>MUSIC ENTREPRENEURSHIP</td>
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<td>MUSI 518</td>
<td>THE ART AND BUSINESS OF STUDIO TEACHING</td>
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<tr>
<td>MUSI 519</td>
<td>THEMATIC PROGRAMMING: THE ART OF THE RECITAL</td>
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<tr>
<td>MUSI 532</td>
<td>THE FELDENKRAIS METHOD AND THE MUSICIAN’S BODY</td>
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<tr>
<td>MUSI 538</td>
<td>THE ART OF PERFORMANCE: PRESENCE ON STAGE</td>
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<tr>
<td>MUSI 540</td>
<td>APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM</td>
<td>2</td>
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</tbody>
</table>

### Select 6 credit hours from the following:

- Any course at the 300-level or above
- Any language course at the 100-level or above
- Any additional Music Theory, Music History, or Music Career and Skills Enhancement course
- Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)
- MUSI 342 RICE JAZZ ENSEMBLE
- MUSI 345 APPLIED STUDIES IN JAZZ
- MUSI 381 CONCENTRATION PIANO
- MUSI 436 / MDEM 456 COLLEGIUM MUSICUM
- MUSI 444 PRACTICUM IN CONTEMPORARY MUSIC
- MUSI 585 SONATA CLASS
- MUSI 649 GRADUATE INDEPENDENT STUDY

### Policies for the MMus Degree

#### Shepherd School of Music Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Shepherd School of Music publishes a graduate program handbook, which can be found here: [https://gradhandbooks.rice.edu/2019_20/Shepherd_School_of_Music_Graduate_Handbook.pdf](https://gradhandbooks.rice.edu/2019_20/Shepherd_School_of_Music_Graduate_Handbook.pdf)

#### Admission

For Instrumental Performance, Vocal Performance, and Orchestral Conducting applicants, an audition is required. Composition applicants must submit portfolios, and Musicology applicants must provide samples of their written work. Musicology applicants must also complete advanced music tests as well as the Graduate Record Examination for admission consideration.

#### Academic Standards

##### Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

##### Grading Policy

A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner.
A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of C+ (2.33 grade points) or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

**Note:** For music history and musicology majors a grade of C+ (2.33 grade points) or lower in any music history course is considered unsatisfactory and will be evaluated as above.

**Graduate degree requirement:** a minimum overall grade point average of 2.67 is necessary for graduation.

**Leaves of Absence and Voluntary Withdrawal**

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

**Performance**

Students are expected to perform frequently during their residency at Rice. MMus students in any of the performance fields of study must present at least two full recitals. Composition and Conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all MMus students must participate in the school’s conducted ensembles as assigned.

**Thesis**

A thesis is required for MMus students in the field of Musicology. In lieu of a thesis, MMus students in the field of Composition must produce an original work of extended scope. Both thesis and original work must be publicly defended.

**Additional Information**

For additional information, please see the Shepherd School of Music website: [https://music.rice.edu](https://music.rice.edu)

**Master of Music (MMus) Degree in the field of Piano Chamber Music and Accompanying**

**Program Learning Outcomes for the MMus Degree**

Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.

**Requirements for the MMus Degree**

The MMus degree in the field of Piano, Chamber Music, and Accompanying is a non-thesis master’s degree. For general university requirements, please see [Non-Thesis Master’s Degrees](https://music.rice.edu) (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see [All Graduate Students](https://music.rice.edu) (p. 55). Students pursuing the MMus degree in the field of Piano, Chamber Music, and Accompanying must complete:

- A minimum of 46-50 credit hours, depending on course selection, to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree.

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s [Official Certifier](https://registrar.rice.edu/facstaff/degrowks/offcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral

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**Opportunities for the MMus Degree**

**Other Musical Opportunities**

**Lectures and Performances**

A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.
Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
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<td>Total Credit Hours Required for the MMus Degree in the field of Piano, Chamber Music, and Accompanying</td>
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Degree Requirements

Performance Requirements

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<td>MUSI 689</td>
<td>PIANO FOR CHAMBER MUSIC AND ACCOMPANYING MAJORS, ADVANCED/GRADUATE (minimum of 4 semesters)</td>
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<td>MUSI 636</td>
<td>ADVANCED CHAMBER MUSIC (minimum of 4 semesters)</td>
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Select 1 from the following: 4-8

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<tr>
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<th>Title</th>
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<tr>
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<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
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<tr>
<td>MUSI 640</td>
<td>RICE CHORALE - ADVANCED (minimum of 4 semesters)</td>
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<tr>
<td>MUSI 642</td>
<td>ACCOMPANYING (minimum of 4 semesters)</td>
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<td>MUSI 641</td>
<td>MASTER'S RECITAL I</td>
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<tr>
<td>MUSI 741</td>
<td>MASTER'S RECITAL II</td>
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Field of Study Specific Coursework

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<td>PIANO CHAMBER MUSIC LITERATURE</td>
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<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
<td>3</td>
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<tr>
<td>MUSI 583</td>
<td>INSTRUMENTAL ACCOMPANYING TECHNIQUES</td>
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<td>MUSI 584</td>
<td>VOCAL ACCOMPANYING TECHNIQUES FOR PIANNISTS</td>
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Academic Coursework

Select 1 course from the Approved Music Theory course offerings (see course list below) 3

Select 1 additional course from the Music Theory or Music History course offerings (see course lists below) 3

Select 2 courses from the Music Career and Skills Enhancement course offerings (see course list below) 4

Select 6 credit hours from the Elective Requirements (see course list below) 1 6

Proficiencies 2

Students must demonstrate the following proficiency:

- Aural Skills
- MUSI 426 PIANO LITERATURE - SURVEY

Total Credit Hours 46-50

Approved Music Theory Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
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<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
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<tr>
<td>MUSI 516</td>
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<tr>
<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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<tr>
<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
<td>3</td>
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<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
<td>3</td>
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<tr>
<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND COMPOSTION</td>
<td>3</td>
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<tr>
<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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Additional Music Theory Courses

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<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>MUSI 316 / FILM 323</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
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<tr>
<td>MUSI 378 / ASIA 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
<td>3</td>
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<tr>
<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
<td>3</td>
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<tr>
<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
<td>3</td>
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<tr>
<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
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<tr>
<td>MUSI 416</td>
<td>ORCHESTRATION</td>
<td>3</td>
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<tr>
<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
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<td>MUSI 514</td>
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<td>MUSI 713</td>
<td>SPECIAL TOPICS IN ADVANCED ANALYSIS</td>
<td>3</td>
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</table>

Footnotes and Additional Information

1 No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

2 Deficiencies in this area will result in remedial coursework being added to a student's degree plan. MMus students in the field of Piano, Chamber Music, and Accompanying do not have to demonstrate piano proficiency. MUSI 426 Piano Literature is required if not completed at the undergraduate level. This course would be considered remedial and would not count towards the elective requirement.

Approved Music Theory Courses

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<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
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<td>J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION</td>
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<td>MUSI 509</td>
<td>THE ALEXANDER TECHNIQUE FOR MUSICIANS</td>
<td>2</td>
<td></td>
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</tr>
<tr>
<td>MUSI 510</td>
<td>PROFESSIONAL DEVELOPMENT FOR MUSICIANS</td>
<td>2</td>
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<tr>
<td>MUSI 515</td>
<td>MUSIC ENTREPRENEURSHIP</td>
<td>2</td>
<td></td>
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<tr>
<td>MUSI 518</td>
<td>THE ART AND BUSINESS OF STUDIO TEACHING</td>
<td>2</td>
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<tr>
<td>MUSI 519</td>
<td>THEMATIC PROGRAMMING: THE ART OF THE RECITAL</td>
<td>2</td>
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<tr>
<td>MUSI 532</td>
<td>THE FELDENKRAIS METHOD AND THE MUSICIAN'S BODY</td>
<td>2</td>
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<tr>
<td>MUSI 538</td>
<td>THE ART OF PERFORMANCE: PRESENCE ON STAGE</td>
<td>2</td>
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<tr>
<td>MUSI 540</td>
<td>APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM</td>
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</table>

**选修课程要求**

<table>
<thead>
<tr>
<th>代码</th>
<th>标题</th>
<th>学分</th>
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<tbody>
<tr>
<td>Select 6 credit hours from the following:</td>
<td></td>
<td>6</td>
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<tr>
<td>Any course at the 300-level or above</td>
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<td></td>
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<tr>
<td>Any language course at the 100-level or above</td>
<td></td>
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</tr>
<tr>
<td>Any additional Music Theory, Music History, or Music Career and Skills Enhancement course</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)</td>
<td></td>
<td></td>
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<tr>
<td>MUSI 342</td>
<td>RICE JAZZ ENSEMBLE</td>
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<tr>
<td>MUSI 345</td>
<td>APPLIED STUDIES IN JAZZ</td>
<td>2</td>
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<tr>
<td>MUSI 381</td>
<td>CONCENTRATION PIANO</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MUSI 436 / MDEM 456</td>
<td>COLLEGIUM MUSICUM</td>
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<td></td>
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<tr>
<td>MUSI 444</td>
<td>PRACTICUM IN CONTEMPORARY MUSIC</td>
<td>2</td>
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<td>MUSI 585</td>
<td>SONATA CLASS</td>
<td>2</td>
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<tr>
<td>MUSI 649</td>
<td>GRADUATE INDEPENDENT STUDY</td>
<td>2</td>
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</tbody>
</table>

**脚注和额外信息**

1. No more than three (3) credit hours of MUSI 649 Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

**政策**

**研究生学位政策**

**谢弗音乐学院音乐研究生项目手册**


**入学**

对于乐器演奏，声乐表演，和管弦乐队指挥申请者，考试是必需的。作曲和音乐学申请人必须提交作品集，并且音乐学申请人必须提供高级音乐测试以及研究生入学考试。音乐学申请人必须完成高级音乐测试以及研究生入学考试。但是，选修和必修课程的额外课程（如额外的私人乐器或声乐学习，管弦乐团，声乐指导，或作品集课程）将不会满足这个要求。

**政策**

**研究生学位政策**

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Academic Standards

Curriculum and Degree Requirements
Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy
A minimum grade of B– (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of C+ (2.33 grade points) or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors a grade of C+ (2.33 grade points) or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum overall grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudit. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Performance
Students are expected to perform frequently during their residency at Rice. MMus students in any of the performance fields of study must present at least two full recitals. Composition and Conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all MMus students must participate in the school’s conducted ensembles as assigned.

Thesis
A thesis is required for MMus students in the field of Musicology. In lieu of a thesis, MMus students in the field of Composition must produce an original work of extended scope. Both thesis and original work must be publicly defended.

Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu

Opportunities for the MMus Degree

Other Musical Opportunities
Lectures and Performances
A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu

Master of Music (MMus) Degree in the field of Piano Performance

Program Learning Outcomes for the MMus Degree
Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.

Requirements for the MMus Degree
The MMus degree in the field of Piano Performance is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MMus degree in the field of Piano Performance must complete:

• A minimum of 43-47 credit hours, depending on course selection, to satisfy degree requirements.
• A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
• A minimum of 24 credit hours must be taken at Rice University.
• A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
• A minimum overall GPA of 2.67 or higher in all Rice coursework.
• A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree.

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.
The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MMus Degree in the field of Piano Performance</td>
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**Degree Requirements**

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
</table>

**Performance Requirements**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>MUSI 681</td>
<td>PIANO FOR MAJORS-ADVANCED (minimum of 4 semesters)</td>
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<tr>
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<td><strong>Select 1 from the following:</strong></td>
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<tr>
<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 2 semesters)</td>
<td>2-4</td>
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<tr>
<td>MUSI 640</td>
<td>RICE CHORALE - ADVANCED (minimum of 2 semesters)</td>
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<tr>
<td>MUSI 642</td>
<td>ACCOMPANYING (minimum of 2 semesters)</td>
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</tr>
<tr>
<td>MUSI 636</td>
<td>ADVANCED CHAMBER MUSIC (minimum of 4 semesters)</td>
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<tr>
<td>MUSI 641</td>
<td>MASTER'S RECITAL I</td>
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<tr>
<td>MUSI 741</td>
<td>MASTER'S RECITAL II</td>
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**Field of Study Specific Coursework**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>MUSI 426</td>
<td>PIANO LITERATURE - SURVEY</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 588</td>
<td>PIANO PEDAGOGY</td>
<td>2</td>
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<tr>
<td></td>
<td><strong>Select 2 courses from the following:</strong></td>
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</tr>
<tr>
<td>MUSI 414</td>
<td>PIANO CHAMBER MUSIC LITERATURE</td>
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</tr>
<tr>
<td>MUSI 447</td>
<td>INTRODUCTION TO PIANO TECHNOLOGY</td>
<td></td>
</tr>
<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
<td></td>
</tr>
<tr>
<td>MUSI 619</td>
<td>HISTORY OF THE 20TH CENTURY PIANISM</td>
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<tr>
<td>MUSI 620</td>
<td>HISTORICAL OVERVIEW OF PIANO TECHNIQUE</td>
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</table>

**Academic Coursework**

Academic Coursework is comprised of at least 1 course (3 credit hours) from the Approved Music Theory course offerings, 1 course (3 credit hours) from the Music Theory or Music History course offerings, 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings, and 6 credit hours from the Elective Requirements.

**Approved Music Theory Courses**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
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</tr>
<tr>
<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
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</tr>
<tr>
<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
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</tr>
<tr>
<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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<tr>
<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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**Additional Music Theory Courses**

<table>
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<tr>
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<tbody>
<tr>
<td>MUSI 316 / FILM 323</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
<td>3</td>
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<tr>
<td>MUSI 378 / ASIA 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
<td>3</td>
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<tr>
<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
<td>3</td>
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<tr>
<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
<td>3</td>
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<tr>
<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 416</td>
<td>ORCHESTRATION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
<td>3</td>
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<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
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</tr>
<tr>
<td>MUSI 606</td>
<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
<td>3</td>
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<tr>
<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
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</table>

**Footnotes and Additional Information**

1. No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

2. Deficiencies in this area will result in remedial coursework being added to a student’s degree plan. MMus students in the field of Piano Performance do not have to demonstrate piano proficiency.

**Proficiencies**

Students must demonstrate the following proficiency:

<table>
<thead>
<tr>
<th>Aural Skills</th>
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<tbody>
<tr>
<td>Total Credit Hours</td>
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</table>

PDF Generated 1/29/2020
### Master of Music (MMus) Degree in the field of Piano Performance

**MUSI 712**  
SEMINAR IN ADVANCED ANALYSIS  
3

**MUSI 713**  
SPECIAL TOPICS IN ADVANCED ANALYSIS  
3

### Music History Courses

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<tbody>
<tr>
<td>MUSI 422</td>
<td>RENAISSANCE MUSIC</td>
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<tr>
<td>MUSI 429 / MDEM 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
<td>3</td>
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<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
<td>3</td>
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<tr>
<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 529</td>
<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
<td>3</td>
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<tr>
<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
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<tr>
<td>MUSI 537</td>
<td>SATIE, COCTEAU, &amp; LES SIX: PARIS IN THE 1920s AND BEYOND</td>
<td>3</td>
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<tr>
<td>MUSI 543</td>
<td>MUSIC AND MODERNISM IN FRANCE</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 551</td>
<td>MUSIC OF RICHARD STRAUSS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 621</td>
<td>SELECTED STUDIES IN MUSIC HISTORY</td>
<td>3</td>
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<tr>
<td>MUSI 623</td>
<td>J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION</td>
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<tr>
<td>MUSI 624</td>
<td>SEMINAR ON A SELECTED COMPOSER</td>
<td>3</td>
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<tr>
<td>MUSI 625</td>
<td>MOZART OPERAS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 626</td>
<td>THE CLASSICAL STYLE</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 627</td>
<td>ROMANTIC SONGS AND PIANO PIECES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 721</td>
<td>MUSIC OF SCHOENBERG</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 722</td>
<td>MUSIC OF STRAVINSKY</td>
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### Music Career and Skills Enhancement Courses

<table>
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<tbody>
<tr>
<td>LPCR 200</td>
<td>ADVANCED MENTAL TRAINING</td>
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<tr>
<td>MGMT 621</td>
<td>THE NEW ENTERPRISE</td>
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</tr>
<tr>
<td>MGMT 625</td>
<td>DESIGN THINKING</td>
<td>1.5</td>
</tr>
<tr>
<td>MGMT 629</td>
<td>BUSINESS PLAN DEVELOPMENT</td>
<td>1.5</td>
</tr>
<tr>
<td>MGMT 676</td>
<td>SOCIAL ENTERPRISE</td>
<td>1.5</td>
</tr>
<tr>
<td>MUSI 413</td>
<td>INTRODUCTION TO DALCROZE EURHYTHMICS</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 500</td>
<td>IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRAL TECHNIQUES</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 501</td>
<td>ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 502</td>
<td>CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 503</td>
<td>MUSIC AND PERFORMANCE: THE MIND/BODY CONNECTION</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 507</td>
<td>TECHNOLOGY FOR MUSICIANS</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 508</td>
<td>FUNDAMENTALS OF PRIVATE TEACHING</td>
<td>2</td>
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<tr>
<td>MUSI 509</td>
<td>THE ALEXANDER TECHNIQUE FOR MUSICIANS</td>
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<td>APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM</td>
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</tr>
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</table>

### Elective Requirements

<table>
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<td>MGMT 621</td>
<td>THE NEW ENTERPRISE</td>
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<td>MGMT 625</td>
<td>DESIGN THINKING</td>
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<td>BUSINESS PLAN DEVELOPMENT</td>
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<td>SOCIAL ENTERPRISE</td>
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<td>MUSI 413</td>
<td>INTRODUCTION TO DALCROZE EURHYTHMICS</td>
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<tr>
<td>MUSI 500</td>
<td>IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRAL TECHNIQUES</td>
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<td>MUSI 501</td>
<td>ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING</td>
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<td>MUSI 502</td>
<td>CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS</td>
<td>2</td>
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<tr>
<td>MUSI 503</td>
<td>MUSIC AND PERFORMANCE: THE MIND/BODY CONNECTION</td>
<td>2</td>
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<tr>
<td>MUSI 507</td>
<td>TECHNOLOGY FOR MUSICIANS</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 508</td>
<td>FUNDAMENTALS OF PRIVATE TEACHING</td>
<td>2</td>
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### Footnotes and Additional Information

1. No more than three (3) credit hours of MUSI 649 **Independent Study** may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

### Policies for the MMus Degree

**Shepherd School of Music Graduate Program Handbook**

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Shepherd School of Music publishes a graduate program handbook, which can be found here: [https://gradhandbooks.rice.edu/2019_20/Shepherd_School_of_Music_Graduate_Handbook.pdf](https://gradhandbooks.rice.edu/2019_20/Shepherd_School_of_Music_Graduate_Handbook.pdf)

**Admission**

For Instrumental Performance, Vocal Performance, and Orchestral Conducting applicants, an audition is required. Composition applicants must submit portfolios, and Musicology applicants must provide samples of their written work. Musicology applicants must also complete
advanced music tests as well as the Graduate Record Examination for admission consideration.

**Academic Standards**

**Curriculum and Degree Requirements**
Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

**Grading Policy**
A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student's work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from any public function not directly a part of a degree program.

If a student receives a second semester of C+ (2.33 grade points) or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

**Note:** For music history and musicology majors a grade of C+ (2.33 grade points) or lower in any music history course will be evaluated in the following manner:

A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student's work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of C+ (2.33 grade points) or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

**Graduate degree requirement: a minimum overall grade point average of 2.67 is necessary for graduation.**

**Leaves of Absence and Voluntary Withdrawal**
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean's office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

**Performance**
Students are expected to perform frequently during their residency at Rice. MMus students in any of the performance fields of study must present at least two full recitals. Composition and Conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all MMus students must participate in the school's conducted ensembles as assigned.

**Thesis**
A thesis is required for MMus students in the field of Musicology. In lieu of a thesis, MMus students in the field of Composition must produce an original work of extended scope. Both thesis and original work must be publicly defended.

**Additional Information**
For additional information, please see the Shepherd School of Music website: https://music.rice.edu

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**Opportunities for the MMus Degree**

**Other Musical Opportunities**

**Lectures and Performances**
A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

**Additional Information**
For additional information, please see the Shepherd School of Music website: https://music.rice.edu

**Master of Music (MMus) Degree in the field of String Quartet Performance**

**Program Learning Outcomes for the MMus Degree**
Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.

**Requirements for the MMus Degree**
The MMus degree in the field of String Quartet Performance is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MMus degree in the field of String Quartet Performance must complete:

- A minimum of 45 credit hours to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree.

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.
The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

## Summary

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<th>Credit Hours</th>
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<tbody>
<tr>
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<td>Total Credit Hours Required for the MMus Degree in the field of String Quartet Performance</td>
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## Degree Requirements

### Performance Requirements

- **MUSI 698** ADVANCED STRING QUARTETS (minimum of 4 semesters) 3
- **MUSI 690** INDIVIDUAL INSTRUMENT COACHING FOR STRING QUARTET MAJORS (minimum of 4 semesters) 3
- **MUSI 635** ADVANCED ORCHESTRA (minimum of 2 semesters) 2
- **MUSI 705** APPRENTICESHIP - ARTISTIC OUTREACH (minimum of 4 semesters, 2 credit hours per semester) 2
- **MUSI 742** STRING QUARTET RECITAL (minimum of 3 semesters) 0
- **MUSI 741** MASTER'S RECITAL II 1 0

### Academic Coursework

- **MUSI 405** MUSIC BUSINESS AND LAW 3
- **MUSI 407** CHamber MUSIC IN THE CLASSIC PERIOD 3

Select 1 course from the following:

1. course from the Music History course offerings (see course list below) 3
2. course from the Music Theory course offerings (see course list below) 3
3. credit hours of Independent Study in Music History or Music Theory (MUSI 649) 1

### Proficiencies 2

Students must demonstrate the following proficiencies:

- Piano proficiency
- Aural skills proficiency

Total Credit Hours 45

## Footnotes and Additional Information

1. Three (3) string quartet recitals (MUSI 742) and one (1) solo recital (MUSI 741) are required for the MMus degree in the field of String Quartet Performance.
2. Deficiencies in these areas will result in remedial coursework being added to a student's degree plan.

## Course Lists to Satisfy Requirements

### Academic Coursework

Academic Coursework is comprised of MUSI 405, MUSI 407, and 1 course (3 credit hours) from the Music History, Music Theory, or Graduate Independent Study Coursework below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
<td>3</td>
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<tr>
<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
<td>3</td>
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<tr>
<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
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<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
<td>3</td>
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<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
<td>3</td>
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<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
<td>3</td>
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<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
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<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
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</tr>
<tr>
<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
<td>3</td>
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<tr>
<td>MUSI 529</td>
<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
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<tr>
<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
<td>3</td>
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<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
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<tr>
<td>MUSI 537</td>
<td>SATIE, COCTEAU, &amp; LES SIX: PARIS IN THE 1920s AND BEYOND</td>
<td>3</td>
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<tr>
<td>MUSI 543</td>
<td>MUSIC AND MODERNISM IN FRANCE</td>
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<td>MUSI 551</td>
<td>MUSIC OF RICHARD STRAUSS</td>
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<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
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<td>MUSI 606</td>
<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
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<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
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<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
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<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
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<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION</td>
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<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
<td>3</td>
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<td>MUSI 623</td>
<td>J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION</td>
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<tr>
<td>MUSI 624</td>
<td>SEMINAR ON A SELECTED COMPOSER</td>
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<td>MUSI 625</td>
<td>MOZART OPERAS</td>
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<tr>
<td>MUSI 626</td>
<td>THE CLASSICAL STYLE</td>
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<td>MUSI 627</td>
<td>ROMANTIC SONGS AND PIANO PIECES</td>
<td>3</td>
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<td>MUSI 649</td>
<td>GRADUATE INDEPENDENT STUDY</td>
<td>3</td>
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<tr>
<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
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<td>MUSI 712</td>
<td>SEMINAR IN ADVANCED ANALYSIS</td>
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<td>MUSI 713</td>
<td>SPECIAL TOPICS IN ADVANCED ANALYSIS</td>
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<tr>
<td>MUSI 721</td>
<td>MUSIC OF SCHOENBERG</td>
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</table>
Footnotes and Additional Information

1 MUSI 649 Graduate Independent Study must be taken for at least 3 credit hours to fulfill this requirement.

Policies for the MMus Degree

Shepherd School of Music Graduate Program Handbook
The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Shepherd School of Music publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019-20/

Admission
For Instrumental Performance, Vocal Performance, and Orchestral Conducting applicants, an audition is required. Composition applicants must submit portfolios, and Musicology applicants must provide samples of their written work. Musicology applicants must also complete advanced music tests as well as the Graduate Record Examination for admission consideration.

Academic Standards
Curriculum and Degree Requirements
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A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner:

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Note: For music history and musicology majors a grade of C+ (2.33 grade points) or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum overall grade point average of 2.67 is necessary for graduation.

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Opportunities for the MMus Degree

Other Musical Opportunities

Lectures and Performances
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Additional Information
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Master of Music (MMus) Degree in the field of Trombone Performance

Program Learning Outcomes for the MMus Degree

Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.

Requirements for the MMus Degree

The MMus degree in the field of Trombone Performance is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MMus degree in the field of Trombone Performance must complete:

• A minimum of 44 credit hours to satisfy degree requirements.
• A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
• A minimum of 24 credit hours must be taken at Rice University.
• A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
• A minimum overall GPA of 2.67 or higher in all Rice coursework.
• A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree.

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music
courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<th>Code</th>
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Degree Requirements

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<td>Performance Requirements</td>
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<td>MUSI 665</td>
<td>TROMBONE FOR MAJORS-ADVANCED (minimum of 4 semesters)</td>
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<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
<td>2</td>
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<tr>
<td>MUSI 636</td>
<td>ADVANCED CHAMBER MUSIC (minimum of 4 semesters)</td>
<td>1</td>
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<tr>
<td>MUSI 531</td>
<td>ORCHESTRAL REPERTOIRE (minimum of 4 semesters)</td>
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<tr>
<td>MUSI 641</td>
<td>MASTER'S RECITAL I (minimum of 4 semesters)</td>
<td>0</td>
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<tr>
<td>MUSI 741</td>
<td>MASTER'S RECITAL II (minimum of 4 semesters)</td>
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<tbody>
<tr>
<td></td>
<td>Academic Coursework</td>
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<tr>
<td></td>
<td>Select 1 course from the Approved Music Theory course offerings (see course list below)</td>
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<tr>
<td></td>
<td>Select 1 additional course from the Music Theory or Music History course offerings (see course lists below)</td>
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</tr>
<tr>
<td></td>
<td>Select 2 courses from the Music Career and Skills Enhancement course offerings (see course list below)</td>
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<td>Select 6 credit hours from the Elective Requirements (see course list below)</td>
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<td>Proficiencies ²</td>
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<td>Students must demonstrate the following proficiencies:</td>
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<tr>
<td></td>
<td>Piano proficiency</td>
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<tr>
<td></td>
<td>Aural skills proficiency</td>
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</table>

Total Credit Hours 44

Footnotes and Additional Information

1. No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

2. Deficiencies in these areas will result in remedial coursework being added to a student’s degree plan.

Academic Coursework

Academic Coursework is comprised of at least 1 course (3 credit hours) from the Approved Music Theory course offerings, 1 course (3 credit hours) from the Music Theory or Music History course offerings, 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings, and 6 credit hours from the Elective Requirements.

Approved Music Theory Courses

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<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
<td>3</td>
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<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
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<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
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<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
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<tr>
<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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Additional Music Theory Courses

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<tr>
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<th>Title</th>
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<tbody>
<tr>
<td>MUSI 316 / FILM 323</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
<td>3</td>
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<tr>
<td>MUSI 378 / ASIA 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
<td>3</td>
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<tr>
<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 416</td>
<td>ORCHESTRATION</td>
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<tr>
<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
<td>3</td>
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<tr>
<td>MUSI 606</td>
<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
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<tr>
<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
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</tr>
<tr>
<td>MUSI 712</td>
<td>SEMINAR IN ADVANCED ANALYSIS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 713</td>
<td>SPECIAL TOPICS IN ADVANCED ANALYSIS</td>
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### Music History Courses

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<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 422</td>
<td>RENAISSANCE MUSIC</td>
<td>3</td>
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<tr>
<td>MUSI 429 /</td>
<td>MUSIC OF THE MIDDLE AGES</td>
<td>3</td>
</tr>
<tr>
<td>MDEM 429</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
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</tr>
<tr>
<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 529</td>
<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 537</td>
<td>SATIE, COETEAU, &amp; LES SIX: PARIS IN THE 1920s AND</td>
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<tr>
<td></td>
<td>BEYOND</td>
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<tr>
<td>MUSI 543</td>
<td>MUSIC AND MODERNISM IN FRANCE</td>
<td>3</td>
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<tr>
<td>MUSI 551</td>
<td>MUSIC OF RICHARD STRAUSS</td>
<td>3</td>
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<tr>
<td>MUSI 621</td>
<td>SELECTED STUDIES IN MUSIC HISTORY</td>
<td>3</td>
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<tr>
<td>MUSI 623</td>
<td>J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION</td>
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<td>MUSI 624</td>
<td>SEMINAR ON A SELECTED COMPOSER</td>
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<td>MUSI 625</td>
<td>MOZART OPERAS</td>
<td>3</td>
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<td>MUSI 626</td>
<td>THE CLASSICAL STYLE</td>
<td>3</td>
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<td>MUSI 627</td>
<td>ROMANTIC SONGS AND PIANO PIECES</td>
<td>3</td>
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<tr>
<td>MUSI 721</td>
<td>MUSIC OF SCHOENBERG</td>
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<tr>
<td>MUSI 722</td>
<td>MUSIC OF STRAVINSKY</td>
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### Music Career and Skills Enhancement Courses

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<td>LPCR 200</td>
<td>ADVANCED MENTAL TRAINING</td>
<td>2</td>
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<tr>
<td>MGMT 621</td>
<td>THE NEW ENTERPRISE</td>
<td>3</td>
</tr>
<tr>
<td>MGMT 625</td>
<td>DESIGN THINKING</td>
<td>1.5</td>
</tr>
<tr>
<td>MGMT 629</td>
<td>BUSINESS PLAN DEVELOPMENT</td>
<td>1.5</td>
</tr>
<tr>
<td>MGMT 676</td>
<td>SOCIAL ENTERPRISE</td>
<td>1.5</td>
</tr>
<tr>
<td>MUSI 413</td>
<td>INTRODUCTION TO Dalcroze EURHYTHMICS</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 500</td>
<td>IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>SKILLS THROUGH THEATRICAL TECHNIQUES</td>
<td></td>
</tr>
<tr>
<td>MUSI 501</td>
<td>ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 502</td>
<td>CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS</td>
<td>2</td>
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<tr>
<td>MUSI 503</td>
<td>MUSIC AND PERFORMANCE: THE MIND/ BODY CONNECTION</td>
<td>2</td>
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<td>MUSI 507</td>
<td>TECHNOLOGY FOR MUSICIANS</td>
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<tr>
<td>MUSI 508</td>
<td>FUNDAMENTALS OF PRIVATE TEACHING</td>
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<td>MUSI 509</td>
<td>THE ALEXANDER TECHNIQUE FOR MUSICIANS</td>
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### Elective Requirements

<table>
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<tr>
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<tbody>
<tr>
<td>MUSI 510</td>
<td>PROFESSIONAL DEVELOPMENT FOR MUSICIANS</td>
<td>2</td>
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<tr>
<td>MUSI 515</td>
<td>MUSIC ENTREPRENEURSHIP</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 518</td>
<td>THE ART AND BUSINESS OF STUDIO TEACHING</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 519</td>
<td>THEMATIC PROGRAMMING: THE ART OF THE RECITAL</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 532</td>
<td>THE FELDENKRAIS METHOD AND THE MUSICIAN'S BODY</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 538</td>
<td>THE ART OF PERFORMANCE: PRESENCE ON STAGE</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 540</td>
<td>APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM</td>
<td>2</td>
</tr>
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</table>

### Policies for the MMus Degree

#### Shepherd School of Music Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Shepherd School of Music publishes a graduate program handbook, which can be found here: [https://gradhandbooks.rice.edu/2019_20/Shepherd_School_of_Music_Graduate_Handbook.pdf](https://gradhandbooks.rice.edu/2019_20/Shepherd_School_of_Music_Graduate_Handbook.pdf)

#### Admission

For Instrumental Performance, Vocal Performance, and Orchestral Conducting applicants, an audition is required. Composition applicants must submit portfolios, and Musicology applicants must provide samples of their written work. Musicology applicants must also complete advanced music tests as well as the Graduate Record Examination for admission consideration.
Academic Standards
Curriculum and Degree Requirements
Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy
A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of C+ (2.33 grade points) or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors a grade of C+ (2.33 grade points) or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum overall grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Performance
Students are expected to perform frequently during their residency at Rice. MMus students in any of the performance fields of study must present at least two full recitals. Composition and Conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all MMus students must participate in the school’s conducted ensembles as assigned.

Thesis
A thesis is required for MMus students in the field of Musicology. In lieu of a thesis, MMus students in the field of Composition must produce an original work of extended scope. Both thesis and original work must be publicly defended.

Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu

Opportunities for the MMus Degree
Other Musical Opportunities
Lectures and Performances
A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu

Master of Music (MMus) Degree in the field of Trumpet Performance
Program Learning Outcomes for the MMus Degree

Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.

Requirements for the MMus Degree
The MMus degree in the field of Trumpet Performance is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MMus degree in the field of Trumpet Performance must complete:

• A minimum of 44 credit hours to satisfy degree requirements.
• A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
• A minimum of 24 credit hours must be taken at Rice University.
• A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
• A minimum overall GPA of 2.67 or higher in all Rice coursework.
• A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree.

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may
be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total Credit Hours Required for the MMus Degree in the field of Trumpet Performance</td>
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Degree Requirements

Performance Requirements

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<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 663</td>
<td>TRUMPET FOR MAJORS-ADVANCED (minimum of 4 semesters)</td>
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</tr>
<tr>
<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
<td>2</td>
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<tr>
<td>MUSI 636</td>
<td>ADVANCED CHAMBER MUSIC (minimum of 4 semesters)</td>
<td>1</td>
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<tr>
<td>MUSI 531</td>
<td>ORCHESTRAL REPERTOIRE (minimum of 4 semesters)</td>
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<tr>
<td>MUSI 641</td>
<td>MASTER'S RECITAL I</td>
<td>0</td>
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<td>MUSI 741</td>
<td>MASTER'S RECITAL II</td>
<td>0</td>
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<tr>
<td>or MUSI 631</td>
<td>MOCK AUDITION</td>
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Academic Coursework

Select 1 course from the Approved Music Theory course offerings (see course list below) 3
Select 1 additional course from the Music Theory or Music History course offerings (see course lists below) 3
Select 2 courses from the Music Career and Skills Enhancement course offerings (see course list below) 4
Select 6 credit hours from the Elective Requirements (see course list below) 1 6

Proficiencies 2

Students must demonstrate the following proficiencies:
- Piano proficiency
- Aural skills proficiency

Total Credit Hours 44

Footnotes and Additional Information 1

1 No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

2 Deficiencies in these areas will result in remedial coursework being added to a student’s degree plan.

Academic Coursework

Academic Coursework is comprised of at least 1 course (3 credit hours) from the Approved Music Theory course offerings, 1 course (3 credit hours) from the Music Theory or Music History course offerings, 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings, and 6 credit hours from the Elective Requirements.

Approved Music Theory Courses

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<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
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<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
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</tr>
<tr>
<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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Additional Music Theory Courses

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<tr>
<td>MUSI 316 / FILM 323</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
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<tr>
<td>MUSI 378 / MDEM 429</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
<td>3</td>
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<tr>
<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
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<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
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<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
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<td>MUSI 416</td>
<td>ORCHESTRATION</td>
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<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
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<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
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<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
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<tbody>
<tr>
<td>LPCR 200</td>
<td>ADVANCED MENTAL TRAINING</td>
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<td>MGMT 621</td>
<td>THE NEW ENTERPRISE</td>
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<tr>
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<td>ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING</td>
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<td>CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS</td>
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<td>FUNDAMENTALS OF PRIVATE TEACHING</td>
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<td>MUSI 509</td>
<td>THE ALEXANDER TECHNIQUE FOR MUSICIANS</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 510</td>
<td>PROFESSIONAL DEVELOPMENT FOR MUSICIANS</td>
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<tr>
<td>MUSI 518</td>
<td>THE ART AND BUSINESS OF STUDIO TEACHING</td>
<td>2</td>
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<td>THEMATIC PROGRAMMING: THE ART OF THE RECITAL</td>
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<tr>
<td>MUSI 532</td>
<td>THE FELDENKRAIS METHOD AND THE MUSICIAN'S BODY</td>
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<tr>
<td>MUSI 538</td>
<td>THE ART OF PERFORMANCE: PRESENCE ON STAGE</td>
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### Elective Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 540</td>
<td>APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM</td>
<td>2</td>
</tr>
</tbody>
</table>

Select 6 credit hours from the following:

- Any course at the 300-level or above
- Any language course at the 100-level or above
- Any additional Music Theory, Music History, or Music Career and Skills Enhancement course
- Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)
- MUSI 342 | RICE JAZZ ENSEMBLE
- MUSI 345 | APPLIED STUDIES IN JAZZ
- MUSI 381 | CONCENTRATION PIANO
- MUSI 436 / MDEM 456 | COLLEGIUM MUSICUM
- MUSI 444 | PRACTICUM IN CONTEMPORARY MUSIC
- MUSI 585 | SONATA CLASS
- MUSI 649 | GRADUATE INDEPENDENT STUDY

### Footnotes and Additional Information

1 No more than three (3) credit hours of MUSI 649 Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

### Policies for the MMus Degree

#### Shepherd School of Music Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Shepherd School of Music publishes a graduate program handbook, which can be found here: [https://gradhandbooks.rice.edu/2019_20/Shepherd_School_of_Music_Graduate_Handbook.pdf](https://gradhandbooks.rice.edu/2019_20/Shepherd_School_of_Music_Graduate_Handbook.pdf)

#### Admission

For Instrumental Performance, Vocal Performance, and Orchestral Conducting applicants, an audition is required. Composition applicants must submit portfolios, and Musicology applicants must provide samples of their written work. Musicology applicants must also complete advanced music tests as well as the Graduate Record Examination for admission consideration.

#### Academic Standards

#### Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

#### Grading Policy

A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner.
A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student's work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of C+ (2.33 grade points) or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors a grade of C+ (2.33 grade points) or lower in any music history course is considered unsatisfactory and will be evaluated as above.

**Graduate degree requirement: a minimum overall grade point average of 2.67 is necessary for graduation.**

**Leaves of Absence and Voluntary Withdrawal**
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean's office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed re-admission into the Shepherd School and may be asked to reapply/re-audition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

**Additional Information**
For additional information, please see the Shepherd School of Music website: [https://music.rice.edu](https://music.rice.edu)

**Opportunities for the MMus Degree**

**Other Musical Opportunities**

**Lectures and Performances**

A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

**Additional Information**
For additional information, please see the Shepherd School of Music website: [https://music.rice.edu](https://music.rice.edu)

**Master of Music (MMus) Degree in the field of Tuba Performance**

**Program Learning Outcomes for the MMus Degree**
Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.

**Requirements for the MMus Degree**

The MMus degree in the field of Tuba Performance is a non-thesis master's degree. For general university requirements, please see [Non-Thesis Master's Degrees](https://music.rice.edu). For additional requirements, regulations, and procedures for all graduate programs, please see [All Graduate Students](https://music.rice.edu). Students pursuing the MMus degree in the field of Tuba Performance must complete:

- A minimum of 44 credit hours to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master's degree.

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's [Official Certifier](https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MMus Degree in the field of Tuba Performance</td>
<td>44</td>
</tr>
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</table>

**Degree Requirements**

**Performance Requirements**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 667</td>
<td>TUBA FOR MAJORS-ADVANCED (minimum of 4 semesters)</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 636</td>
<td>ADVANCED CHAMBER MUSIC (minimum of 4 semesters)</td>
<td>1</td>
</tr>
</tbody>
</table>
Master of Music (MMus) Degree in the field of Tuba Performance

MUSI 531 ORCHESTRAL REPERTOIRE (minimum of 4 semesters) 1
MUSI 641 MASTER'S RECITAL I 0
MUSI 741 MASTER'S RECITAL II 0
or MUSI 631 MOCK AUDITION

Academic Coursework
Select 1 course from the Approved Music Theory course offerings (see course list below) 3
Select 1 additional course from the Music Theory or Music History course offerings (see course lists below) 3
Select 2 courses from the Music Career and Skills Enhancement course offerings (see course list below) 4
Select 6 credit hours from the Elective Requirements (see course list below) 6

Proficiencies 2
Students must demonstrate the following proficiencies:
- Piano proficiency
- Aural skills proficiency

Total Credit Hours 44

Footnotes and Additional Information
1 No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

Academic Coursework
Academic Coursework is comprised of at least 1 course (3 credit hours) from the Approved Music Theory course offerings, 1 course (3 credit hours) from the Music Theory or Music History course offerings, 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings, and 6 credit hours from the Elective Requirements.

Approved Music Theory Courses
<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
<td>3</td>
</tr>
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<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
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</tr>
<tr>
<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
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</tr>
<tr>
<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
<td>3</td>
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Additional Music Theory Courses
<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 316 / FILM 323</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
<td>3</td>
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MUSI 378 / ASIA 378 | CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC | 3 |
MUSI 403 | BASIC ELECTRONIC MUSIC | 3 |
MUSI 404 | ELECTRONIC MUSIC COMPOSITION | 3 |
MUSI 405 | MUSIC BUSINESS AND LAW | 3 |
MUSI 416 | ORCHESTRATION | 3 |
MUSI 417 | MUSIC FOR MEDIA | 3 |
MUSI 514 | SCORE READING AND THEORY AT THE KEYBOARD | 3 |
MUSI 605 | ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS | 3 |
MUSI 606 | ADVANCED COMPUTER SOUND SYNTHESIS | 3 |
MUSI 611 | CLASSROOM PEDAGOGY | 3 |
MUSI 711 | ANALYTICAL APPROACHES | 3 |
MUSI 712 | SEMINAR IN ADVANCED ANALYSIS | 3 |
MUSI 713 | SPECIAL TOPICS IN ADVANCED ANALYSIS | 3 |

Music History Courses
<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 422</td>
<td>RENAISSANCE MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 429 / MDEM 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
<td>3</td>
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<tr>
<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
<td>3</td>
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<td>MUSI 529</td>
<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
<td>3</td>
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<tr>
<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
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</tr>
<tr>
<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
<td>3</td>
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<tr>
<td>MUSI 537</td>
<td>SATIE, COCTEAU &amp; LES SIX: PARIS IN THE 1920s AND BEYOND</td>
<td>3</td>
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<tr>
<td>MUSI 543</td>
<td>MUSIC AND MODERNISM IN FRANCE</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 551</td>
<td>MUSIC OF RICHARD STRAUSS</td>
<td>3</td>
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<tr>
<td>MUSI 621</td>
<td>SELECTED STUDIES IN MUSIC HISTORY</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 623</td>
<td>J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION</td>
<td>3</td>
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<td>MUSI 624</td>
<td>SEMINAR ON A SELECTED COMPOSER</td>
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<td>MUSI 625</td>
<td>MOZART OPERAS</td>
<td>3</td>
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<td>MUSI 626</td>
<td>THE CLASSICAL STYLE</td>
<td>3</td>
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<tr>
<td>MUSI 627</td>
<td>ROMANTIC SONGS AND PIANO PIECES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 721</td>
<td>MUSIC OF SCHOENBERG</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 722</td>
<td>MUSIC OF STRAVINSKY</td>
<td>3</td>
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Music Career and Skills Enhancement Courses
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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td>LPCR 200</td>
<td>ADVANCED MENTAL TRAINING</td>
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<tr>
<td>MGMT 621</td>
<td>THE NEW ENTERPRISE</td>
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<tr>
<td>MGMT 625</td>
<td>DESIGN THINKING</td>
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2019-2020 General Announcements
PDF Generated 1/29/2020
MGMT 629  BUSINESS PLAN DEVELOPMENT  1.5
MGMT 676  SOCIAL ENTERPRISE  1.5
MUSI 413  INTRODUCTION TO DALCROZE EURHYTHMICS  2
MUSI 500  IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES  2
MUSI 501  ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING  2
MUSI 502  CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS  2
MUSI 503  MUSIC AND PERFORMANCE: THE MIND/BODY CONNECTION  2
MUSI 507  TECHNOLOGY FOR MUSICIANS  2
MUSI 508  FUNDAMENTALS OF PRIVATE TEACHING  2
MUSI 509  THE ALEXANDER TECHNIQUE FOR MUSICIANS  2
MUSI 510  PROFESSIONAL DEVELOPMENT FOR MUSICIANS  2
MUSI 515  MUSIC ENTREPRENEURSHIP  2
MUSI 518  THE ART AND BUSINESS OF STUDIO TEACHING  2
MUSI 519  THEMATIC PROGRAMMING: THE ART OF THE RECITAL  2
MUSI 532  THE FELDENKRAIS METHOD AND THE MUSICIAN'S BODY  2
MUSI 538  THE ART OF PERFORMANCE: PRESENCE ON STAGE  2
MUSI 540  APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM  2

Elective Requirements

Select 6 credit hours from the following: 1

- Any course at the 300-level or above 6
- Any language course at the 100-level or above 6
- Any additional Music Theory, Music History, or Music Career and Skills Enhancement course 6
- Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281) 6
- MUSI 342  RICE JAZZ ENSEMBLE 6
- MUSI 345  APPLIED STUDIES IN JAZZ 6
- MUSI 381  CONCENTRATION PIANO 6
- MUSI 436 / MDEM 456  COLLEGIUM MUSICUM 6
- MUSI 444  PRACTICUM IN CONTEMPORARY MUSIC 6
- MUSI 585  SONATA CLASS 6
- MUSI 649  GRADUATE INDEPENDENT STUDY 6

Footnotes and Additional Information

1  No more than three (3) credit hours of MUSI 649 Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

Policies for the MMus Degree

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Admission

For Instrumental Performance, Vocal Performance, and Orchestral Conducting applicants, an audition is required. Composition applicants must submit portfolios, and Musicology applicants must provide samples of their written work. Musicology applicants must also complete advanced music tests as well as the Graduate Record Examination for admission consideration.

Academic Standards

Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy

A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

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Graduate degree requirement: a minimum overall grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.
Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Performance
Students are expected to perform frequently during their residency at Rice. MMus students in any of the performance fields of study must present at least two full recitals. Composition and Conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all MMus students must participate in the school's conducted ensembles as assigned.

Thesis
A thesis is required for MMus students in the field of Musicology. In lieu of a thesis, MMus students in the field of Composition must produce an original work of extended scope. Both thesis and original work must be publicly defended.

Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu

Opportunities for the MMus Degree

Other Musical Opportunities

Lectures and Performances
A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

Additional Information
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Master of Music (MMus) Degree in the field of Viola Performance

Program Learning Outcomes for the MMus Degree

Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.

Requirements for the MMus Degree

The MMus degree in the field of Viola Performance is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MMus degree in the field of Viola Performance must complete:

- A minimum of 44 credit hours to satisfy degree requirements.
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master's degree.

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/dregeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

Total Credit Hours Required for the MMus Degree in the field of Viola Performance: 44

Degree Requirements

Performance Requirements

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
<td>2</td>
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<tr>
<td>MUSI 636</td>
<td>ADVANCED CHAMBER MUSIC (minimum of 4 semesters)</td>
<td>1</td>
</tr>
<tr>
<td>MUSI 531</td>
<td>ORCHESTRAL REPERTOIRE (minimum of 4 semesters)</td>
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<tr>
<td>MUSI 641</td>
<td>MASTER'S RECITAL I</td>
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<tr>
<td>MUSI 741</td>
<td>MASTER'S RECITAL II</td>
<td>0</td>
</tr>
<tr>
<td>or MUSI 631</td>
<td>MOCK AUDITION</td>
<td></td>
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</tbody>
</table>

Academic Coursework

Select 1 course from the Approved Music Theory course offerings (see course list below)  3

Select 1 additional course from the Music Theory or Music History course offerings (see course lists below)  3
Select 2 courses from the Music Career and Skills Enhancement course offerings (see course list below) 4

Select 6 credit hours from the Elective Requirements (see course list below) 6

Proiciencies 2

Students must demonstrate the following proficiencies:
- Piano proficiency
- Aural skills proficiency

Proficiencies

Footnotes and Additional Information

1 No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

2 Deficiencies in these areas will result in remedial coursework being added to a student's degree plan.

Academic Coursework

Academic Coursework is comprised of at least 1 course (3 credit hours) from the Approved Music Theory course offerings, 1 course (3 credit hours) from the Music Theory or Music History course offerings, 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings, and 6 credit hours from the Elective Requirements.

Approved Music Theory Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
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<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
<td>3</td>
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<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
<td>3</td>
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<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
<td>3</td>
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<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
<td>3</td>
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<tr>
<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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Additional Music Theory Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 316 / FILM 323</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 378 / ASIA 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
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</tr>
<tr>
<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
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<tr>
<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
<td>3</td>
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<tr>
<td>MUSI 416</td>
<td>ORCHESTRATION</td>
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<tr>
<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
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<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
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<tr>
<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
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Music History Courses

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<td>MUSI 422</td>
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<td>MUSI 429 / MDEM 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
<td>3</td>
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<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
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</tr>
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<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
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<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
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<tr>
<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
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<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
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<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
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<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
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<td>MUSI 722</td>
<td>MUSIC OF STRAVINSKY</td>
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Music Career and Skills Enhancement Courses

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<td>MGMT 621</td>
<td>THE NEW ENTERPRISE</td>
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<td>MGMT 625</td>
<td>DESIGN THINKING</td>
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<tr>
<td>MUSI 413</td>
<td>INTRODUCTION TO DALCROZE EURHYTHMICS</td>
<td>2</td>
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<tr>
<td>MUSI 500</td>
<td>IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES</td>
<td>2</td>
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<tr>
<td>MUSI 501</td>
<td>ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 502</td>
<td>CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS</td>
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</table>
MUSIC AND PERFORMANCE: THE MIND/BODY CONNECTION 2
TECHNOLOGY FOR MUSICIANS 2
FUNDAMENTALS OF PRIVATE TEACHING 2
THE ALEXANDER TECHNIQUE FOR MUSICIANS 2
PROFESSIONAL DEVELOPMENT FOR MUSICIANS 2
MUSIC ENTREPRENEURSHIP 2
THE ART AND BUSINESS OF STUDIO TEACHING 2
THEMATIC PROGRAMMING: THE ART OF THE RECITAL 2
THE FELDENKRAIS METHOD AND THE MUSICIAN'S BODY 2
THE ART OF PERFORMANCE: PRESENCE ON STAGE 2
APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM 2

Elective Requirements

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<td>MUSI 507</td>
<td>TECHNOLOGY FOR MUSICIANS</td>
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<td>MUSI 508</td>
<td>FUNDAMENTALS OF PRIVATE TEACHING</td>
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<td>THE ALEXANDER TECHNIQUE FOR MUSICIANS</td>
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<tr>
<td>MUSI 515</td>
<td>MUSIC ENTREPRENEURSHIP</td>
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<td>MUSI 518</td>
<td>THE ART AND BUSINESS OF STUDIO TEACHING</td>
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<td>MUSI 519</td>
<td>THEMATIC PROGRAMMING: THE ART OF THE RECITAL</td>
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<tr>
<td>MUSI 532</td>
<td>THE FELDENKRAIS METHOD AND THE MUSICIAN'S BODY</td>
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<tr>
<td>MUSI 538</td>
<td>THE ART OF PERFORMANCE: PRESENCE ON STAGE</td>
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<td>MUSI 540</td>
<td>APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM</td>
<td>2</td>
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</table>

Select 6 credit hours from the following: 7

- Any course at the 300-level or above
- Any language course at the 100-level or above
- Any additional Music Theory, Music History, or Music Career and Skills Enhancement course
- Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)
- MUSI 342 RICE JAZZ ENSEMBLE
- MUSI 345 APPLIED STUDIES IN JAZZ
- MUSI 381 CONCENTRATION PIANO
- MUSI 436 / MDEM 456 COLLEGIUM MUSICUM
- MUSI 444 PRACTICUM IN CONTEMPORARY MUSIC
- MUSI 585 SONATA CLASS
- MUSI 649 GRADUATE INDEPENDENT STUDY

Footnotes and Additional Information

1 No more than three (3) credit hours of MUSI 649 Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

Admission

For Instrumental Performance, Vocal Performance, and Orchestral Conducting applicants, an audition is required. Composition applicants must submit portfolios, and Musicology applicants must provide samples of their written work. Musicology applicants must also complete advanced music tests as well as the Graduate Record Examination for admission consideration.

Academic Standards

Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy

A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student's work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of C+ (2.33 grade points) or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors a grade of C+ (2.33 grade points) or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum overall grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean's office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed re-admission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Performance

Students are expected to perform frequently during their residency at Rice. MMus students in any of the performance fields of study must present at least two full recitals. Composition and Conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all MMus students must participate in the school's conducted ensembles as assigned.

Thesis

A thesis is required for MMus students in the field of Musicology. In lieu of a thesis, MMus students in the field of Composition must produce an
original work of extended scope. Both thesis and original work must be publicly defended.

**Additional Information**
For additional information, please see the Shepherd School of Music website: [https://music.rice.edu](https://music.rice.edu)

### Opportunities for the MMus Degree

#### Other Musical Opportunities

#### Lectures and Performances
A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

**Additional Information**
For additional information, please see the Shepherd School of Music website: [https://music.rice.edu](https://music.rice.edu)

### Master of Music (MMus) Degree in the field of Violin Performance

#### Program Learning Outcomes for the MMus Degree
Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.

#### Requirements for the MMus Degree
The MMus degree in the field of Violin Performance is a non-thesis master’s degree. For general university requirements, please see [Non-Thesis Master’s Degrees](https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/) (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see [All Graduate Students](https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/) (p. 55). Students pursuing the MMus degree in the field of Violin Performance must complete:

- A minimum of 44 credit hours to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree.

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate, private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s *Official Certifier* ([https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/](https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/)). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

#### Summary

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<tr>
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<tr>
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<td>Total Credit Hours Required for the MMus Degree in the field of Violin Performance</td>
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**Degree Requirements**

**Performance Requirements**

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<td>MUSI 691</td>
<td>VIOLIN FOR MAJORS-ADVANCED (minimum of 4 semesters)</td>
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<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
<td>2</td>
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<tr>
<td>MUSI 636</td>
<td>ADVANCED CHAMBER MUSIC (minimum of 4 semesters)</td>
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<tr>
<td>MUSI 531</td>
<td>ORCHESTRAL REPERTOIRE (minimum of 4 semesters)</td>
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<td>MUSI 641</td>
<td>MASTER’S RECITAL I</td>
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<tr>
<td>MUSI 741</td>
<td>MASTER’S RECITAL II</td>
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<tr>
<td>or MUSI 631</td>
<td>MOCK AUDITION</td>
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</table>

**Academic Coursework**

- Select 1 course from the Approved Music Theory course offerings (see course list below) | 3
- Select 1 additional course from the Music Theory or Music History course offerings (see course lists below) | 3
- Select 2 courses from the Music Career and Skills Enhancement course offerings (see course list below) | 4
- Select 6 credit hours from the Elective Requirements (see course list below) | 6

**Proficiencies**

Students must demonstrate the following proficiencies:

- Piano proficiency
- Aural skills proficiency

Total Credit Hours | 44
Footnotes and Additional Information

1 No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

2 Deficiencies in these areas will result in remedial coursework being added to a student’s degree plan.

Academic Coursework

Academic Coursework is comprised of at least 1 course (3 credit hours) from the Approved Music Theory course offerings, 1 course (3 credit hours) from the Music Theory or Music History course offerings, 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings, and 6 credit hours from the Elective Requirements.

Approved Music Theory Courses

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<tr>
<th>Code</th>
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<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
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<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
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<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
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<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
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<tr>
<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION</td>
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<tr>
<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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Additional Music Theory Courses

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<tbody>
<tr>
<td>MUSI 316 / FILM 323</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
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<tr>
<td>MUSI 378 / ASIA 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
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<tr>
<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
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<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
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<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
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<td>MUSI 416</td>
<td>ORCHESTRATION</td>
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<td>MUSI 606</td>
<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
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<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
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<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
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<td>SEMINAR IN ADVANCED ANALYSIS</td>
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<td>MUSI 713</td>
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Music Career and Skills Enhancement Courses

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<tr>
<td>MUSI 501</td>
<td>ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING</td>
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</tr>
<tr>
<td>MUSI 502</td>
<td>CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS</td>
<td>2</td>
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<tr>
<td>MUSI 503</td>
<td>MUSIC AND PERFORMANCE: THE MIND/ BODY CONNECTION</td>
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<tr>
<td>MUSI 507</td>
<td>TECHNOLOGY FOR MUSICIANS</td>
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<tr>
<td>MUSI 508</td>
<td>FUNDAMENTALS OF PRIVATE TEACHING</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 509</td>
<td>THE ALEXANDER TECHNIQUE FOR MUSICIANS</td>
<td>2</td>
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</tbody>
</table>
Elective Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 510</td>
<td>PROFESSIONAL DEVELOPMENT FOR MUSICIANS</td>
<td>2</td>
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<tr>
<td>MUSI 515</td>
<td>MUSIC ENTREPRENEURSHIP</td>
<td>2</td>
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<td>MUSI 518</td>
<td>THE ART AND BUSINESS OF STUDIO TEACHING</td>
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<tr>
<td>MUSI 519</td>
<td>THEMATIC PROGRAMMING: THE ART OF THE RECITAL</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 532</td>
<td>THE FELDENKRAIS METHOD AND THE MUSICIAN’S BODY</td>
<td>2</td>
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<tr>
<td>MUSI 538</td>
<td>THE ART OF PERFORMANCE: PRESENCE ON STAGE</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 540</td>
<td>APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM</td>
<td>2</td>
</tr>
</tbody>
</table>

Select 6 credit hours from the following: ¹
- Any course at the 300-level or above
- Any language course at the 100-level or above
- Any additional Music Theory, Music History, or Music Career and Skills Enhancement course
- Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)
- MUSI 342 | RICE JAZZ ENSEMBLE                              |              |
- MUSI 345 | APPLIED STUDIES IN JAZZ                         |              |
- MUSI 381 | CONCENTRATION PIANO                            |              |
- MUSI 436 / MDEM 456 | COLLEGIUM MUSICIUM |              |
- MUSI 444 | PRACTICUM IN CONTEMPORARY MUSIC                |              |
- MUSI 585 | SONATA CLASS                                   |              |
- MUSI 649 | GRADUATE INDEPENDENT STUDY                     |              |

¹ No more than three (3) credit hours of MUSI 649 Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

Footnotes and Additional Information

Academic Standards

Curriculum and Degree Requirements
Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy
A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of C+ (2.33 grade points) or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors a grade of C+ (2.33 grade points) or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum overall grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Performance
Students are expected to perform frequently during their residency at Rice. MMus students in any of the performance fields of study must present at least two full recitals. Composition and Conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all MMus students must participate in the school’s conducted ensembles as assigned.

Thesis
A thesis is required for MMus students in the field of Musicology. In lieu of a thesis, MMus students in the field of Composition must produce an original work of extended scope. Both thesis and original work must be publicly defended.

Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu

Policies for the MMus Degree

Shepherd School of Music Graduate Program Handbook
The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Shepherd School of Music publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Shepherd_School_of_Music_Graduate_Handbook.pdf

Admission
For Instrumental Performance, Vocal Performance, and Orchestral Conducting applicants, an audition is required. Composition applicants must submit portfolios, and Musicology applicants must provide samples of their written work. Musicology applicants must also complete advanced music tests as well as the Graduate Record Examination for admission consideration.
Opportunities for the MMus Degree

Other Musical Opportunities

Lectures and Performances

A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

Additional Information

For additional information, please see the Shepherd School of Music website: https://music.rice.edu

Master of Music (MMus) Degree in the field of Vocal Performance

Program Learning Outcomes for the MMus Degree

Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.

Requirements for the MMus Degree

The MMus degree in the field of Vocal Performance is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MMus degree in the field of Vocal Performance must complete:

- A minimum of 48-52 credit hours, depending on course selection, to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree.

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MMus Degree in the field of Vocal Performance</td>
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</table>

### Degree Requirements

#### Performance Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 673</td>
<td>VOICE FOR MAJORS-ADVANCED (minimum of 4 semesters)</td>
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<tr>
<td>MUSI 570</td>
<td>ADVANCED OPERA STUDIES (minimum of 4 semesters)</td>
<td>1</td>
</tr>
<tr>
<td>MUSI 571</td>
<td>VOCAL COACHING (minimum of 4 semesters)</td>
<td>1</td>
</tr>
<tr>
<td>MUSI 572</td>
<td>GRADUATE OPERA PERFORMANCE (minimum of 4 semesters)</td>
<td>1-2</td>
</tr>
<tr>
<td>MUSI 587</td>
<td>GRADUATE DICTION FOR SINGERS (minimum of 2 semesters)</td>
<td>1</td>
</tr>
<tr>
<td>MUSI 549</td>
<td>VOCAL PHYSIOLOGY &amp; FUNCTION</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 575</td>
<td>VOICE REPERTOIRE I</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 576</td>
<td>VOICE REPERTOIRE II</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 641</td>
<td>MASTER’S RECITAL I</td>
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<tr>
<td>MUSI 741</td>
<td>MASTER’S RECITAL II</td>
<td>0</td>
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</tbody>
</table>

#### Academic Coursework

Select 1 course from the Approved Music Theory course offerings (see course list below) 3

Select 1 additional course from Music Theory or Music History course offerings (see course lists below) 3

Select 2 courses from the Music Career and Skills Enhancement course offerings (see course list below) 4

Select 6 credit hours from the Elective Requirements (see course list below) 6

#### Additional Coursework

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>FREN 141</td>
<td>FIRST YEAR FRENCH I</td>
<td>3</td>
</tr>
<tr>
<td>GERM 141</td>
<td>FIRST YEAR GERMAN I</td>
<td>3</td>
</tr>
<tr>
<td>ITAL 141</td>
<td>FIRST YEAR ITALIAN I</td>
<td>3</td>
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</tbody>
</table>

Select 1 course from the following: 3

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>FREN 142</td>
<td>FIRST YEAR FRENCH II</td>
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<tr>
<td>GERM 142</td>
<td>FIRST YEAR GERMAN II</td>
</tr>
<tr>
<td>ITAL 142</td>
<td>FIRST YEAR ITALIAN II</td>
</tr>
</tbody>
</table>

#### Proficiencies

Students must demonstrate the following proficiencies:

- Piano proficiency
Aural skills proficiency  

Total Credit Hours 48-52

Footnotes and Additional Information
1 No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

2 Language coursework is only required for MMus students in the field of Vocal Performance if not completed at the undergraduate level. Language coursework may be taken for Elective credit by Vocal Performance students only if the required coursework (or equivalent) is completed at the undergraduate level, otherwise language coursework is considered remedial and will not count toward the elective requirement.

3 Deficiencies in these areas will result in remedial coursework being added to a student’s degree plan.

Academic Coursework
Academic Coursework is comprised of at least 1 course (3 credit hours) from the Approved Music Theory course offerings, 1 course (3 credit hours) from the Music Theory or Music History course offerings, 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings, and 6 credit hours from the Elective Requirements.

Approved Music Theory Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 615</td>
<td>MUSIC OF ARAVEL: MUSIC THEORY AND COMPOSITION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
<td>3</td>
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</table>

Additional Music Theory Courses

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 316 / FILM 323</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 378 / ASIA 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 416</td>
<td>ORCHESTRATION</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
<td>3</td>
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<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 606</td>
<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
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<tr>
<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
<td>3</td>
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<tr>
<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
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<tr>
<td>MUSI 712</td>
<td>SEMINAR IN ADVANCED ANALYSIS</td>
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<tr>
<td>MUSI 713</td>
<td>SPECIAL TOPICS IN ADVANCED ANALYSIS</td>
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Music History Courses

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<tbody>
<tr>
<td>MUSI 422</td>
<td>RENAISSANCE MUSIC</td>
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<td>MUSI 429 / MDEM 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
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<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
<td>3</td>
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<tr>
<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
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<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
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<tr>
<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
<td>3</td>
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<tr>
<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
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<tr>
<td>MUSI 529</td>
<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
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<tr>
<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
<td>3</td>
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<tr>
<td>MUSI 537</td>
<td>SATIE, COCTEAU, &amp; LES SIX: PARIS IN THE 1920s AND BEYOND</td>
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<tr>
<td>MUSI 543</td>
<td>MUSIC AND MODERNISM IN FRANCE</td>
<td>3</td>
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<tr>
<td>MUSI 551</td>
<td>MUSIC OF RICHARD STRAUSS</td>
<td>3</td>
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<tr>
<td>MUSI 621</td>
<td>SELECTED STUDIES IN MUSIC HISTORY</td>
<td>3</td>
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<tr>
<td>MUSI 623</td>
<td>J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION</td>
<td>3</td>
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<tr>
<td>MUSI 624</td>
<td>SEMINAR ON A SELECTED COMPOSER</td>
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<tr>
<td>MUSI 625</td>
<td>MOZART OPERAS</td>
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<tr>
<td>MUSI 626</td>
<td>THE CLASSICAL STYLE</td>
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<tr>
<td>MUSI 627</td>
<td>ROMANTIC SONGS AND PIANO PIECES</td>
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</tr>
<tr>
<td>MUSI 721</td>
<td>MUSIC OF SCHOENBERG</td>
<td>3</td>
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<tr>
<td>MUSI 722</td>
<td>MUSIC OF STRAVINSKY</td>
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</table>

Music Career and Skills Enhancement Courses

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<tr>
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<tbody>
<tr>
<td>LPCR 200</td>
<td>ADVANCED MENTAL TRAINING</td>
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<tr>
<td>MGMT 621</td>
<td>THE NEW ENTERPRISE</td>
<td>3</td>
</tr>
<tr>
<td>MGMT 625</td>
<td>DESIGN THINKING</td>
<td>1.5</td>
</tr>
<tr>
<td>MGMT 629</td>
<td>BUSINESS PLAN DEVELOPMENT</td>
<td>1.5</td>
</tr>
<tr>
<td>MGMT 676</td>
<td>SOCIAL ENTERPRISE</td>
<td>1.5</td>
</tr>
<tr>
<td>MUSI 413</td>
<td>INTRODUCTION TO DALCROZE EURHYTHMICS</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 500</td>
<td>IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 501</td>
<td>ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING</td>
<td>2</td>
</tr>
<tr>
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<td>CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS</td>
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</tr>
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</table>
MUSIC AND PERFORMANCE: THE MIND/ BODY CONNECTION 2
MUSI 507 TECHNOLOGY FOR MUSICIANS 2
MUSI 508 FUNDAMENTALS OF PRIVATE TEACHING 2
MUSI 509 THE ALEXANDER TECHNIQUE FOR MUSICIANS 2
MUSI 510 PROFESSIONAL DEVELOPMENT FOR MUSICIANS 2
MUSI 515 MUSIC ENTREPRENEURSHIP 2
MUSI 518 THE ART AND BUSINESS OF STUDIO TEACHING 2
MUSI 519 THEMATIC PROGRAMMING: THE ART OF THE RECITAL 2
MUSI 532 THE FELDENKRAIS METHOD AND THE MUSICIAN'S BODY 2
MUSI 538 THE ART OF PERFORMANCE: PRESENCE ON STAGE 2
MUSI 540 APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM 2

Elective Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Select 6 credit hours from the following: 1</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Any course at the 300-level or above</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Any language course at the 100-level or above</td>
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<td></td>
<td>Any additional Music Theory, Music History, or Music Care and Skills Enhancement course</td>
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<td></td>
<td>Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)</td>
<td></td>
</tr>
<tr>
<td>MUSI 342</td>
<td>RICE JAZZ ENSEMBLE</td>
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<td>APPLIED STUDIES IN JAZZ</td>
<td></td>
</tr>
<tr>
<td>MUSI 381</td>
<td>CONCENTRATION PIANO</td>
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</tr>
<tr>
<td>MUSI 436 / MDEM 456</td>
<td>COLLEGIUM MUSICUM</td>
<td></td>
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<td>MUSI 444</td>
<td>PRACTICUM IN CONTEMPORARY MUSIC</td>
<td></td>
</tr>
<tr>
<td>MUSI 585</td>
<td>SONATA CLASS</td>
<td></td>
</tr>
<tr>
<td>MUSI 649</td>
<td>GRADUATE INDEPENDENT STUDY</td>
<td></td>
</tr>
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A minimum grade of B- (2.67 grade points) is expected of all music students in their major applied area. A grade of C+ (2.33 grade points) or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of C+ (2.33 grade points) or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of C+ (2.33 grade points) or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors a grade of C+ (2.33 grade points) or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum overall grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Performance

Students are expected to perform frequently during their residency at Rice. MMus students in any of the performance fields of study must present at least two full recitals. Composition and Conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all MMus students must participate in the school’s conducted ensembles as assigned.

Thesis

A thesis is required for MMus students in the field of Musicology. In lieu of a thesis, MMus students in the field of Composition must produce an
original work of extended scope. Both thesis and original work must be publicly defended.

Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu

Opportunities for the MMus Degree

Other Musical Opportunities
Lectures and Performances
A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

Additional Information
For additional information, please see the Shepherd School of Music website: https://music.rice.edu

Naval Science

Contact Information
Naval Science
https://nrotc.rice.edu/
6100 Main Street
713-348-3940

Timothy E. Symons, USN
Department Chair
timothy.symons@rice.edu

Students may enroll in the Naval Reserve Officers’ Training Corps (NROTC) program as scholarship or non-scholarship students.

An academic minor in Naval Science is also available to all Rice students in undergraduate degree-granting programs. The faculty and instructors in the program consist of active-duty military officers.

Minor

• Minor in Naval Science (p. 747)

Naval Science does not currently offer an academic program at the graduate level.

Chair and Professor in the Practice
Timothy E. Symons, USN

Advisors
Joseph E. Elseroad, USMC
Kurtt Muffoletto, USN

Adjunct Professors in the Practice
Joseph E. Elseroad, USMC
Raymond Fernandez Jr., USMC

Kurtt Muffoletto, USN

Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: NAVA

Program Description and Code
• Naval Science: NAVA

Undergraduate Minor Description and Code
• Minor in Naval Science: NAVA

CIP Code and Description ¹
• NAVA Minor: CIP Code/Title: 28.0505 - Naval Science and Operational Studies

¹ Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Minor in Naval Science

Program Learning Outcomes for the Minor in Naval Science

Upon completing the minor in Naval Science, students will be able to:

1. Gain a broad understanding of the United States Navy and Marine Corps to include their current structure, organization, missions, and national security importance.
2. Become familiar with the significant events, attitudes, personalities, and circumstances that have shaped the naval service and understand their relative impact on American history.
3. Become familiar with organizational behavior and management, to include individual and group behaviors, performance incentives and degraders, and different leadership styles.
4. Gain an understanding of Western moral traditions and ethical philosophy as they relate to military leadership and the conduct of warfare, to include Aristotle, Bentham, Mill, Kant, and Aquinas.
5. Develop critical analysis, writing, verbal skills and demonstrate practical application through experiential learning, case study analysis and Socratic discussion.

Requirements for the Minor in Naval Science

Students pursuing the minor in Naval Science must complete:

• A minimum of 6 courses (18 credit hours) to satisfy the minor requirements.
• A minimum of 3 courses (9 credit hours) taken at the 300-level or above.
• A maximum of 2 courses (6 credit hours) from study abroad or transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab.
The minor in Naval Science (NAVA) is available to all degree-seeking Rice students in undergraduate degree-granting programs.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor's academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the minor's Official Certifier (https://registrar.rice.edu/facstaff/degeworks/officialcertifier/). Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Minor in Naval Science</td>
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#### Minor Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Core Requirements</strong></td>
<td></td>
</tr>
<tr>
<td>NAVA 101</td>
<td>NAVAL ORIENTATION</td>
<td>3</td>
</tr>
<tr>
<td>NAVA 103</td>
<td>SEA POWER AND MARITIME AFFAIRS</td>
<td>3</td>
</tr>
<tr>
<td>NAVA 203</td>
<td>LEADERSHIP AND MANAGEMENT I</td>
<td>3</td>
</tr>
<tr>
<td>NAVA 402</td>
<td>LEADERSHIP AND ETHICS</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Elective Requirements</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select 2 courses from the following:</td>
<td>6</td>
</tr>
<tr>
<td>NAVA 301</td>
<td>NAVIGATION I</td>
<td></td>
</tr>
<tr>
<td>NAVA 302</td>
<td>NAVAL OPERATIONS AND SEAMANSHIP</td>
<td></td>
</tr>
<tr>
<td>NAVA 303</td>
<td>EVOLUTION OF WARFARE</td>
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<tr>
<td>NAVA 403</td>
<td>NAVAL ENGINEERING</td>
<td></td>
</tr>
<tr>
<td>NAVA 411</td>
<td>FUNDAMENTALS OF MANEUVER WARFARE</td>
<td></td>
</tr>
</tbody>
</table>

|        | **Total Credit Hours**                      | 18           |

#### Footnotes and Additional Information

1 All Naval Science (NAVA) courses are offered once every academic year with the exception of NAVA 303 and NAVA 411. These two courses are offered every other academic year.

### Policies for the Minor in Naval Science

#### Program Restrictions and Exclusions

Students pursuing the minor in Naval Science should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 11), i) students may declare their intent to pursue a minor only after they have first declared a major, and ii) students may not major and minor in the same subject.

#### Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

### Program Transfer Credit Guidelines

Students pursuing the minor in Naval Science should be aware of the following program-specific transfer credit guidelines:

- No more than 2 courses (6 credit hours) as transfer credit from U.S. or international universities of similar standing as Rice may apply towards the minor.
- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

### Opportunities for the Minor in Naval Science

#### Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

### Contact Information

Neuroscience

http://neuroscience.rice.edu/

W100 George R. Brown Hall

713-348-4015

Behnaam Aazhang

Program Director

aaz@rice.edu

The Neuroscience program, housed in the BioSciences Department, provides a strong interdisciplinary education covering the breadth of fundamental disciplines on which neuroscience is based and includes multiple opportunities for experiential learning. Neuroscience uses diverse methodologies to investigate the brain and its relationship to the mind, and includes the analysis of brain structures related to specific cognitive processes and representations, investigations of the biochemical processes that occur in brain functions, and the interactions and correlations among the brain, behavior, and biology that can be observed and modeled. The primary aim of the neuroscience program is to provide an understanding of how the cognition and behavior of organisms are encoded in neural processes. Such an understanding of
the brain, bringing to bear many types of knowledge, is necessary as a basis for understanding and solving many practical problems including but not limited to: neurophysiology of disease; treatment for pathologies related to aging, stroke, autism, and hearing and other impairments; human behavior relating to risk, addiction, and social pathologies; memory, learning, and acquisition of literacy; neural basis of emotion and its relation to human perception and behavior.

The Neuroscience program offers a broad range of introductory and advanced courses that lead to either a Bachelor of Arts (BA) Degree with a Major in Neuroscience or a Minor in Neuroscience. The BA degree is designed with the intent that all majors will gain a robust foundation in science and engineering basics and additional experience in the multidisciplinary core areas that contribute to the breadth of modern neuroscience. Project-based laboratory courses are required, and students will have the opportunity to pursue independent research. This program is appropriate for students with interests in pursuing advanced degrees in the future. The minor is available for students who choose other majors but desire strong foundational knowledge of the diverse aspects of how the brain functions. Neuroscience students are encouraged to participate in undergraduate research, and numerous students have already availed themselves of the neuroscience research opportunities at Rice and within the Houston community.

**Bachelor's Program**
- Bachelor of Arts (BA) Degree with a Major in Neuroscience (p. 749)

**Minor**
- Minor in Neuroscience (p. 751)

Neuroscience does not currently offer an academic program at the graduate level.

**Advisors**
Behnaam Aazhang  
David R. Caprette  
J. David Dickman  
Simon J. Fischer-Baum  
Jonathan Flynn  
Caleb Kemere  
Peter Y. Lwigale

**Professors**
Behnaam Aazhang  
Richard G. Baraniuk  
Kathleen M. Beckingham  
Janet Braam  
Anthony K. Brandt  
James L. Dannemiller  
Michael W. Deem  
J. David Dickman  
Suzanne E. Kemmer  
Herbert Levine  
Randi C. Martin  
James A. McNew  
Marcia K. O'Malley  
Timothy Schroeder  
Charles Siewert  
Michael Stern  
Devika Subramanian  
Marina Vannucci  
Rick K. Wilson

**Associate Professors**
Genevra I. Allen  
Peter Y. Lwigale  
Robert M. Raphael  
Jacob Robinson

**Assistant Professors**
Simon J. Fischer-Baum  
Caleb Kemere  
Alexander Morgan  
Ankit Patel  
Xaq Pitkow  
Amina Qutub  
Julia Saltz  
Rosa Uribe

**Teaching Professor**
David R. Caprette

**Lecturer**
Jonathan Flynn

**Adjunct Professors**
Fabrizio Gabbiani  
Harel Shouval

**Description and Code Legend**
*Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

**Course Catalog/Schedule**
- Course offerings/subject code: NEUR

**Program Description and Code**
- Neuroscience: NEUR

**Undergraduate Major Description and Code**
- Major in Neuroscience: NEUX

**Undergraduate Minor Description and Code**
- Minor in Neuroscience: NEUR

**CIP Code and Description**
- NEUX Major/Program: CIP Code/Title: 26.1501 - Neuroscience
- NEUR Minor: CIP Code/Title: 26.1501 - Neuroscience

1. Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: [https://nces.ed.gov/ipeds/cipcode/](https://nces.ed.gov/ipeds/cipcode/)

**Bachelor of Arts (BA) Degree with a Major in Neuroscience**
Program Learning Outcomes for the BA Degree with a Major in Neuroscience

Upon completing the BA degree with a major in Neuroscience, students will be able to:

1. Demonstrate knowledge of the biological basis for brain and neuron function and experimental strategies that led to our current understanding of brain and neuron function.
2. Demonstrate knowledge of the key issues, questions, and perspectives that define systems neuroscience.
3. Demonstrate the ability to analyze and interpret neuro-scientific data.
4. Understand multiple experimental methods to measure and manipulate brain activity.
5. Demonstrate how to apply the modern scientific method, including designing and executing experiments, and collecting, analyzing, and interpreting meaningful data.

Requirements for the BA Degree with a Major in Neuroscience

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Neuroscience must complete:

- A minimum of 23 courses (62-69 credit hours, depending on course selection) to satisfy major requirements.
- A minimum of 122-129 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 10 courses (26-30 credit hours) taken at the 300-level or above.
- A maximum of 2 courses (6 credit hours) from study abroad or transfer credits. For additional program guidelines regarding transfer credit, see the Policies tab.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Neuroscience</td>
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<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Neuroscience</td>
<td>122-129</td>
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Degree Requirements

<table>
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<th>Code</th>
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<tr>
<td></td>
<td>Foundation Courses 1</td>
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</tr>
<tr>
<td>BIOC 201</td>
<td>INTRODUCTORY BIOLOGY I</td>
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<tr>
<td>CAAM 210</td>
<td>INTRODUCTION TO ENGINEERING COMPUTATION</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 121</td>
<td>GENERAL CHEMISTRY I</td>
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<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Core Requirements</td>
<td></td>
</tr>
<tr>
<td>NEUR 362 / PSYC 362</td>
<td>COGNITIVE NEUROSCIENCE: EXPLORING THE LIVING BRAIN</td>
<td>3</td>
</tr>
<tr>
<td>NEUR 380 / BIOC 380 / PSYC 380</td>
<td>FUNDAMENTAL NEUROSCIENCE SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>NEUR 383 / BIOC 380 / ELEC 380</td>
<td>INTRODUCTION TO NEUROENGINEERING: MEASURING AND MANIPULATING NEURAL ACTIVITY</td>
<td>3</td>
</tr>
<tr>
<td>NEUR 385 / BIOC 385</td>
<td>FUNDAMENTALS OF CELLULAR AND MOLECULAR NEUROSCIENCE</td>
<td>3</td>
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</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Project-Based Laboratory Courses</td>
<td></td>
</tr>
<tr>
<td>BIOC 212</td>
<td>INTERMEDIATE EXPERIMENTAL CELLULAR AND MOLECULAR NEUROSCIENCE</td>
<td>2</td>
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</tbody>
</table>

Select a minimum of 2 courses (minimum of 2 credit hours) from the following:

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>BIOC 415</td>
<td>EXPERIMENTAL PHYSIOLOGY</td>
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<tr>
<td>BIOC 417</td>
<td>EXPERIMENTAL CELL AND MOLECULAR NEUROSCIENCE</td>
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<tr>
<td>NEUR 310</td>
<td>INDEPENDENT RESEARCH FOR NEUROSCIENCE UNDERGRADUATES</td>
<td>2</td>
</tr>
<tr>
<td>PSYC 366</td>
<td>METHODS IN SOCIAL COGNITIVE AND AFFECTIVE NEUROSCIENCE</td>
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</table>

Elective Requirements

Select a minimum of 4 courses (minimum of 12 credit hours) from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>BIOC 129</td>
<td>BRAINSTEM - TEACHING STEM THROUGH NEUROSCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 442</td>
<td>MOLECULES, MEMORY AND MODEL ANIMALS: METHODS IN BEHAVIORAL NEUROSCIENCE</td>
<td></td>
</tr>
<tr>
<td>BIOC 443</td>
<td>DEVELOPMENTAL NEUROBIOLOGY</td>
<td></td>
</tr>
</tbody>
</table>
Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 Permissible substitutions: MATH 105 or MATH 111 and MATH 112 may be substituted for MATH 101; MATH 106 may be substituted for MATH 102; CHEM 151 may be substituted for CHEM 121 or CHEM 111; CHEM 153 may be substituted for CHEM 123 or CHEM 113; CHEM 152 may be substituted for CHEM 122 or CHEM 112, and CHEM 154 may be substituted for CHEM 124 or CHEM 114; PHYS 101 and PHYS 103 or PHYS 111 may be substituted for PHYS 125; PHYS 102 and PHYS 104 or PHYS 112 may be substituted for PHYS 126.

2 NEUR 310 can be repeated and counted as an elective if a student has chosen NEUR 310 to count as a Project-Based Laboratory Course. It can only be repeated as an elective once for credit towards the major. If taken as a Project-Based Laboratory or as an Elective, NEUR 310 must be taken for at least 3 credit hours.

3 Students must complete a minimum of three semesters (3 credit hours total) of BIOC 129 to use this course as an Elective Requirement.

Policies for the BA Degree with a Major in Neuroscience

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines

Students pursuing the major in Neuroscience should be aware of the following program transfer credit guidelines:

- No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the major.
- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information

For additional information, please see the Neuroscience website: http://neuroscience.rice.edu/.

Opportunities for the BA Degree with a Major in Neuroscience

Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Research in Neuroscience

Research is highly encouraged for all neuroscience programs, and many opportunities are available for independent research at Rice and other institutions of the Texas Medical Center. Students can receive course credit for independent research through the course NEUR 310 with the option to repeat for credit once as an elective for the major.

Additional Information

For additional information, please see the Neuroscience website: http://neuroscience.rice.edu/.

Minor in Neuroscience

Program Learning Outcomes for the Minor in Neuroscience

Upon completing the minor in Neuroscience, students will be able to:
1. Demonstrate knowledge of the key issues, questions, and perspectives that define contemporary neuroscience.

2. Understand neuroscience as an interdisciplinary field and demonstrate the ability to draw on, and synthesize, key findings and concepts in the sciences, humanities and/or engineering in both the evaluation of existing theories and in the formulation and solution of new problems in neuroscience.

## Requirements for the Minor in Neuroscience

Students pursuing the minor in Neuroscience must complete:

- A minimum of 6 courses (18 credit hours) to satisfy minor requirements.
- A minimum of 3 courses (9 credit hours) taken at the 300-level or above.
- A maximum of 2 courses (6 credit hours) from study abroad or transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab.
- A minimum of 2 of the Elective Requirements should be completed for the minor only (not shared or double-counted with another major).
- The requirements for one area of specialization (see below for areas of specialization). The Neuroscience minor offers two areas of specialization:
  - Humanities and Social Science (p. 752): represents cognitive and behavioral approaches to neuroscience, or
  - Natural Sciences and Engineering (p. 752): represents genetics, cellular/molecular, bioengineering, computation, and systems-level investigations.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the minor’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Total Credit Hours Required for the Minor in Neuroscience</td>
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### Minor Requirements

<table>
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<tr>
<th>Code</th>
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<tbody>
<tr>
<td></td>
<td>Core Requirement</td>
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</tr>
<tr>
<td>NEUR 380 / PSYC 380 / BIOC 380</td>
<td>FUNDAMENTAL NEUROSCIENCE SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Area of Specialization</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select 1 from the following Areas of Specialization (see Areas of Specialization below):</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Humanities and Social Science</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Natural Sciences and Engineering</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>18</td>
</tr>
</tbody>
</table>

### Areas of Specialization

#### Area of Specialization: Humanities and Social Science

Students must complete a total of 5 courses (15 credit hours total) as listed below to satisfy the requirements for the Humanities and Social Sciences area of specialization.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>NEUR 362 / PSYC 362</td>
<td>COGNITIVE NEUROSCIENCE: EXPLORING</td>
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</tr>
<tr>
<td></td>
<td>Elective Requirements 1, 2, 3</td>
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</tr>
<tr>
<td></td>
<td>Select a minimum of 3 courses (9 credit hours) from the Humanities and Social Science area of specialization (see below for course lists)</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Select at least 1 course (3 credit hours) from the Natural Science and Engineering area of specialization to provide breadth in the field of Neuroscience (see below for course lists)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>15</td>
</tr>
</tbody>
</table>

#### Footnotes and Additional Information

1. At least 2 of the electives should be completed for the minor only (not shared or double-counted with another major).
2. NEUR 385/BIOC 385 may be used to fulfill this requirement.
3. No more than 3 credit hours for research (NEUR 310) may be used to satisfy elective requirements for this specialization. NEUR 310 may be taken twice (one instance may count toward the Area of Specialization, one instance may count as breadth.)

#### Area of Specialization: Natural Sciences and Engineering

Students must complete 5 courses (15 credit hours) as listed below to satisfy the requirements for the Natural Sciences and Engineering area of specialization.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEUR 385 / BIOC 385</td>
<td>FUNDAMENTALS OF CELLULAR AND MOLECULAR NEUROSCIENCE</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Elective Requirements 1, 2, 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select a minimum of 3 courses (9 credit hours) from the Natural Science and Engineering area of specialization (see below for course lists)</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Select at least 1 course (3 credit hours) from the Humanities and Social Science area of specialization to provide breadth in the field of Neuroscience (see below for course lists)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>15</td>
</tr>
</tbody>
</table>

#### Footnotes and Additional Information

1. At least 2 of the electives should be completed for the minor only (not shared or double-counted with another major).
2. No more than 3 credit hours for research (NEUR 310) may be used to satisfy elective requirements for this specialization. NEUR 310 may be taken twice (one instance may count toward the Area of Specialization, one instance may count as breadth.)
3. NEUR 362/PSYC 362 may be used to fulfill this requirement.
Course Lists to Satisfy Requirements

Humanities and Social Science

All students must complete at least 1 course (such that at least 3 credit hours are completed) from the Humanities and Social Science Electives. Students pursuing the Humanities and Social Sciences area of specialization must take 2 additional courses (6 credit hours) from the following list, for a minimum of 3 courses (9 credit hours must be reached with a combination of all courses).

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC 129</td>
<td>BRAINSTEM - TEACHING STEM THROUGH NEUROSCIENCE</td>
<td>1</td>
</tr>
<tr>
<td>NEUR 411 / ANTH 411 / LING 411</td>
<td>NEUROLINGUISTICS</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 103</td>
<td>PHILOSOPHICAL ASPECTS OF COGNITIVE SCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 303</td>
<td>THEORY OF KNOWLEDGE</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 312</td>
<td>PHILOSOPHY OF MIND</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 358</td>
<td>PHILOSOPHY OF NEUROSCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 359</td>
<td>ANIMAL MINDS</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 354</td>
<td>INTRODUCTION TO SOCIAL AND AFFECTIVE NEUROSCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 366</td>
<td>METHODS IN SOCIAL COGNITIVE AND AFFECTIVE NEUROSCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 375</td>
<td>NEUROPSYCHOLOGY OF LANGUAGE AND MEMORY</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 432</td>
<td>BRAIN AND BEHAVIOR</td>
<td>3</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

Students must complete a minimum of three semesters (3 credit hours total) of BIOC 129 to use this course as an elective requirement.

Natural Sciences and Engineering

All students must complete at least 1 course (such that at least 3 credit hours are completed) from the Natural Sciences and Engineering Electives. Students pursuing the Natural Sciences and Engineering area of specialization must take 2 additional courses (6 credit hours) from the following list, for a minimum of 3 courses (9 credit hours must be reached with a combination of all courses).

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
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<tr>
<td>BIOC 415</td>
<td>EXPERIMENTAL PHYSIOLOGY</td>
<td>1</td>
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<tr>
<td>BIOC 417</td>
<td>EXPERIMENTAL CELL AND MOLECULAR NEUROSCIENCE</td>
<td>1</td>
</tr>
<tr>
<td>BIOC 443</td>
<td>DEVELOPMENTAL NEUROBIOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 492</td>
<td>SENSORY NEUROENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td>COMP 440 / ELEC 440</td>
<td>ARTIFICIAL INTELLIGENCE</td>
<td>4</td>
</tr>
<tr>
<td>EBIO 321</td>
<td>ANIMAL BEHAVIOR</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 475</td>
<td>LEARNING FROM SENSOR DATA</td>
<td>3</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

Students must complete a minimum of three semesters (3 credit hours total) of BIOC 129 to use this course as an elective requirement.

Policies for the Minor in Neuroscience

Program Restrictions and Exclusions

Students pursuing minor in Neuroscience should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 11), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines

Students pursuing the minor in Neuroscience should be aware of the following program-specific transfer credit guidelines:

- No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the minor.
- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

Additional Information

For additional information, please see the Neuroscience website: http://neuroscience.rice.edu/.
Opportunities for the Minor in Neuroscience

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Research in Neuroscience
Research is highly encouraged for all neuroscience minors, and may opportunities are available for independent research at Rice and other institutions of the Texas Medical Center. Students can receive course credit for independent research through the course NEUR 310. There is a 3 credit hour limit for applying research courses to the NEUR minor requirements.

Additional Information
For additional information, please see the Neuroscience website: http://neuroscience.rice.edu/.

Philosophy

Contact Information
Philosophy
https://philosophy.rice.edu/
208 Humanities Building
713-348-2723

Timothy Schroeder
Department Chair
tas6@rice.edu

Philosophy is best described as the attempt to think clearly and deeply about the fundamental questions that arise for us as human beings. What is the nature of knowledge (epistemology)? How are we to distinguish between what really is and what only seems to be (metaphysics)? What is the right thing to do (ethics)? Is there any meaning to existence? To study the history of philosophy is to study the best, most enduring answers given to these questions in the past. Because every other field of study adopts some stance toward these questions, though often implicitly, philosophical issues arise in the natural and social sciences, history, linguistics, literature, art, and so on. Special courses in philosophy deal with each of these.

Characteristic of philosophy are commitments to the construction and evaluation of arguments, to expressing thoughts clearly and precisely, and to defending one’s ideas and evaluating the ideas of others. The study of philosophy thus provides resources for critical participation in all realms of human endeavor.

The graduate program trains students to teach and pursue research in the main areas of department concentration: ethics (especially bioethics) and social and political philosophy, core portions of analytic philosophy (especially philosophy of mind), history of philosophy, and continental philosophy.

Bachelor’s Program
• Bachelor of Arts (BA) Degree with a Major in Philosophy (p. 755)

Master’s Program
• Master of Arts (MA) Degree in the field of Philosophy*

Doctoral Program
• Doctor of Philosophy (PhD) Degree in the field of Philosophy (p. 757)
  * Although students are not normally admitted to a Master of Arts (MA) degree program, graduate students may earn the MA as they work towards the PhD.

Chair
Timothy Schroeder

Director of Undergraduate Studies
Charles Siewert

Director of Graduate Studies
Gwendolyn M. Bradford

Professors
Elizabeth Brake
Steven G. Crowell
Uriah Kriegel
Donald Ray Morrison
Timothy Schroeder
George Sher
Charles Siewert

Associate Professor
Gwendolyn M. Bradford

Assistant Professors
Alexander Morgan
Vida Yao

Visiting Lecturer
Brian Miller

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: PHIL

Department Description and Code
• Philosophy : PHIL

Undergraduate Degree Description and Code
• Bachelor of Arts degree: BA
Undergraduate Major Description and Code
• Major in Philosophy: PHIL

Graduate Degree Descriptions and Codes
• Master of Arts degree: MA
• Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code
• Degree Program in Philosophy: PHIL

CIP Code and Description

- PHIL Major/Program: CIP Code/Title: 38.0101 - Philosophy

Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Bachelor of Arts (BA) Degree with a Major in Philosophy

Program Learning Outcomes for the BA Degree with a Major in Philosophy

Upon completing the BA degree with a major in Philosophy, students will be able to:

1. Demonstrate an understanding of the general historical development of philosophy and develop an in depth understanding of at least one historical period or movement.
2. Demonstrate the ability to read philosophical texts critically and with understanding of the problems and contexts.
3. Demonstrate the cognitive and formal abilities to evaluate critically philosophical arguments.
4. Demonstrate the ability to communicate clearly and logically their own views on a range of important philosophical problems.

Requirements for the BA Degree with a Major in Philosophy

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Philosophy must complete:

• A minimum of 10 courses (30 credit hours) to satisfy major requirements.
• A minimum of 120 credit hours to satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
• A minimum of 6 courses (18 credit hours) taken at the 300-level or above.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor, or where applicable, the department's Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major's Official Certifier (https://registrar.rice.edu/facstaff/degeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
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<th>Code</th>
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<th>Credit Hours</th>
</tr>
</thead>
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<tr>
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<td>Total Credit Hours Required for the BA Degree with a Major in Philosophy</td>
<td>120</td>
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Degree Requirements

<table>
<thead>
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<tbody>
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<td>Core Requirements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Core Courses</td>
<td></td>
</tr>
<tr>
<td>PHIL 201 / CLAS 201 / MDEM 201</td>
<td>HISTORY OF PHILOSOPHY I</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 202</td>
<td>HISTORY OF PHILOSOPHY II</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 106</td>
<td>LOGIC</td>
<td>3</td>
</tr>
</tbody>
</table>

Areas of Study

History

Select 1 course from the following: 3

- PHIL 301 / CLAS 301 / MDEM 301
  - ANCIENT AND MEDIEVAL PHILOSOPHY
- PHIL 302
  - MODERN PHILOSOPHY

Core Analytic

Select 1 course from the following: 3

- PHIL 303
  - THEORY OF KNOWLEDGE
- PHIL 304
  - METAPHYSICS
- PHIL 312
  - PHILOSOPHY OF MIND
- PHIL 313
  - PHILOSOPHY OF SCIENCE

Value Theory

Select 1 course from the following: 3

- PHIL 306
  - ETHICS
- PHIL 307
  - SOCIAL AND POLITICAL PHILOSOPHY
- PHIL 316
  - PHILOSOPHY OF LAW
- PHIL 326
  - HISTORY OF ETHICS
- PHIL 327
  - HISTORY OF SOCIAL AND POLITICAL PHILOSOPHY

Elective Requirements

Select 4 elective courses from departmental (PHIL) course offerings 12

Total Credit Hours Required for the Major in Philosophy 30

Additional Credit Hours to Complete BA Degree Requirements 30

University Graduation Requirements (p. 26) * 60

Total Credit Hours 120

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.
Students who pursue the senior thesis (departmental honors) option must take PHIL 411 and PHIL 412. These courses are required in addition to major requirements and will not fulfill Elective Requirements. For more information, see the Opportunities tab.

**Policies for the BA Degree with a Major in Philosophy**

**Transfer Credit**
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

**Departmental Transfer Credit Guidelines**
Students pursuing the major in Philosophy should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.
- Transfer credit coursework from online-only courses cannot be used to count towards the major.

**Distribution Credit Information**
The determination of distribution eligibility is done as part of the new course creation process (https://registrar.rice.edu/facstaff/courseprocess/). As part of an annual roll call (https://registrar.rice.edu/facstaff/distribution_credit/) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean’s Offices of each of the academic schools.

Faculty and leadership in the academic schools are responsible for ensuring that the courses identified as distribution-eligible meet the criteria as set in the General Announcements (p. 26). Students are responsible for ensuring that they meet graduation requirements (p. 26) by completing coursework designated as distribution at the time of course registration.

Distribution courses from Philosophy (PHIL) study basic questions of knowledge, value, and reality. They show students the importance of critical examination and careful reasoning about fundamental issues that affect us as persons, as professionals, and as citizens. These courses tend to be broad based and address foundational concerns connected to studies in many other disciplines. Many bear importantly on basic ethical and political issues. Many involve the study of perspectives that have broadly and profoundly shaped history and culture.

**Additional Information**
For additional information, please see the Philosophy website: https://philosophy.rice.edu.

**Opportunities for the BA Degree with a Major in Philosophy**

**Academic Honors**
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

**Distinction in Research in Philosophy**
Students must submit an application to be considered for ‘Distinction in Research in Philosophy’ by April 1. Minimum qualifications are a 3.50 GPA in philosophy courses and enrollment in Honors Thesis course PHIL 407 or the Research Seminar for majors, PHIL 407. The work to be considered must be submitted to a committee appointed by the Chair, which will include the Director of Undergraduate Studies, any Honors Thesis supervisors, and the instructor(s) of the Research Seminar.

**Senior Thesis and Departmental Honors in Philosophy**
Qualified majors may apply before their senior year for directed research leading to a senior thesis, carried out during both semesters of the senior year. Each semester will require 3 credit hours; these 6 hours (PHIL 411 and PHIL 412) are in addition to the course hours required for the major.

To qualify for the program, students must have an approved research proposal and the agreement of a faculty member to serve as advisor for that project. Applicants will normally be required to have a GPA of 3.75 in philosophy courses and to have completed at least two upper-level courses in the distribution area of the proposed research. (See the major requirements for the definition of the distribution areas.) Applications should be submitted to the departmental director of undergraduate studies and will be evaluated by the department.

Students who are considering applying to write a senior thesis should consult the departmental director of undergraduate studies and potential advisors as early as possible. Normally students will apply before preregistration in the second semester of their junior year and will spend time during the following summer reading from a list they have developed with their advisor. The thesis normally will be between 7,500 and 15,000 words (approximately 30–60 pages) in length. Students will enroll in PHIL 411 and PHIL 412. Students accepted into the Rice Undergraduate Scholars Program should enroll in HONS 470 and HONS 471 and will be awarded departmental honors for their work in that program if they meet the requirements in this statement. Note that acceptance into the departmental honors program is a separate process from acceptance in RUSP, as is the evaluation for departmental honors.

To be considered for honors, the senior thesis must be completed by the beginning of April. The thesis will be read and evaluated by the advisor and a second reader chosen by the department, and the final decision on honors will be made by the entire faculty. A student will receive honors if he or she receives a grade of A+, A, or A- in PHIL 412. Completion of the major with at least a 3.50 GPA in all philosophy courses is required for departmental honors. Students who miss the April deadline for thesis submission but meet the university deadline for the semester will receive a grade and credit for completed work but will not be considered for honors. Students whose thesis is not awarded honors will receive a grade and credit for completed work.

**Additional Information**
For additional information, please see the Philosophy website at: https://philosophy.rice.edu.

See https://humanities.rice.edu/student-life (https://humanities.rice.edu/student-life/) for tables of fellowships, prizes, and internships/practica that may be relevant to this major.
Doctor of Philosophy (PhD) Degree in the field of Philosophy

Program Learning Outcomes for the MA and PhD Degrees in the field of Philosophy

Upon completing the MA and PhD degrees in the field of Philosophy, students will be able to:

1. Demonstrate advanced skills of reading philosophical texts critically and with understanding of the problems and contexts.
2. Demonstrate the ability to communicate clearly and logically their own views on a range of important philosophical problems at an advanced level.
3. Demonstrate an understanding in depth of the content and context of one of the main areas of philosophy.
4. Propose, evaluate, and defend original views in at least one of the main areas of philosophy.

Requirements for the MA and PhD Degrees in the field of Philosophy

MA Degree Program

The MA degree can be either a thesis or a non-thesis master's degree depending on the option the student pursues. For general university requirements for thesis master's degrees, please see Thesis Master's Degrees (p. 68). For general university requirements for non-thesis master's degrees, please see Non-Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55).

Students pursuing the non-thesis MA degree in the field of Philosophy must:

- Complete at least two semesters in residence at Rice University.
- Complete 42 credit hours of courses approved for graduate credit in philosophy at Rice University with a grade of B- (2.67 grade points) or better in each course.
- Accumulate an overall GPA of at least 3.00.
- Complete at least 30 credit hours in philosophy at the 500-level or higher.
- Satisfy the departmental logic requirement (PHIL 505 or examination).
- Complete at least 5 courses in an area of concentration.
- Satisfactorily complete departmental duties.
- File a petition for certification of the non-thesis master's degree. This petition can be obtained from the graduate administrator and must be approved and signed by the department chair and submitted to the Office of Graduate and Postdoctoral Studies according to the deadlines posted in the Academic Calendar (http://registrar.rice.edu/calendars/).

Students pursuing the thesis MA degree in the field of Philosophy must:

- Complete with high standing at least 30 credit hours in advanced courses approved by the department.
- Complete a written thesis on a subject approved by the department.
- Perform satisfactorily on a final oral examination (not limited to the student's special field of study).

Requirements for the PhD Degree in the field of Philosophy

PhD Degree Program

For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the PhD degree in the field of Philosophy must:

- Complete with high standing 42 credit hours of coursework approved by the department (including logic).
- Demonstrate competence in logic.
- Pass a qualifying examination.
- Perform satisfactorily on an oral defense of their thesis proposal.
- Complete a written thesis on a subject approved by the department (at least one year of thesis research must be spent in residence).
- Perform satisfactorily on a final oral examination (not limited to the student's special field of study)

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</tr>
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<td>Total Credit Hours Required for the thesis MA Degree in the field of Philosophy</td>
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</tr>
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<td></td>
<td>Total Credit Hours Required for the PhD Degree in the field of Philosophy</td>
<td>90</td>
</tr>
</tbody>
</table>

Policies for the PhD Degree in the field of Philosophy

Department of Philosophy Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Department of Philosophy publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Philosophy_Graduate_Handbook.pdf

Additional Information

For additional information, please see the Philosophy website at: https://philosophy.rice.edu.

Opportunities for the PhD Degree in the field of Philosophy

Additional Information

For additional Information, please see the Philosophy website at: https://philosophy.rice.edu.
Physics and Astronomy

Contact Information

Physics and Astronomy
https://physics.rice.edu/
201 Brockman Hall
713-348-4938

Douglas Natelson
Department Chair
natelson@rice.edu

Stanley A. Dodds
Associate Chair
dodds@rice.edu

The Department of Physics and Astronomy offers undergraduate and graduate programs for a wide range of interests. The bachelor of arts degree with majors in physics or astronomy is suitable for students who wish to obtain a broad liberal arts education with a concentration in a physical science. The bachelor of science degree with majors in physics, astrophysics, or chemical physics provides preparation for employment or further study in physics, astrophysics, and related technical fields. The minor in physics provides a solid foundation in physics with additional advanced physics topics of the student’s choosing.

Research facilities and thesis supervision are available for MS and PhD students in atomic, molecular, and optical physics; biophysics; condensed matter physics; galactic astronomy; high energy astrophysics, nuclear and particle physics; and space physics.

Bachelor’s Programs

- Bachelor of Arts (BA) Degree with a Major in Astronomy (p. 759)
- Bachelor of Arts (BA) Degree with a Major in Physics (p. 761)
- Bachelor of Science (BS) Degree with a Major in Astrophysics (p. 762)
- Bachelor of Science (BS) Degree with a Major in Physics
  - and a Major Concentration in Applied Physics (p. 764)
  - and a Major Concentration in Biological Physics (p. 765)
  - and a Major Concentration in Computational Physics (p. 767)
  - and a Major Concentration in General Physics (p. 769)

Minor

- Minor in Physics. (p. 771)

Coordinated Program

- Bachelor of Science (BS) Degree with a Major in Chemical Physics (p. 286)

* This degree is jointly managed by the Department of Chemistry and the Department of Physics and Astronomy. For more information, see Chemical Physics. (p. 286)

Master’s Program

- Master of Science (MS) Degree in the field of Physics*

Doctoral Program

- Doctor of Philosophy (PhD) Degree in the field of Physics. (p. 771)

* Although students are not normally admitted to a Master of Science (MS) degree program, graduate students may earn the MS as they work towards the PhD.

Coordinated Program

- Master of Science Teaching (MST) Degree (p. 807)

Chair

Douglas Natelson

Professors

David Alexander
Matthew G. Baring
Anthony A. Chan
Cecilia Clementi
Pengcheng Dai
Michael W. Deem
F. Barry Dunning
Karl M. Ecklund
Franciscus Johannes Maria Geurts
Jason H. Hafner
Naomi J. Halas
Patrick M. Hartigan
Huey W. Huang
Randall G. Hulet
Christopher M. Johns-Krull
Thomas C. Killian
Anatoly B. Kolomeisky
Junichiro Kono
Eugene H. Levy
Edison P. Liang
Frederick C. MacKintosh
Emilia Morosan
Peter Nordlander
Jose Nelson Onuchic
B. Paul Padley
Han Pu
Patricia H. Reiff
Jabus B. Roberts Jr.
Gustavo E. Scuseria
Qimiao Si
Frank R. Toffoletto
Peter C. Wolynes

Associate Professors

Stephen J. Bradshaw
Stanley A. Dodds
Matthew S. Foster
Ching-Hwa Kiang
Wei Li
Andriy Nevidomskyy
Assistant Professors
Mustafa Amin
Kaden Hazzard
Andrea Isella
Andrew Long
Guido Pagano
Christopher Tunnell
Ming Yi

Professors Emeriti
Paul A. Cloutier
Thomas W. Hill
Neal F. Lane
Carl Rau
Richard A. Wolf

Associate Research Professors
Stanislav Sazykin
Pablo P. Yepes

Assistant Research Professor
Petr Chaguine

Instructors
Robert Beaird
Michael Cone
Jared Stenson
Lam Yu

Adjunct Faculty
James L. Burch
Franklin R. Chang Diaz
Stefan Kirchner
Hui Li
Carolyn Sumners
Jon C. Weisheit
Jian-Xin Zhu

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule:
• Course offerings/subject code for Astronomy: ASTR
• Course offerings/subject code for Physics: PHYS

Department Description and Code
• Physics and Astronomy: PHYS

Undergraduate Degree Descriptions and Codes
• Bachelor of Arts degree: BA
• Bachelor of Science degree: BS

Undergraduate Major Descriptions and Codes
• Major in Physics (attached to the BA and BS degrees): PHYS
• Major in Astronomy (attached to the BA degree): ASBA
• Major in Astrophysics (attached to the BS degree): ASTR
• Major in Chemical Physics (attached to the BS degree): CPHY

Undergraduate Major Concentration Descriptions and Codes
• Major Concentration in Applied Physics (BS degree-PHYS majors): APPS
• Major Concentration in Biological Physics (BS degree-PHYS majors): BIPS
• Major Concentration in Computational Physics (BS degree-PHYS majors): COPS
• Major Concentration in General Physics (BS degree-PHYS majors): GEPS

Undergraduate Minor Description and Code
• Minor in Physics: PHYM

Graduate Degree Descriptions and Codes
• Master of Science Teaching degree: MST
• Master of Science degree: MS
• Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code
• Degree Program in Physics: PHYS
• Degree Program in Science Teaching: STEA

CIP Code and Description
1
• ASBA Major/Program: CIP Code/Title: 40.0201 - Astronomy
• ASTR Major/Program: CIP Code/Title: 40.0202 - Astrophysics
• CPHY Major/Program: CIP Code/Title: 40.0508 - Chemical Physics
• PHYS Major/Program: CIP Code/Title: 40.0801 - Physics, General
• STEA Major/Program: CIP Code/Title: 13.1316 - Science Teacher Education/General Science Teacher Education
• APPS Major Concentration: CIP Code/Title: 40.0899 - Physics, Other
• BIPS Major Concentration: CIP Code/Title: 26.0203 - Biophysics
• COPS Major Concentration: CIP Code/Title: 40.0899 - Physics, Other
• GEPS Major Concentration: CIP Code/Title: 40.0801 - Physics, General
• PHYM Minor: CIP Code/Title: 40.0801 - Physics, General

1 Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Bachelor of Arts (BA) Degree with a Major in Astronomy

Program Learning Outcomes for the BA Degree with a Major in Astronomy
Upon completing the BA degree with a major in Astronomy, students will be able to:

1. Demonstrate an understanding of fundamental concepts in Mechanics.
2. Demonstrate an understanding of fundamental concepts in Electromagnetism.
3. Demonstrate an understanding of fundamental concepts in Quantum Mechanics.
4. Be knowledgeable in fundamental topics in Astronomy.

Requirements for the BA Degree with a Major in Astronomy

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Astronomy must complete:

- A minimum of 53 credit hours to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 19 credit hours taken at the 300-level or above.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the department’s undergraduate committee. (Course substitutions must be formally applied and entered into Degree Works by the major's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
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<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tbody>
<tr>
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<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Astronomy</td>
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### Degree Requirements

#### Core Requirements

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<th>Credit Hours</th>
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<tr>
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<td>or MATH 105</td>
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<td>MATH 102</td>
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<td>or MATH 106</td>
<td>AP/OTH CREDIT IN CALCULUS II</td>
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<td>ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA</td>
<td>3</td>
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<tr>
<td>or MATH 220</td>
<td>HONORS ORDINARY DIFFERENTIAL EQUATIONS</td>
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<td>or MATH 221</td>
<td>HONORS CALCULUS III</td>
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<td>or MATH 222</td>
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<td>PHYS 111</td>
<td>HONORS MECHANICS (WITH LAB)</td>
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<th>Title</th>
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<td>PHYS 202</td>
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<td>PHYS 302</td>
<td>INTERMEDIATE ELECTRODYNAMICS</td>
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<td>ASTR 230</td>
<td>ASTRONOMY LAB</td>
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<td>ASTR 350</td>
<td>INTRODUCTION TO ASTROPHYSICS-ASTRSTARS</td>
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<td>ASTR 360</td>
<td>INTRODUCTION TO ASTROPHYSICS-GALAXY AND COSMO</td>
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<tr>
<td>ASTR 400</td>
<td>UNDERGRADUATE RESEARCH SEMINAR (2 semesters required, 1st semester)</td>
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<tr>
<td>ASTR 400</td>
<td>UNDERGRADUATE RESEARCH SEMINAR (2 semesters required, 2nd semester)</td>
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<th>Title</th>
<th>Credit Hours</th>
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<td>ASTROPHYSICS I: SUN AND STARS</td>
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<tr>
<td>ASTR 452</td>
<td>ASTROPHYSICS II: GALAXIES AND COSMOLOGY</td>
<td></td>
</tr>
<tr>
<td>ASTR 470</td>
<td>SOLAR SYSTEM PHYSICS</td>
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</tr>
<tr>
<td>PHYS 480</td>
<td>INTRODUCTION TO PLASMA PHYSICS</td>
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</tr>
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</table>

Total Credit Hours Required for the Major in Astronomy 53

Additional Credit Hours Required for BA Degree Requirements 7

University Graduation Requirements (p. 26) 60

Total Credit Hours 120

### Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

### Policies for the BA Degree with a Major in Astronomy

#### Program Restrictions and Exclusions

Students pursuing the major in Astronomy should be aware of the following program restriction:

- Students pursuing the major in Astronomy may not additionally declare the minor in Physics.

#### Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

#### Departmental Transfer Credit Guidelines

Students pursuing the major in Astronomy should be aware of the following departmental transfer credit guidelines:
• Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information
For additional information, please see the Physics and Astronomy website: https://physics.rice.edu/.

Opportunities for the BA Degree with a Major in Astronomy

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Research in the Department of Physics and Astronomy
The Physics and Astronomy Department encourages undergraduate participation in research, both within the department and through extramural programs. For current opportunities, please visit the Department’s website and click on the Undergraduate Study link, at: https://physics.rice.edu/.

Additional Information
For additional information, please see the Physics and Astronomy website: https://physics.rice.edu/.

Bachelor of Arts (BA) Degree with a Major in Physics

Program Learning Outcomes for the BA Degree with a Major in Physics
Upon completing the BA degree with a major in Physics, students will be able to:

1. Demonstrate an understanding of fundamental concepts in Mechanics.
2. Demonstrate an understanding of fundamental concepts in Electromagnetism.
3. Demonstrate an understanding of fundamental concepts in Quantum Mechanics.
4. Demonstrate an understanding of a variety of physics topics taken from: statistical and thermal physics, biological physics, nuclear and particle physics, solid state physics, computational physics, and/or plasma physics.

Requirements for the BA Degree with a Major in Physics
For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Physics must complete:

• A minimum of 45-47 credit hours, depending on course selection, taken at the 300-level or above.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the department’s undergraduate committee. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/dregeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
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Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tr>
<td></td>
<td>Core Requirements</td>
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<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I</td>
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<td>or MATH 105</td>
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<tr>
<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
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<td>or MATH 106</td>
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<td>3</td>
</tr>
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<td>MATH 211</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA</td>
<td>3</td>
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<tr>
<td>or MATH 220</td>
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</tr>
<tr>
<td>or MATH 221</td>
<td>HONORS CALCULUS III</td>
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<tr>
<td>MATH 212</td>
<td>MULTIVARIABLE CALCULUS</td>
<td>3</td>
</tr>
<tr>
<td>or MATH 222</td>
<td>HONORS CALCULUS IV</td>
<td></td>
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<tr>
<td></td>
<td>Select 1 from the following:</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 101</td>
<td>MECHANICS (WITH LAB)</td>
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</tr>
<tr>
<td>&amp; PHYS 103</td>
<td>and MECHANICS DISCUSSION</td>
<td></td>
</tr>
<tr>
<td>PHYS 111</td>
<td>HONORS MECHANICS (WITH LAB)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select 1 from the following:</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 102</td>
<td>ELECTRICITY &amp; MAGNETISM (WITH LAB)</td>
<td></td>
</tr>
<tr>
<td>&amp; PHYS 104</td>
<td>and ELECTRICITY AND MAGNETISM DISCUSSION</td>
<td></td>
</tr>
<tr>
<td>PHYS 112</td>
<td>HONORS ELECTRICITY &amp; MAGNETISM (WITH LAB)</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 201</td>
<td>WAVES, LIGHT, AND HEAT</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 202</td>
<td>MODERN PHYSICS</td>
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<td>PHYS 231</td>
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<td>INTRODUCTION TO QUANTUM PHYSICS I</td>
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<td>Select 2 courses from the following:</td>
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<tr>
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<td>INTERMEDIATE MECHANICS</td>
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<td>PHYS 302</td>
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<td>PHYS 312</td>
<td>INTRODUCTION TO QUANTUM PHYSICS II</td>
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<tr>
<td>PHYS 355</td>
<td>INTRODUCTION TO BIOLOGICAL PHYSICS</td>
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<tr>
<td>PHYS 411</td>
<td>INTRODUCTION TO NUCLEAR &amp; PARTICLE PHYSICS</td>
<td></td>
</tr>
<tr>
<td>PHYS 416</td>
<td>COMPUTATIONAL PHYSICS</td>
<td></td>
</tr>
<tr>
<td>PHYS 425</td>
<td>STATISTICAL &amp; THERMAL PHYSICS</td>
<td></td>
</tr>
<tr>
<td>PHYS 480</td>
<td>INTRODUCTION TO PLASMA PHYSICS</td>
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</tbody>
</table>
Select 6 additional credit hours of departmental (PHYS) or (ASTR) courses at the 300-level or above.

Select 1 course from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>CAAM 210</td>
<td>INTRODUCTION TO ENGINEERING COMPUTATION</td>
</tr>
</tbody>
</table>

1 course from Computational and Applied Mathematics (CAAM) course offerings at the 300-level or above.

1 course from Mathematics (MATH) course offerings at the 300-level or above.

Total Credit Hours Required for the Major in Physics: 45-47

Additional Credit Hours to Complete BA Degree Requirements: 13-15

University Graduation Requirements (p. 26)*: 60

Total Credit Hours: 120

Footnotes and Additional Information

*Includes coursework completed as distribution credit, FWIS, LPAR, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1Includes PHYS 332, PHYS 461, and PHYS 462, but does not include PHYS 491, PHYS 492, PHYS 493, or PHYS 494.

Policies for the BA Degree with a Major in Physics

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in Physics should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

Additional Information

For additional information, please see the Physics and Astronomy website: https://physics.rice.edu/

Opportunities for the BA Degree with a Major in Physics

Academic Honors

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Research in the Department of Physics and Astronomy

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Additional Information

For additional information, please see the Physics and Astronomy website: https://physics.rice.edu/

Bachelor of Science (BS) Degree with a Major in Astrophysics

Program Learning Outcomes for the BS Degree with a Major in Astrophysics

Upon completing the BS degree with a major in Astrophysics, students will be able to:

1. Demonstrate an understanding of fundamental concepts in Mechanics.
2. Demonstrate an understanding of fundamental concepts in Electromagnetism.
3. Demonstrate an understanding of fundamental concepts in Quantum Mechanics.
4. Be knowledgeable in fundamental topics in Astrophysics.
5. Demonstrate proficiency in research techniques and methodology under guidance of a faculty member.
6. Communicate scientific results both in writing and oral presentations.

Requirements for the BS Degree with a Major in Astrophysics

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BS degree with a major in Astrophysics must complete:

- A minimum of 71 credit hours to satisfy major requirements.
- A minimum of 131 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 37 credit hours taken at the 300-level or above.

Students may obtain credit for some courses by advanced placement, and the department's undergraduate committee can modify requirements to meet the needs of students with special backgrounds.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the department's undergraduate committee. (Course substitutions must be formally applied and entered into Degree Works by the major's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.
### Summary

**Total Credit Hours Required for the Major in Astrophysics** 71
**Total Credit Hours Required for the BS Degree with a Major in Astrophysics** 131

### Degree Requirements

#### Core Requirements

<table>
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<tr>
<th>Code</th>
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<tr>
<td>COMP 130</td>
<td>ELEMENTS OF ALGORITHMS AND COMPUTATION</td>
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</tr>
<tr>
<td>or COMP 140</td>
<td>COMPUTATIONAL THINKING</td>
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<tr>
<td>or MATH 220</td>
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<td>or MATH 221</td>
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<tr>
<td>or MATH 222</td>
<td>HONORS CALCULUS IV</td>
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Select 1 from the following:

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<tr>
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<tr>
<td>PHYS 101</td>
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</tr>
<tr>
<td>&amp; PHYS 103</td>
<td>and MECHANICS DISCUSSION</td>
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<tr>
<td>PHYS 111</td>
<td>HONORS MECHANICS (WITH LAB)</td>
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Select 1 from the following:

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<td>&amp; PHYS 104</td>
<td>and ELECTRICITY AND MAGNETISM DISCUSSION</td>
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<tr>
<td>PHYS 112</td>
<td>HONORS ELECTRICITY &amp; MAGNETISM (WITH LAB)</td>
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<td>PHYS 201</td>
<td>WAVES, LIGHT, AND HEAT</td>
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<td>PHYS 202</td>
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<td>PHYS 231</td>
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<td>PHYS 301</td>
<td>INTERMEDIATE MECHANICS</td>
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<td>INTERMEDIATE ELECTRODYNAMICS</td>
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<td>PHYS 425</td>
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<td>PHYS 491</td>
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<td>&amp; PHYS 493</td>
<td>and UNDERGRADUATE RESEARCH SEMINAR</td>
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<td>PHYS 492</td>
<td>UNDERGRADUATE RESEARCH</td>
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<tr>
<td>&amp; PHYS 494</td>
<td>and UNDERGRADUATE RESEARCH SEMINAR</td>
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<td>ASTR 408</td>
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</tr>
<tr>
<td>ASTR 451</td>
<td>ASTROPHYSICS I: SUN AND STARS</td>
<td></td>
</tr>
<tr>
<td>ASTR 452</td>
<td>ASTROPHYSICS II: GALAXIES AND COSMOLOGY</td>
<td></td>
</tr>
<tr>
<td>ASTR 470</td>
<td>SOLAR SYSTEM PHYSICS</td>
<td></td>
</tr>
<tr>
<td>PHYS 312</td>
<td>INTRODUCTION TO QUANTUM PHYSICS II</td>
<td></td>
</tr>
<tr>
<td>PHYS 480</td>
<td>INTRODUCTION TO PLASMA PHYSICS</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credit Hours Required for the Major in Astrophysics** 71
**University Graduation Requirements** (p. 26) 60
**Total Credit Hours** 131

### Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

1 PHYS 491 and PHYS 493 must be taken concurrently.

2 PHYS 492 and PHYS 494 must be taken concurrently.

### Policies for the BS Degree with a Major in Astrophysics

#### Program Restrictions and Exclusions

Students pursuing the major in Astrophysics should be aware of the following program restriction:

- Students pursuing the major in Astrophysics may not additionally declare the minor in Physics.

#### Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [https://oaa.rice.edu](https://oaa.rice.edu). Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

#### Departmental Transfer Credit Guidelines

Students pursuing the major in Astrophysics should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

#### Additional Information

For additional information, please see the Physics and Astronomy website: [https://physics.rice.edu/](https://physics.rice.edu/)

### Opportunities for the BS Degree with a Major in Astrophysics

#### Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university
honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Research in the Department of Physics and Astronomy

The Physics and Astronomy Department encourages undergraduate participation in research, both within the department and through extramural programs. For current opportunities, please visit the Department’s website and click on the Undergraduate Study link, at: https://physics.rice.edu/.

Additional Information

For additional information, please see the Physics and Astronomy website: https://physics.rice.edu/

Bachelor of Science (BS) Degree with a Major in Physics and a Major Concentration in Applied Physics

Program Learning Outcomes for the BS Degree with a Major in Physics and a Major Concentration in Applied Physics

Upon completing the BS Degree with a major in Physics and a major concentration in Applied Physics, students will be able to:

1. Demonstrate an understanding of fundamental concepts in Mechanics.
2. Demonstrate an understanding of fundamental concepts in Electromagnetism.
3. Demonstrate an understanding of fundamental concepts in Quantum Mechanics.
4. Be knowledgeable in the applications of physics concepts to real world devices and applications.
5. Demonstrate proficiency in research techniques and methodology under guidance of a faculty member.
6. Communicate scientific results both in writing and oral presentations.

Requirements for the BS Degree with a Major in Physics and a Major Concentration in Applied Physics

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BS degree with a major in Physics and a major concentration in Applied Physics must complete:

- A minimum of 68 credit hours to satisfy major requirements.
- A minimum of 128 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 37 credit hours taken at the 300-level or above.
- Core courses common to all major concentrations.
- The requirements for the major concentration in Applied Physics. When students declare the major (p. 11) in Physics, students must additionally identify and declare one of four major concentrations, either in:
  - Applied Physics (p. 764), or
  - Biological Physics (p. 766), or
  - Computational Physics (p. 767), or
  - General Physics (p. 769).

Because of the common core requirements, it is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (%20registrar@rice.edu).

Students may obtain credit for some courses by advanced placement, and the department’s undergraduate committee can modify requirements to meet the needs of students with special backgrounds.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the department’s undergraduate committee. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/dregeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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Degree Requirements

Core Requirements

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<td>or MATH 106</td>
<td>AP/OTH CREDIT IN CALCULUS II</td>
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<td>or MATH 220</td>
<td>HONORS ORDINARY DIFFERENTIAL EQUATIONS</td>
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<td>or MATH 222</td>
<td>HONORS CALCULUS IV</td>
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<td>&amp; PHYS 103</td>
<td>and MECHANICS DISCUSSION</td>
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<td>PHYS 111</td>
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<td>PHYS 112</td>
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<td>PHYS 201</td>
<td>WAVES, LIGHT, AND HEAT</td>
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<td>MODERN PHYSICS</td>
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<td>PHYS 301</td>
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<td>and UNDERGRADUATE RESEARCH SEMINAR ¹</td>
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<td>&amp; PHYS 494</td>
<td>and UNDERGRADUATE RESEARCH SEMINAR ²</td>
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**Major Concentration in Applied Physics**

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<td>PHYS 312</td>
<td>INTRODUCTION TO QUANTUM PHYSICS II</td>
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<tr>
<td>or ELEC 361</td>
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<td>ELEC 364</td>
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<td>PHYS 412</td>
<td>SOLID STATE PHYSICS ⁴</td>
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<td>STATISTICAL &amp; THERMAL PHYSICS</td>
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<td>ELEC 242</td>
<td>SIGNALS, SYSTEMS, AND TRANSFORMS</td>
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<td>MATH 381</td>
<td>INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS</td>
<td>3</td>
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<td>or CAAM 336</td>
<td>DIFFERENTIAL EQUATIONS IN SCIENCE AND ENGINEERING</td>
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</table>

Total Credit Hours for the Major in Physics and a Major Concentration in Applied Physics: 68

**University Graduation Requirements (p. 25)**: 60

Total Credit Hours: 128

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**Footnotes and Additional Information**

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

¹ PHYS 491 and PHYS 493 must be taken concurrently.

² PHYS 492 and PHYS 494 must be taken concurrently.

³ Because of common core requirements, it is possible to change major concentrations even after declaring the major. See the Undergraduate tab of the Physics and Astronomy department listing for the requirements for each major concentration for the BS degree in Physics.

⁴ Or approved substitute in applied physics.

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**Policies for the BS Degree with a Major in Physics and a Major Concentration in Applied Physics**

**Transfer Credit**

For Rice University’s policy regarding transfer credit, see [Transfer Credit](p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [https://oaa.rice.edu](https://oaa.rice.edu). Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

**Departmental Transfer Credit Guidelines**

Students pursuing the major in Physics should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

**Additional Information**

For additional information, please see the Physics and Astronomy website: [https://physics.rice.edu](https://physics.rice.edu).

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**Opportunities for the BS Degree with a Major in Physics and a Major Concentration in Applied Physics**

**Academic Honors**

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see [Latin Honors](p. 48) ([summa cum laude](https://physics.rice.edu/)), [magna cum laude](https://physics.rice.edu/), and [cum laude](https://physics.rice.edu/). Some departments have department-specific Honors awards or designations.

**Research in the Department of Physics and Astronomy**

The Physics and Astronomy Department encourages undergraduate participation in research, both within the department and through extramural programs. For current opportunities, please visit the Department’s website and click on the [Undergraduate Study Link](https://physics.rice.edu/), at:

**Additional Information**

For additional information, please see the Physics and Astronomy website: [https://physics.rice.edu](https://physics.rice.edu).

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**Bachelor of Science (BS) Degree with a Major in Physics and a Major Concentration in Biological Physics**

**Program Learning Outcomes for the BS Degree with a Major in Physics and a Major Concentration in Biological Physics**

Upon completing the BS degree with a major in Physics and a major concentration in Biological Physics, students will be able to:

1. Demonstrate an understanding of fundamental concepts in Mechanics.
2. Demonstrate an understanding of fundamental concepts in Electromagnetism.
3. Demonstrate an understanding of fundamental concepts in Quantum Mechanics.
4. Understand how the tools and concepts of physics are used to understand fundamental processes in the biosciences.
5. Demonstrate proficiency in research techniques and methodology under guidance of a faculty member.
6. Communicate scientific results both in writing and oral presentations.

**Requirements for the BS Degree with a Major in Physics and a Major Concentration in Biological Physics**

For general university requirements, see [Graduation Requirements](p. 26). Students pursuing the BS degree with a major in Physics and a major concentration in Biological Physics must complete:

- A minimum of 75 credit hours to satisfy major requirements.
- A minimum of 135 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 32 credit hours taken at the 300-level or above.
- Core courses common to all major concentrations.
- The requirements for the major concentration in Biological Physics. When students declare the major (p. 11) in Physics, students must additionally identify and declare one of four major concentrations, either in:
  - [Applied Physics](p. 764), or
  - [Biological Physics](p. 766), or
  - [Computational Physics](p. 767), or
  - [General Physics](p. 769).

Because of the common core requirements, it is possible for students to change their major concentration, even after initially declaring the major. To do so, please contact the Office of the Registrar ([%20registrar@rice.edu](mailto:%20registrar@rice.edu)).

Students may obtain credit for some courses by advanced placement, and the department's undergraduate committee can modify requirements to meet the needs of students with special backgrounds.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the department's undergraduate committee. (Course substitutions must be formally applied and entered into Degree Works by the major's Official Certifier ([https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/](https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/))). Students and their academic advisors should identify and clearly document the courses to be taken.

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<td>or MATH 222</td>
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<td>or CAAM 336</td>
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**Degree Requirements**

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Total Credit Hours Required for the Major in Physics and a Major Concentration in Biological Physics

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2019-2020 General Announcements
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Footnotes and Additional Information

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1 PHYS 491 and PHYS 493 must be taken concurrently.
2 PHYS 492 and PHYS 494 must be taken concurrently.
3 Because of common core requirements, it is possible to change major concentrations even after declaring the major. See the Undergraduate tab of the Physics and Astronomy department listing for the requirements for each major concentration for the BS degree in Physics.
4 CHEM 121 or CHEM 111 can be satisfied by completing CHEM 151; CHEM 123 or CHEM 113 can be satisfied by completing CHEM 153; CHEM 122 or CHEM 112 can be satisfied by completing CHEM 152; CHEM 124 or CHEM 114 can be satisfied by completing CHEM 154.

Policies for the BS Degree with a Major in Physics and a Major Concentration in Biological Physics

Transfer Credit

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Opportunities for the BS Degree with a Major in Physics and a Major Concentration in Biological Physics

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Additional Information

For additional information, please see the Physics and Astronomy website: https://physics.rice.edu/

Bachelor of Science (BS) Degree with a Major in Physics and a Major Concentration in Computational Physics

Program Learning Outcomes for the BS Degree with a Major in Physics and a Major Concentration in Computational Physics

Upon completing the BS degree with a major in Physics and a major concentration in Computational Physics, students will be able to:

1. Demonstrate an understanding of fundamental concepts in Mechanics.
2. Demonstrate an understanding of fundamental concepts in Electromagnetism.
3. Demonstrate an understanding of fundamental concepts in Quantum Mechanics.
4. Be knowledgeable of the use of numerical analysis to apply the laws of physics to real-world problems.
5. Demonstrate proficiency in research techniques and methodology under guidance of a faculty member.
6. Communicate scientific results both in writing and oral presentations.

Requirements for the BS Degree with a Major in Physics and a Major Concentration in Computational Physics

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BS degree with a major in Physics and a major concentration in Computational Physics must complete:

- A minimum of 72 credit hours to satisfy major requirements.
- A minimum of 132 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 38 credit hours taken at the 300-level or above.
- Core courses common to all major concentrations.
- The requirements for the major concentration in Computational Physics. When students declare the major (p. 11) in Physics, students must additionally identify and declare one of four major concentrations, either in:
  - Applied Physics (p. 764), or
  - Biological Physics (p. 766), or
Because of the common core requirements, it is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (%20registrar@rice.edu).

Students may obtain credit for some courses by advanced placement, and the department’s undergraduate committee can modify requirements to meet the needs of students with special backgrounds.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the department's undergraduate committee. (Course substitutions must be formally applied and entered into Degree Works by the major's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

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<thead>
<tr>
<th>Code</th>
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<tr>
<td>Total Credit Hours Required for the Major in Physics and a Major Concentration in Computational Physics</td>
<td>72</td>
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<tr>
<td>Total Credit Hours Required for the BS Degree with a Major in Physics and Major Concentration in Computational Physics</td>
<td>132</td>
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**Degree Requirements**

**Core Requirements**

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<td>or MATH 221</td>
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<tr>
<td>or MATH 222</td>
<td>HONORS CALCULUS IV</td>
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<th>Credit Hours</th>
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<tr>
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<td></td>
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<td>PHYS 111</td>
<td>HONORS MECHANICS (WITH LAB)</td>
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<td>ELECTRICITY AND MAGNETISM DISCUSSION</td>
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<td>PHYS 112</td>
<td>HONORS ELECTRICITY &amp; MAGNETISM (WITH LAB)</td>
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<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>PHYS 201</td>
<td>WAVES, LIGHT, AND HEAT</td>
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<td>PHYS 202</td>
<td>MODERN PHYSICS</td>
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<td>PHYS 311</td>
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<td>UNDERGRADUATE RESEARCH SEMINAR</td>
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**Major Concentration in Computational Physics**

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<td>STATISTICAL &amp; THERMAL PHYSICS</td>
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<td>COMPUTATIONAL PHYSICS</td>
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<td>CAAM 210</td>
<td>INTRODUCTION TO ENGINEERING COMPUTATION</td>
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<td>CAAM 334</td>
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<td>DIFFERENTIAL EQUATIONS IN SCIENCE AND ENGINEERING</td>
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<td>CAAM 453</td>
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<td>ELEMENTS OF ALGORITHMS AND COMPUTATION</td>
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<td>CAAM 536</td>
<td>NUMERICAL METHODS FOR PARTIAL DIFFERENTIAL EQUATIONS</td>
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<td>DIFFERENTIAL EQUATIONS</td>
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<tr>
<td>CAAM 519</td>
<td>COMPUTATIONAL SCIENCE I</td>
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<tr>
<td>PHYS 580</td>
<td>INTRODUCTION TO PLASMA PHYSICS</td>
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</table>

Total Credit Hours Required for the Major in Physics and a Major Concentration in Computational Physics: 72

Total Credit Hours: 132

**Footnotes and Additional Information**

- Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.
- PHYS 491 and PHYS 493 must be taken concurrently.
- PHYS 492 and PHYS 494 must be taken concurrently.
- Because of common core requirements, it is possible to change major concentrations even after declaring the major. See the Undergraduate tab of the Physics and Astronomy department listing for the requirements for each major concentration for the BS degree in Physics.

**Policies for the BS Degree with a Major in Physics and a Major Concentration in Computational Physics**

**Transfer Credit**

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising
maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

**Departmental Transfer Credit Guidelines**
Students pursuing the major in Physics should be aware of the following department transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

**Additional Information**
For additional information, please see the Physics and Astronomy website: https://physics.rice.edu/.

**Opportunities for the BS Degree with a Major in Physics and a Major Concentration in Computational Physics**

**Academic Honors**
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

**Research in the Department of Physics and Astronomy**
The Physics and Astronomy Department encourages undergraduate participation in research, both within the department and through extramural programs. For current opportunities, please visit the Department’s website and click on the Undergraduate Study link, at: https://physics.rice.edu/.

**Additional Information**
For additional information, please see the Physics and Astronomy website: https://physics.rice.edu/.

**Bachelor of Science (BS) Degree with a Major in Physics and a Major Concentration in General Physics**

**Program Learning Outcomes for the BS Degree with a Major in Physics and a Major Concentration in General Physics**
Upon completing the BS degree with a major in Physics and a major concentration in General Physics, students will be able to:

1. Demonstrate an understanding of fundamental concepts in Mechanics.
2. Demonstrate an understanding of fundamental concepts in Electromagnetism.
3. Demonstrate an understanding of fundamental concepts in Quantum Mechanics.
4. Demonstrate an understanding of a variety of fundamental physics topics taken from: statistical and thermal physics, biological physics, nuclear and particle physics, solid state physics, computational physics, and/or plasma physics.
5. Demonstrate proficiency in research techniques and methodology under guidance of a faculty member.
6. Communicate scientific results both in writing and oral presentations.

**Requirements for the BS Degree with a Major in Physics and a Major Concentration in General Physics**
For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BS degree with a major in Physics and a major concentration in General Physics must complete:

- A minimum of 64 credit hours to satisfy major requirements.
- A minimum of 124 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 37 credit hours taken at the 300-level or above.
- Core courses common to all major concentrations.
- The requirements for the major concentration in General Physics. When students declare the major (p. 11) in Physics, students must additionally identify and declare one of four major concentrations, either in:
  - Applied Physics (p. 764), or
  - Biological Physics (p. 766), or
  - Computational Physics (p. 767), or
  - General Physics (p. 769).

Because of the common core requirements, it is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (%20registrar@rice.edu).

Students may obtain credit for some courses by advanced placement, and the department's undergraduate committee can modify requirements to meet the needs of students with special backgrounds.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the department’s undergraduate committee. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

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<td>Total Credit Hours for the BS Degree with a Major in Physics and a Major Concentration in General Physics</td>
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## Degree Requirements

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<td><strong>Core Requirements</strong></td>
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<td>MATH 211</td>
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<td>or MATH 220</td>
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<td>or MATH 221</td>
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<td>or MATH 222</td>
<td>HONORS CALCULUS IV</td>
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<tbody>
<tr>
<td>PHYS 101</td>
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<tr>
<td>&amp; PHYS 103</td>
<td>and MECHANICS DISCUSSION</td>
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<td>and UNDERGRADUATE RESEARCH SEMINAR</td>
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**Major Concentration in General Physics**

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<td>PHYS 425</td>
<td>STATISTICAL &amp; THERMAL PHYSICS</td>
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<td>PHYS 412</td>
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<td>PHYS 416</td>
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<td>INTRODUCTION TO PLASMA PHYSICS</td>
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<td>INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS</td>
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<td>MATH 382</td>
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<td>or CAAM 334</td>
<td>MATRIX ANALYSIS FOR DATA SCIENCE</td>
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<td>or CAAM 335</td>
<td>MATRIX ANALYSIS</td>
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</table>

## Total Credit Hours Required for the Major in Physics and a Major Concentration in General Physics

**64**

**University Graduation Requirements** (p. 26)

**60**

**Total Credit Hours**

**124**

### Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

1. PHYS 491 and PHYS 493 must be taken concurrently.
2. PHYS 492 and PHYS 494 must be taken concurrently.
3. Because of common core requirements, it is possible to change major concentrations even after declaring the major. See the Undergraduate tab of the Physics and Astronomy department listing for the requirements for each major concentration for the BS degree in Physics.

## Policies for the BS Degree with a Major in Physics and a Major Concentration in General Physics

### Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [https://oaa.rice.edu](https://oaa.rice.edu). Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

### Departmental Transfer Credit Guidelines

Students pursuing the major in Physics should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

### Additional Information

For additional information, please see the Physics and Astronomy website: [https://physics.rice.edu/](https://physics.rice.edu/)

## Opportunities for the BS Degree with a Major in Physics and a Major Concentration in General Physics

### Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

### Research in the Department of Physics and Astronomy

The Physics and Astronomy Department encourages undergraduate participation in research, both within the department and through
extramural programs. For current opportunities, please visit the Department’s website and click on the Undergraduate Study link at: https://physics.rice.edu/.

**Additional Information**
For additional information, please see the Physics and Astronomy website: https://physics.rice.edu/

### Doctor of Philosophy (PhD) Degree in the field of Physics

#### Program Learning Outcomes for the PhD Degree in the field of Physics

Upon completing the PhD degree in the field of Physics, students will be able to:

1. Demonstrate advanced knowledge in foundational areas of physics and astronomy, and a mastery of their selected subfield.
2. Have the skills necessary to conduct independent research in physics and astronomy and become leaders in their chosen careers.
3. Have the ability to identify, formulate, and solve challenging scientific and technical problems as encountered in physics and astronomy.
4. Be proficient in reading the scientific literature and in oral and written communication of scientific results.
5. Make an original and significant contribution to knowledge in their discipline.

#### Requirements for the PhD Degree in the field of Physics

For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). To be eligible for the PhD degree, graduate students must demonstrate to the department their knowledge in the discipline and the ability to engage in advanced research. This normally is accomplished by: successfully completing required coursework; presenting a research progress report and proposal to a faculty committee; and passing an oral candidacy exam. Students must complete a total of 60 credit hours of approved graduate-level study at Rice and produce a research thesis under the direction of a departmental faculty member. At least two years of graduate study are required for the PhD.

Complete information about research opportunities, courses and other requirements can be found under the Department’s website, on the Graduate Study link at https://physics.rice.edu/.

#### Summary

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<tr>
<th>Code</th>
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### Policies for the PhD Degree in the field of Physics

**Department of Physics and Astronomy Graduate Program Handbook**

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Physics and Astronomy publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Physics_Astronomy_Graduate_Handbook.pdf

**Additional Information**
For additional information, please see the Physics and Astronomy website: https://physics.rice.edu/

### Opportunities for the PhD Degree in the field of Physics

**Additional Information**
For additional information, please see the Physics and Astronomy website: https://physics.rice.edu/

### Minor in Physics

#### Program Learning Outcomes for the Minor in Physics

Upon completing the minor in Physics, students will be able to:

1. Acquire and demonstrate a solid foundation of knowledge in physics. This includes: basic mechanics, basic electromagnetism, Maxwell’s equations in differential form, waves, interference and diffraction, special relativity, the Schroedinger equation, and the wave formulation of quantum mechanics.
2. Acquire and demonstrate knowledge in a number of advanced physics topics of their choosing.

#### Requirements for the Minor in Physics

Students pursuing the minor in Physics must complete:

- A minimum of 35 credit hours to satisfy minor requirements.
- A minimum of 26 credit hours to satisfy the Core Requirements.
- A minimum of 9 additional credit hours from departmental (PHYS) course offerings at the 300-level or above.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the minor’s Official Certifier (https://registrar.rice.edu/facstaff/degrowks/officialcertifier/)). Students and their academic advisors should identify and clearly document the courses to be taken.

#### Summary

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Minor Requirements

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 101 &amp; PHYS 103</td>
<td>MECHANICS (WITH LAB) and MECHANICS DISCUSSION</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 111</td>
<td>HONORS MECHANICS (WITH LAB)</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 102 &amp; PHYS 104</td>
<td>ELECTRICITY &amp; MAGNETISM (WITH LAB) and ELECTRICITY AND MAGNETISM DISCUSSION</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 112</td>
<td>HONORS ELECTRICITY &amp; MAGNETISM (WITH LAB)</td>
<td>4</td>
</tr>
<tr>
<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I</td>
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</tr>
<tr>
<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
<td>3</td>
</tr>
<tr>
<td>MATH 211</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA</td>
<td>3</td>
</tr>
<tr>
<td>MATH 212</td>
<td>MULTIVARIABLE CALCULUS</td>
<td>3</td>
</tr>
<tr>
<td>MATH 221</td>
<td>HONORS CALCULUS III</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 201</td>
<td>WAVES, LIGHT, AND HEAT</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 202</td>
<td>MODERN PHYSICS</td>
<td>3</td>
</tr>
</tbody>
</table>

Elective Requirements

Select a minimum of 3 courses from departmental (PHYS) course offerings at the 300-level or above.

Total Credit Hours: 35

Policies for the Minor in Physics

Program Restrictions and Exclusions

Students pursuing the minor in Physics should be aware of the following program restrictions:

- As noted in Majors, Minors, and Certificates (p. 11), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.
- Students pursuing the major in Astronomy may not declare the minor in Physics.
- Students pursuing the major in Astrophysics may not declare the minor in Physics.

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the minor in Physics should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information

For additional information, please see the Physics and Astronomy website: https://physics.rice.edu/

Opportunities for the Minor in Physics

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Additional Information

For additional information, please see the Physics and Astronomy website: https://physics.rice.edu/

Political Science

Contact Information

Political Science
https://politicalscience.rice.edu/
105 Herzstein Hall
713-348-4842

Brett Ashley Leeds
Department Chair
leeds@rice.edu

Leslie Schwindt-Bayer
Director of Undergraduate Studies
schwindt@rice.edu

Keith Hamm
Director of Graduate Studies
hamm@rice.edu

The mission of the Department of Political Science, at Rice University’s School of Social Sciences, is to contribute to the university and discipline through excellence in research, graduate training, and undergraduate teaching. We train graduate and undergraduate students in modern techniques of social science research in three substantive areas of political science—American Politics, Comparative Politics, and International Relations—to prepare them for successful careers in academia, government, business, law, education, non-governmental organizations, and many other professional paths.

Undergraduate students majoring in political science are encouraged to achieve both a broad understanding of the field and a specialized knowledge of one or more aspects of political science, including American Politics, Comparative Politics, and Politics and International Relations. Graduate study is grounded in the areas of American Politics, Comparative Politics, and International Relations.
Bachelor's Program
• Bachelor of Arts (BA) Degree with a Major in Political Science
  (p. 773)

Master's Program
• Master of Arts (MA) Degree in the field of Political Science*

Doctoral Program
• Doctor of Philosophy (PhD) Degree in the field of Political Science
  (p. 775)
* Although students are not normally admitted to a Master of Arts (MA) degree program, graduate students may earn the MA as they work towards the PhD.

Chair
Brett Ashley Leeds

Director of Undergraduate Studies
Leslie A. Schwindt-Bayer

Director of Graduate Studies
Keith Edward Hamm

Professors
John R. Alford
Paul Brace
Keith Edward Hamm
William P. Hobby
Mark P. Jones
David W. Leebron
Brett Ashley Leeds
Melissa J. Marschall
T. Clifton Morgan
Lyn Ragsdale
Jerrold G. Rusk
Leslie A. Schwindt-Bayer
Robert M. Stein
Randolph T. Stevenson
Richard J. Stoll
Rick K. Wilson

Associate Professors
Songying Fang
Diana O’Brien

Assistant Professors
Matthew Hayes
Jonathan Homola
Connor Huff
Michelle Torres

Professors Emeriti
John S. Ambler
Earl Black
Chandler Davidson

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: POLI

Department Description and Code
• Political Science: POLI

Undergraduate Degree Description and Code
• Bachelor of Arts degree: BA

Undergraduate Major Description and Code
• Major in Political Science: POLI

Graduate Degree Descriptions and Codes
• Master of Arts degree: MA
• Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code
• Degree Program in Political Science: POLI

CIP Code and Description

Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Bachelor of Arts (BA) Degree with a Major in Political Science

Program Learning Outcomes for the BA Degree with a Major in Political Science
Upon completing the BA degree with a major in Political Science, students will have:

1. Developed a broad understanding of political science and more specific knowledge in one or more subfields (Substantive knowledge).
2. Developed critical thinking skills and the ability to apply political science theories to understand the political world (Critical thinking).
3. Learned how to interpret, conduct, and evaluate political science research, including data collection and data analysis techniques and statistical software (Empirical analysis).
4. Developed and strengthened written, oral and visual communication skills and the ability to present political science research to an audience (Communication).
5. Become informed citizens able to participate effectively and meaningfully in the political process (Citizenship).
Requirements for the BA Degree with a Major in Political Science

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Political Science must complete:

- A minimum of 13 courses (41 credit hours) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 8 courses (26 credit hours) taken at the 300-level or above.
- A minimum of 4 courses (14 credit hours) from the Core Requirements.
- A minimum of 2 courses (6 credit hours) from the Seminar Requirements.
- A minimum of 7 courses (21 credit hours) from the Elective Requirements.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor, or where applicable, the department's Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total Credit Hours Required for the Major in Political Science</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Political Science</td>
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</table>

Degree Requirements

<table>
<thead>
<tr>
<th>Core Requirements</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td></td>
<td>Introductory Courses</td>
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<tr>
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<td>Select 2 courses from the following:</td>
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<tr>
<td>POLI 210</td>
<td>INTRODUCTION TO AMERICAN POLITICS</td>
<td>3</td>
</tr>
<tr>
<td>POLI 211</td>
<td>INTRODUCTION TO INTERNATIONAL RELATIONS</td>
<td>3</td>
</tr>
<tr>
<td>POLI 212</td>
<td>INTRODUCTION TO COMPARATIVE POLITICS</td>
<td>3</td>
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<table>
<thead>
<tr>
<th>Research Methods Courses 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOSC 302</td>
</tr>
<tr>
<td>POLI 395</td>
</tr>
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<table>
<thead>
<tr>
<th>Seminar Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select at least 2 seminar courses from departmental (POLI) course offerings at the 400-level 2</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Elective Requirements</th>
</tr>
</thead>
</table>

Select 4 additional courses from departmental (POLI) course offerings at the 300-level (between course numbers POLI 300 and POLI 399) 3

Select 3 additional courses from departmental (POLI) course offerings at any level 4

Total Credit Hours Required for the Major in Political Science | 41 |

Additional Credit Hours to Complete BA Degree Requirements | 19 |

University Graduation Requirements (p. 26) 5 |

Total Credit Hours | 120 |

Footnotes and Additional Information

- Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.
- SOSC 302 should be taken before POLI 395.
- Departmental (POLI) seminars are courses numbered at the 400-level (excluding POLI 405 and POLI 406). Students must take seminars from two different instructors.
- The 4 courses (12 credit hours) taken at the 300-level (between course numbers POLI 300 and POLI 399, excluding POLI 305, POLI 306, POLI 307, and POLI 395) must be taken at Rice University.
- This excludes POLI 110 and POLI 112, which do not count toward any major requirements. POLI 305 and POLI 306 (Directed Readings) are eligible for credit as 'additional courses,' as is POLI 307 and up to two POLI 3XX courses (POLI 3XX are transfer credit hours). See the Policies tab and the program's official transfer credit advisor for more information regarding transfer credit.

Policies for the BA Degree with a Major in Political Science

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in Political Science should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.
- Transfer credit coursework from online-only courses cannot be used to count towards the major.

Additional Information

For additional information, please see the Political Science website: https://politicalscience.rice.edu/.
Opportunities for the BA Degree with a Major in Political Science

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Additional Information
For additional information, please see the Political Science website at: https://politicalscience.rice.edu/.

Doctor of Philosophy (PhD) Degree in the field of Political Science

Program Learning Outcomes for the MA and PhD Degrees in the field of Political Science

Upon completing the MA and PhD degrees in the field of Political Science, students will be able to:

1. Demonstrate advanced knowledge of theoretical and empirical research in two of the following three sub-fields of Political Science: American politics, comparative politics, and international relations.
2. Apply social science research design and methodologies, including advanced statistical techniques.
3. Demonstrate the ability to communicate their research effectively through multiple mediums including scholarly writing, oral presentation, and poster sessions.
4. Demonstrate their competence as political scientists through research, teaching, and professional development activities.

Requirements for the MA and PhD Degrees in the field of Political Science

MA Degree Program
The MA degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). The Master of Arts degree requires 30 semester hours of coursework, all of which must be taken at the graduate level (500-level or above except with permission of the Director of Graduate Studies), and the completion of two research papers in seminars taken over the course of study. A minimum GPA of 3.00 is required for awarding the MA degree.

The Political Science Department requires that not more than 3 years elapse between the time the student is admitted to the graduate program and the completion of the MA degree, unless an extension is approved by the Graduate Studies Committee.

PhD Degree Program
For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55).

Summary
<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MA Degree in the field of Political Science</td>
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</table>

Requirements for the PhD Degree in the field of Political Science

PhD Degree Program
For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55).

Summary
<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the PhD Degree in the field of Political Science</td>
<td>90</td>
</tr>
</tbody>
</table>

Coursework
A student must complete successfully 54 credit hours of advanced coursework. This must include the core courses in each of 3 fields, 3 courses beyond the core in the major field, 2 courses beyond the core in the minor field, POLI 500, POLI 501, and 3 additional courses that meet the advanced research tools requirement.

Exams
A student must pass three Preliminary Examinations (a general exam in the major field, a subfield exam in the major field, and a general exam in the minor field), a thesis prospectus defense, and a thesis defense.

Maintenance of Good Academic Standing
A student must remain in good academic standing with the university and with the department. Remaining in good academic standing with the department requires a GPA of at least 3.33, satisfactory evaluations for work as a research and/or teaching mentee, and satisfactory participation in professional development activities.

Policies for the PhD Degree in the field of Political Science

Department of Political Science Graduate Program Handbook
The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Political Science publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Political_Science_Graduate_Handbook.pdf

Additional Information
For additional information, please see the Political Science website: https://politicalscience.rice.edu/
Opportunities for the PhD Degree in the field of Political Science

Requirements for the Coordinated PhD/MA Degree Program in Political Science and Statistics

The coordinated PhD/MA requires that a student fulfill all requirements for the PhD program in Political Science and satisfy the general university requirements for residency and total hours to receive a second non-thesis MA degree. The Statistics MA degree shall not be conferred prior to conferral of the PhD in Political Science. No course may count for credit for both MA degrees; however, POLI 504, POLI 505, POLI 506, and POLI 507 will continue to count toward the hours required for a PhD degree in Political Science when used to fulfill the requirements for an MA in Statistics.

To earn a non-thesis MA in Statistics, students in the PhD program in Political Science must additionally:

• Obtain written approval from the head of the Methods field and the Director of Graduate Studies in the Political Science department.
• Have their plan of study for the MA in Statistics pre-approved by the Director of Graduate Studies in the Department of Statistics (or another person designated by the chairperson of the Statistics department). Note: A maximum of ten Political Science PhD students will be allowed to enroll in the MA in Statistics program at one time.
• Earn a grade of ‘B+’ or better in four courses in statistical methodology in the Political Science department, which must include POLI 504, POLI 505, POLI 506, and POLI 507.
• Earn a grade of ‘B’ or better in each of six courses from the Department of Statistics. Four of these courses must be STAT 605, STAT 518, STAT 519, and STAT 615. Other acceptable courses are STAT 616 and courses at the 500-level and above, subject to the approval by the Director of Graduate studies in the Department of Statistics (or another person designated by the chairperson of the Statistics department). Courses that are jointly listed between two departments (cross-listed) are counted as a course in the home department. Note: completion of POLI 504 and POLI 505 will be considered as meeting the prerequisite requirements for STAT 519.
• Complete a major project that has strong statistical content. The project may be directed by faculty in Political Science, but must be pre-approved by the Director of Graduate Studies in the Department of Statistics (or another person designated by the chairperson of the Statistics department). The doctoral proposal in Political Science may satisfy this requirement, but must be successfully defended.

Additional Information

For additional information, please see the Political Science website: https://politicalscience.rice.edu/

Politics, Law and Social Thought

Contact Information

Politics, Law and Social Thought
https://politics.rice.edu/
116 Humanities Building
713-348-4548

Peter C. Caldwell
Program Director

caldwell@rice.edu

Politics, Law and Social Thought (PLST) is an interdisciplinary minor open to all undergraduate students at Rice from all backgrounds. Its task is the study of political ideas in their philosophical and historical contexts as well as with regard to their effects on constitutional law and social and political practices.

The central focus of the minor is political theory, taken in a wide sense to mean the theory and philosophy of how polities form, function, and fail. The minor has a strong orientation toward works of political, legal, and social philosophy, understood in their historical context. Politics, Law and Social Thought is a program of study that enables Rice students to engage successfully with the “big” political questions relevant to contemporary society in a global setting: Why democracy? What are the foundations of law? What is political liberty? What is political citizenship? Are states necessary? How do normative political and social orders come into existence? Is there a philosophical justification for human rights?

Minor

• Minor in Politics, Law and Social Thought (p. 777)

Politics, Law and Social Thought does currently not offer an academic program at the graduate level.

Chair

Christian J. Emden

Director

Peter C. Caldwell

Humanities Faculty Director, Law, Justice and Society Scholars

Shannon LaBove

Professors

Dominic C. Boyer
Peter C. Caldwell
Steven G. Crowell
Luis Duno-Gottberg
Christian J. Emden
James D. Faubion
David W. Leebron
Melissa J. Marschall
Donald Ray Morrison
George Sher
Lora Wildenthal
Harvey E. Yunis

Associate Professors

Andrea Ballestero
Gwendolyn M. Bradford
Julie Fette
Aysha Pollnitz
William Suarez-Potts

2019-2020 General Announcements

PDF Generated 1/29/2020
Assistant Professors
Sophie Esch
Vida Yao

Professor in the Practice
Steven W. Lewis

Lecturers
Shannon LaBove
Rudy Ramirez
Robert Werth

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject codes: PLST

Program Description and Code
• Politics, Law and Social Thought: PLST

Undergraduate Minor Description and Code
• Minor in Politics, Law and Social Thought: PLST

CIP Code and Description 1
• PLST Minor: CIP Code/Title: 22.0000 - Legal Studies, General

1 Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Minor in Politics, Law and Social Thought

Program Learning Outcomes for the Minor in Politics, Law and Social Thought
Upon completing the minor in Politics, Law and Social Thought, students will be able to:

1. Understand the main lines of political, legal, and social thought in their historical context through original sources.
2. Analyze and evaluate complex texts in political, legal, and social thought through a close reading and critical interpretation of arguments, metaphors, images, and the emotions that drive political arguments.
3. Compare different authors and texts and formulate complex arguments across different traditions in the history of political thought.
4. Develop and communicate their own arguments about politics, law, and society in research papers, class presentations, and discussions.

Requirements for the Minor in Politics, Law and Social Thought
Students pursuing the minor in Politics, Law and Social Thought must complete:

• A minimum of 6 courses (18 credit hours) to satisfy minor requirements.
• A minimum of 4 courses (12 credit hours) taken at the 300-level or above.
• A maximum of 2 courses (6 credit hours) from study abroad or transfer credits. For additional program guidelines regarding transfer credit, see the Policies tab.
• A maximum of 2 courses (6 credit hours) from the same subject code (i.e., GERM, HIST, etc.) may be used to meet the Elective Requirements.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the minor’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/)). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td></td>
<td>Total Credit Hours Required for the Minor in Politics, Law and Social Thought</td>
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Minor Requirements

Core Requirement
Select 1 course from the following:

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<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>HIST 373</td>
<td>SOCIAL AND POLITICAL THOUGHT IN 19TH CENTURY EUROPE</td>
</tr>
<tr>
<td>HIST 392</td>
<td>PRE-MODERN POLITICAL THOUGHT FROM CICERO TO LOCKE</td>
</tr>
<tr>
<td>PLST 301</td>
<td>MODERN POLITICAL THOUGHT: MACHIAVELLI TO RAWLS</td>
</tr>
<tr>
<td>PLST 302</td>
<td>CONTEMPORARY POLITICAL THEORY</td>
</tr>
<tr>
<td>PLST 303</td>
<td>HOW DEMOCRACY FAILS</td>
</tr>
<tr>
<td>PLST 316 / CLAS 316</td>
<td>DEMOCRACY AND POLITICAL THEORY IN ANCIENT GREECE</td>
</tr>
<tr>
<td>SOCI 325</td>
<td>SOCIOLOGY OF LAW</td>
</tr>
</tbody>
</table>

Elective Requirements
Select 5 courses from the Elective Requirements (see course list below) 15

Total Credit Hours 18
credit hours) from the same subject code (i.e., GERM, HIST, etc.) may be used to meet the Elective Requirements for the minor.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tr>
<td></td>
<td>Elective Requirements</td>
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<tr>
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<td>Select 5 courses from the following:</td>
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<tr>
<td></td>
<td>Anthropology</td>
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<tr>
<td>ANTH 309</td>
<td>GLOBAL CULTURES</td>
<td></td>
</tr>
<tr>
<td>ANTH 317</td>
<td>REVOLUTIONS AND UTOPIAS</td>
<td></td>
</tr>
<tr>
<td>ANTH 319</td>
<td>SYMBOLISM AND POWER</td>
<td></td>
</tr>
<tr>
<td>ANTH 322</td>
<td>GLOBAL IM/MOBILITIES: BORDERS, MIGRATION, AND CITIZENSHIP</td>
<td></td>
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<tr>
<td>ANTH 326</td>
<td>LAW, POWER AND CULTURE</td>
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<tr>
<td>ANTH 340</td>
<td>NEOLIBERALISM AND GLOBALIZATION</td>
<td></td>
</tr>
<tr>
<td>ANTH 372</td>
<td>CULTURES OF CAPITALISM</td>
<td></td>
</tr>
<tr>
<td>ANTH 424</td>
<td>MAJOR FIGURES IN CULTURAL AND SOCIAL THOUGHT</td>
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<tr>
<td>ANTH 429</td>
<td>ACTIVISM AND SOCIAL MOVEMENTS</td>
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<td></td>
<td>Asian Studies</td>
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<td>ASIA 489/ POLI 489</td>
<td>CHINESE POLITICS IN COMPARATIVE PERSPECTIVE</td>
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<td>Classical and European Studies</td>
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<td>CLAS 316/ PLST 316</td>
<td>DEMOCRACY AND POLITICAL THEORY IN ANCIENT GREECE</td>
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<tr>
<td>FREN 324/ POLI 324/ RELI 476</td>
<td>FROM DECOLONIZATION TO GLOBALIZATION</td>
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<td>FREN 453</td>
<td>IMMIGRATION AND CITIZENSHIP IN CONTEMPORARY FRANCE</td>
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<tr>
<td>GERM 333</td>
<td>NIETZSCHE: PHILOSOPHY, POLITICS, HISTORY</td>
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<td>GERM 334</td>
<td>NATIONALISM AND CITIZENSHIP</td>
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<td>GERM 349</td>
<td>GERMAN POLITICAL THOUGHT</td>
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<td></td>
<td>History</td>
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<td>HIST 305</td>
<td>READING HISTORIES OF WORK</td>
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<tr>
<td>HIST 332</td>
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<td>HIST 340/ SWGS 345</td>
<td>HISTORY OF FEMINISM</td>
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<td>THE UNITED STATES IN THE TWENTIETH CENTURY WORLD</td>
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<td>HIST 373</td>
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<td>HIST 392</td>
<td>PRE-MODERN POLITICAL THOUGHT FROM CICERO TO LOCKE</td>
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<td>DEMOCRACY AND CAPITALISM: THE HISTORICAL DEBATE FROM MARX TO TRUMP</td>
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<td>HIST 412</td>
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<td>WESTERN EUROPEAN WELFARE STATE, 1880-1980: ORIGINS, CONSOLIDATIONS, CRISIS</td>
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<td>HIST 455</td>
<td>THE HISTORY OF HUMAN RIGHTS</td>
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<td>HIST 457</td>
<td>FOUR MODERN REVOLUTIONS: 1776, 1789, 1917, 1989</td>
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<td>PHIL 111/ SWGS 111</td>
<td>INTRODUCTION TO FEMINIST PHENOMENA</td>
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<td>PHIL 116</td>
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<td>PHIL 307</td>
<td>SOCIAL AND POLITICAL PHILOSOPHY</td>
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<td>PHIL 316</td>
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<td>PHIL 319/ SWGS 319</td>
<td>FEMINIST PHILOSOPHY</td>
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<td>PHIL 326</td>
<td>HISTORY OF ETHICS</td>
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<td>PHIL 327</td>
<td>HISTORY OF SOCIAL AND POLITICAL PHILOSOPHY</td>
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<td>POLI 209</td>
<td>INTRODUCTION TO CONSTITUTIONALISM AND MODERN POLITICAL THOUGHT</td>
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<td>POLI 210</td>
<td>INTRODUCTION TO AMERICAN POLITICS</td>
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<td>POLI 211</td>
<td>INTRODUCTION TO INTERNATIONAL RELATIONS</td>
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<td>POLI 321</td>
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<td>POLI 333</td>
<td>LEGISLATURES AROUND THE WORLD</td>
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<td>POLI 342</td>
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<td>POLI 357</td>
<td>DEMOCRACY AND DEMOCRATIZATION</td>
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<td>POLI 371</td>
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<td>MODERN POLITICAL THOUGHT: MACHIAVELLI TO RAWLS</td>
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<td>PLST 302</td>
<td>CONTEMPORARY POLITICAL THEORY</td>
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<td>PLST 303</td>
<td>HOW DEMOCRACY FAILS</td>
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<td>PLST 305</td>
<td>INTRODUCTION TO LAW</td>
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<td>PLST 401</td>
<td>LAW, JUSTICE AND SOCIETY SCHOLARS LEGAL PRACTICUM</td>
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<td>PLST 402</td>
<td>LAW, JUSTICE AND SOCIETY SCHOLARS JUDICIAL PRACTICUM</td>
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<td>SOCI 325</td>
<td>SOCIOLOGY OF LAW</td>
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<td>SOCI 349</td>
<td>CRIME, LAW &amp; JUSTICE IN POPULAR CULTURE</td>
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<td>SOCI 358</td>
<td>CRIME, PUNISHMENT AND SOCIETY</td>
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<td>SOCI 380</td>
<td>SOCIAL THEORY</td>
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<td>SOCI 396/ ANTH 396</td>
<td>LAW AND RESISTANCE IN THE EVERYDAY</td>
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<tr>
<td>SOCI 426</td>
<td>CONTEMPORARY THEORY</td>
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</tbody>
</table>

Study of Women, Gender and Sexuality
**Practica**

Students may count one practicum with 3 credit hours toward the Elective Requirements for the minor, as long as the practicum substantively reflects the thematic focus of the minor in PLST. As general guidance, acceptable practica are concerned with the public dimension of law or fall into the area of public policy. Proposed practica have to be approved by the director before the official start date of the practicum. Practica must adhere to the requirements and policies governing practica as they have been established by the School of Humanities and/or the School of Social Sciences.

**Policies for the Minor in Politics, Law and Social Thought**

**Program Restrictions and Exclusions**

Students pursuing the minor in Politics, Law and Social Thought should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 11), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

**Transfer Credit**

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

**Program Transfer Credit Guidelines**

Students pursuing the minor in Politics, Law and Social Thought should be aware of the following program-specific transfer credit guidelines:

- No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the minor.
- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.
- Transfer credit coursework received via the articulation of AP, IB or A-level credit will not be considered towards minor requirements.
- Transfer credit from online-only courses may not be used to count towards the minor.

**Distribution Credit Information**

The determination of distribution eligibility is done as part of the new course creation process (https://registrar.rice.edu/facstaff/courseprocess/). As part of an annual roll call (https://registrar.rice.edu/facstaff/distribution_credit/) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean's Offices of each of the academic schools.

Faculty and leadership in the academic schools are responsible for ensuring that the courses identified as distribution-eligible meet the criteria as set in the General Announcements (p. 26). Students are responsible for ensuring that they meet graduation requirements (p. 26) by completing coursework designated as distribution at the time of course registration.

Distribution courses from Politics, Law and Social Thought (PLST) are designed to provide students with the tools for thinking critically about politics, law, and society, and for using those tools to participate in the life of our society and polity.

**Additional Information**

For additional information, please see the Politics, Law and Social Thought website: https://politics.rice.edu/

**Opportunities for the Minor in Politics, Law and Social Thought**

**Academic Honors**

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

**Additional Information**

For additional information, please see the Politics, Law and Social Thought website: https://politics.rice.edu/.

See https://humanities.rice.edu/student-life/ for tables of fellowships, prizes, and internships/practica that may be relevant to this minor.

**Poverty, Justice and Human Capabilities**

**Contact Information**

Poverty, Justice and Human Capabilities
https://pjhc.rice.edu/
322 Rayzor Hall
713-348-6152
Diana Strassmann
Program Director
dls@rice.edu

The Program in Poverty, Justice and Human Capabilities (PJHC) provides students with a multifaceted understanding of human well-being. A key goal of the minor is to enrich students' understanding of poverty and inequality so that, regardless of their choice of occupation, PJHC alumni will maintain a long-standing commitment to enhancing the well-being of all people. More generally, the program trains Rice students to be future leaders in solving global problems.

This interdisciplinary minor emphasizes a “capabilities approach,” which considers what people are able to do and to be — for example, live to old age and engage in economic and political activities — rather than strictly what material goods they possess. The program also acknowledges the central importance of a variety of additional influences on well-being beyond income, such as: gender, health status, racial and ethnic
disparities, education, human rights, political freedoms, and material needs, including food and shelter.

Although impediments to human well-being take many forms, barriers to the capabilities of women and girls persist across societies; women and girls are therefore disproportionately represented among the poor and those unable to attain their full capabilities. The academic component of the program, including the content of core and required coursework, acknowledges gender inequality as a powerful influence on disparities in human well-being and recognizes gender as a central analytic category.

The PJHC minor combines high-caliber undergraduate courses with service learning experiences that help disadvantaged communities and people. Students are placed with organizations where they work directly with clients and gain experiential knowledge that broadens their perspectives on human lives and capabilities. Through these academic and experiential learning opportunities, students explore deeper understandings of the structural factors underlying poverty and human well-being, as well as potential policy solutions. The program further aims to promote dialogue among all disciplines about how to address issues of poverty alleviation and human well-being with a sophisticated understanding of the challenges and sound strategies for moving forward.

Minor

- Minor in Poverty, Justice and Human Capabilities (p. 780)

Poverty, Justice and Human Capabilities does not currently offer an academic program at the graduate level.

Director

Diana Strassmann

Advisors

Moramay López-Alonso
Diana Strassmann

Steering Committee

Elias K. Bongmba
Vivian Ho
Moramay López-Alonso
Anthony B. Pinn
Elora Shehabuddin
Diana Strassmann

Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule

- Course offerings/subject codes: PJHC

Program Description and Code

- Poverty, Justice and Human Capabilities: PJHC

Undergraduate Minor Description and Code

- Minor in Poverty, Justice and Human Capabilities: PJHC

CIP Code and Description

- PJHC Minor: CIP Code/Title: 42.2808 - Environmental Psychology

Minor in Poverty, Justice and Human Capabilities

Program Learning Outcomes for the Minor in Poverty, Justice and Human Capabilities

Upon completing the minor in Poverty, Justice and Human Capabilities, students will be able to:

1. Understand theoretical approaches to poverty and justice that draw from the capabilities framework, economics, history, sociology, philosophy, and other fields. Students will have in-depth knowledge of approaches to enhancing human flourishing and will understand the social, institutional, and political contexts that underlie deprivations and inequities.

2. Demonstrate a sophisticated understanding of the multiple influences on well-being beyond income and material wealth, including gender, racial, and ethnic disparities, and the impact of colonialism on the Global South. Students will be able to provide examples from different geographic regions, not exclusively from one country or region, and be able to apply the capabilities approach when evaluating these disparities.

3. Gain, through direct service, experiential knowledge of the challenges faced in disadvantaged communities.

4. Achieve an interdisciplinary knowledge of approaches to enhancing human well-being and mitigating human deprivations. Students will be able to apply this knowledge in evaluating potential policy solutions.

5. Demonstrate the oral, written, and visual communication skills essential for sophisticated and successful advocacy.

6. Become a global citizen by understanding the role that advocacy and service play in addressing poverty, strengthening justice, and improving well-being.

Requirements for the Minor in Poverty, Justice and Human Capabilities

Students pursuing the minor in Poverty, Justice and Human Capabilities must complete:

- A minimum of 6-8 courses (18-22 credit hours), depending on course selection, to satisfy minor requirements.
- A minimum of 3 PJHC Service Credits from the direct service learning experiences.

The courses used to meet the PJHC minor are open to all Rice students, including those not pursuing the minor; however, in some courses with limited space, preference will be given to declared minors.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor, or where applicable,
the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the minor’s Official Certifier [https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/]). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Minor in Poverty, Justice and Human Capabilities</td>
<td>18-22</td>
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Minor Requirements

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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td>PJHC 371</td>
<td>POVERTY, JUSTICE, AND HUMAN CAPABILITIES</td>
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<tr>
<td>PJHC 394</td>
<td>HUMAN DEVELOPMENT IN GLOBAL AND LOCAL COMMUNITIES</td>
<td>3</td>
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</table>

Elective Requirements

Select 3 courses as Electives from the following categories (see below for course lists):

- Global South
- Race and Ethnicity

Capstone Requirement 1

Select 1 of the following options:

- HIST 421 RACE, EDUCATION AND SOCIETY IN THE URBAN SOUTH
- or PJHC 470 ADVANCED SEMINAR IN POVERTY, JUSTICE, AND CAPABILITIES

Capstone Course Sequences Option

Select 1 of the following:

- SOCI 469 COMMUNITY BRIDGES TRAINING
- & SOCI 470 and INEQUALITY AND URBAN LIFE
- SWGS 494 PRE-SEMINAR IN ENGAGED RESEARCH
- & SWGS 496 and ENGAGED RESEARCH PRACTICUM
- & SWGS 497 and ENGAGED RESEARCH SEMINAR

Direct Service Learning Experience

Students must complete a total of three PJHC Service Credits. See below for more information.

Total Credit Hours 18-22

Footnotes and Additional Information

1 Students can use additional capstone courses to fulfill the General Elective requirement (SWGS 496, SWGS 497, or PJHC 470) or the Race and Ethnicity requirement (HIST 421 or SOCI 470). HIST 421 and SOCI 470 do not fulfill the Race and Ethnicity requirement unless a second capstone course is completed. Students who complete the entire Engaged Research course sequence (SWGS 494, SWGS 496, and SWGS 497) may use SWGS 497 to fulfill the General Elective requirement.

Course Lists to Satisfy Requirements

Elective Requirements

Students must complete a total of 3 courses (minimum of 9 credit hours) from the Global South, Race and Ethnicity, and General Electives Categories as listed below to satisfy the Poverty, Justice and Human Capabilities minor’s Elective Requirements. An additional course from the Global South or Race and Ethnicity list can be used to fulfill the General Elective requirement. Students must select separate courses to fulfill the Global South and Race and Ethnicity requirements. As course offerings may vary from year to year, students are urged to consult with the undergraduate advisors (see https://pjhc.rice.edu/) at the beginning of each semester. Please note that not all courses listed below will be offered every academic year.

Global South Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td>ANTH 212 / ASIA 212</td>
<td>PERSPECTIVES ON MODERN ASIA</td>
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<tr>
<td>ANTH 290</td>
<td>HISTORY AND ETHNOGRAPHY *</td>
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<tr>
<td>ANTH 340</td>
<td>NEOLIBERALISM AND GLOBALIZATION</td>
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<td>ANTH 343 / RELI 342</td>
<td>NEW RELIGIOUS MOVEMENTS IN AFRICA</td>
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<td>ANTH 358</td>
<td>THE FOURTH WORLD: ISSUES OF INDIGENOUS PEOPLE</td>
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<tr>
<td>ASIA 222 / ENGL 222</td>
<td>THE WORLD AND SOUTH ASIA</td>
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<td>ASIA 232 / RELI 232</td>
<td>RELIGIONS FROM INDIA</td>
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<td>ASIA 251 / POLI 250 / SWGS 250</td>
<td>SEX, MONEY, AND POWER AROUND THE WORLD</td>
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<td>ASIA 328 / HIST 384 / SWGS 384</td>
<td>MODERN GIRL AND ASIA IN THE WORLD</td>
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<td>ASIA 338</td>
<td>BIOETHICS AND INDIAN TRADITIONS</td>
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<td>ASIA 349 / POLI 349</td>
<td>URBAN LAB ISTANBUL</td>
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<tr>
<td>BIOE 361 / BIOL 361 / GLHT 361</td>
<td>METABOLIC ENGINEERING FOR GLOBAL HEALTH ENVIRONMENTS</td>
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<td>ECON 450</td>
<td>ECONOMIC DEVELOPMENT</td>
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<td>ECON 460</td>
<td>ADVANCED TOPICS IN ECONOMIC DEVELOPMENT *</td>
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<td>ENGL 379</td>
<td>THIRD WORLD LITERATURE</td>
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<td>CONTEMPORARY ANGLOPHONE LITERATURE</td>
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<td>ENGL 383</td>
<td>GLOBAL FICTIONS</td>
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<td>TOPICS IN CULTURAL STUDIES</td>
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<td>ENGL 397</td>
<td>TOPICS IN LITERATURE AND CULTURE *</td>
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<td>GLHT 314 / CEVE 314 / BIOE 365</td>
<td>SUSTAINABLE WATER PURIFICATION FOR THE DEVELOPING WORLD</td>
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<td>HIST 268</td>
<td>MODERN SLAVERY AND HUMAN TRAFFICKING</td>
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<td>HIST 271</td>
<td>HISTORY OF SOUTH ASIA</td>
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<td>SWGS 496</td>
<td>PRE-SEMINAR IN ENGAGED RESEARCH</td>
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<td>SWGS 497</td>
<td>and ENGAGED RESEARCH PRACTICUM</td>
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<td>HIST 278</td>
<td>MODERN ARAB HISTORY</td>
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<td>HIST 281 / MDEM 281</td>
<td>GOLDEN AGE OF ISLAM</td>
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<td>HIST 389 / ASIA 389</td>
<td>INDIAN OCEAN WORLD HISTORY</td>
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<td>HIST 407</td>
<td>THE RISE AND FALL OF SLAVERY IN THE ATLANTIC WORLD, 1791-1888</td>
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<td>HIST 428</td>
<td>MODERN SLAVERY AND HUMAN TRAFFICKING: GLOBAL AND LOCAL</td>
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<tr>
<td>POLI 238</td>
<td>SPECIAL TOPICS (minimum of 3 credit hours.) *</td>
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<td>POLI 362</td>
<td>COMPARATIVE URBAN POLITICS AND POLICY</td>
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<td>RELI 111</td>
<td>INTRODUCTION TO AFRICAN RELIGIONS</td>
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<td>RELI 315 / ASIA 315 / SWGS 315</td>
<td>GENDER AND ISLAM</td>
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<td>RELI 328</td>
<td>RELIGION AND GLOBAL POVERTY</td>
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<td>RELI 340</td>
<td>THEOLOGY IN AFRICA</td>
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<td>RELI 348</td>
<td>CHRISTIANITY AND ISLAM IN AFRICA</td>
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<td>RELI 356</td>
<td>MAJOR ISSUES IN CONTEMPORARY ISLAM</td>
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<td>RELI 371</td>
<td>CHRISTIANITY IN THE GLOBAL SOUTH</td>
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<td>RELI 424</td>
<td>RELIGION AND POLITICS IN AFRICA</td>
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<td>RELI 426</td>
<td>RELIGION AND LITERATURE IN AFRICA</td>
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<td>SOCI 485</td>
<td>IDENTITIES IN A DIVERSE WORLD</td>
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<td>SWGS 303</td>
<td>GENDER AND SCIENCE</td>
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<td>SWGS 374 / LASR 374</td>
<td>FEMINIST AND QUEER THEORY IN THE AFRICAN DIASPORA</td>
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**Race and Ethnicity Courses**

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<tr>
<td>ANTH 322</td>
<td>GLOBAL IM/MOBILITIES: BORDERS, MIGRATION, AND CITIZENSHIP</td>
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<tr>
<td>ANTH 387 / ASIA 387</td>
<td>ASIAN AMERICAN CONTEMPORARY COMMUNITIES</td>
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<td>ANTH 443</td>
<td>ANTHROPOLOGY OF RACE, ETHNICITY AND HEALTH</td>
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<td>ASIA 399 / MDEM 379 / SWGS 399</td>
<td>WOMEN IN CHINESE LITERATURE</td>
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<tr>
<td>EDUC 304</td>
<td>RACE, CLASS, GENDER IN EDUCATION</td>
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<tr>
<td>EDUC 335</td>
<td>URBAN EDUCATION: ISSUES, POLICY, AND PRACTICE</td>
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<tr>
<td>ENGL 268</td>
<td>INTRODUCTION TO NATIVE AMERICAN LITERATURE</td>
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<tr>
<td>ENGL 369 / SWGS 329</td>
<td>THE AMERICAN WEST AND ITS OTHERS</td>
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<td>ENGL 371 / SPPO 354 / SWGS 354</td>
<td>CHICANO/A LITERATURE</td>
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<tr>
<td>ENGL 389 / SWGS 389</td>
<td>YOUTH STUDIES</td>
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<tr>
<td>ENGL 393</td>
<td>BLACK MANHATTAN: 1915-1940</td>
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<tr>
<td>ENGL 399</td>
<td>THE BLACK IMAGINARY: 1775-PRESENT</td>
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<tr>
<td>HIST 111</td>
<td>RED, WHITE AND BLACK IN EARLY AMERICA CREATING RACIAL IDENTITIES IN THE ERA OF THE AMERICAN REVOLUTION</td>
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<tr>
<td>HIST 186</td>
<td>HISTORICAL SURVEY OF JEWISH CIVILIZATION FROM ITS ORIGINS TO THE PRESENT</td>
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<td>LATIN AMERICAN CULTURAL TRADITIONS</td>
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<td>U.S. WOMEN'S HISTORY I: COLONIAL BEGINNINGS TO THE CIVIL WAR</td>
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<td>HIST 242 / SWGS 235</td>
<td>U.S. WOMEN'S HISTORY II: CIVIL WAR TO THE PRESENT</td>
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<td>RACE AND PUBLIC POLICY</td>
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<td>SOCI 309</td>
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<td>SOCI 329</td>
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<td>SOCI 343</td>
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<td>ART AND ACTIVISM: CRITICAL STUDY OF HOPE IN TIMES OF CRISIS</td>
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<td>SOCI 436</td>
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<td>SEX AND GENDER IN MODERN JEWISH CULTURE</td>
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<td>SWGS 373 / LASR 373</td>
<td>WOMEN'S SOCIAL MOVEMENTS IN LATIN AMERICA AND THE CARIBBEAN</td>
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<td>SWGS 377</td>
<td>RACE, POWER AND THE POLITICS OF PLACE</td>
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**General Elective Courses**

Select up to 1 from the following (or select an additional Global South or Race and Ethnicity Elective)

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<tr>
<td>ANTH 381</td>
<td>MEDICAL ANTHROPOLOGY</td>
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| ANTH 477 | SPECIAL TOPICS (minimum of 3 credit hours.) *
| ASIA 303 | ASIA ON THE MOVE: GENDER, SEXUALITY, AND GLOBAL MIGRATION |
| BIOL 122 | BIOLOGY FOR VOTERS |
| BIOE 360 / GLHT 360 | APPROPRIATE DESIGN FOR GLOBAL HEALTH |
| ECON 481 | HEALTH ECONOMICS |
| ENGL 354 / SWGS 364 | QUEER LITERARY CULTURES |
| ENGL 382 / SWGS 380 | FEMINIST THEORY |
| GLHT 201 | INTRODUCTION TO GLOBAL HEALTH |
| GLHT 411 | INTEGRATED APPROACHES TO SUSTAINABLE DEVELOPMENT |
| HEAL 222 | PRINCIPLES OF PUBLIC AND COMMUNITY HEALTH |
| HEAL 360 | VIOLENCE IN AMERICA: A PUBLIC HEALTH PERSPECTIVE |
| HEAL 380 | DISPARITIES IN HEALTH IN AMERICA |
| HEAL 498 | SPECIAL TOPICS IN HEALTH SCIENCES * |
| HIST 209 | AMERICAN URBAN HISTORY, 1609 TO TODAY |
| HIST 311 | SEX, GENDER, AND FAMILY IN EUROPE, 1300-1700 |
| HIST 312 | BIOMEDICAL APPROACH TO HISTORY |
| HIST 329 / ARCH 329 / HART 329 | STREETS AND URBAN LIFE: PARIS TO ISTANBUL |
| HIST 340 / SWGS 345 | HISTORY OF FEMINISM |
| HIST 423 | AMERICAN RADICALS AND REFORMERS |
| HIST 448 | WESTERN EUROPEAN WELFARE STATE, 1880-1980: ORIGINS, CONSOLIDATIONS, CRISIS |
| HIST 455 | THE HISTORY OF HUMAN RIGHTS |
| PHIL 307 | SOCIAL AND POLITICAL PHILOSOPHY |
| PHIL 315 | ETHICS, MEDICINE, AND PUBLIC POLICY |
| PJHC 470 | ADVANCED SEMINAR IN POVERTY, JUSTICE, AND CAPABILITIES |
| POLI 260 / LEAD 260 | ADVOCATING FOR IDEAS TO CHANGE THE WORLD |
| POLI 329 | HEALTH POLICY |
| POLI 332 | URBAN POLITICS |
| POLI 356 | REPRESENTATION AND POLICY MAKING |
| POLI 378 | POLITICS OF AMERICAN NATIONAL SECURITY |
| POLI 437 | EDUCATION POLICY |
| PSYC 331 / SWGS 331 | PSYCHOLOGY OF GENDER |
| SOCIO 306 / SWGS 324 | SOCIOLOGY OF GENDER |
| SOCIO 319 | SOCIOLOGY OF WORK AND OCCUPATIONS |
| SOCIO 340 | SOCIOLOGY OF IMMIGRATION |
Program Transfer Credit Guidelines

Students pursuing the minor in Poverty, Justice and Human Capabilities should be aware of the following program-specific transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

Distribution Credit Information

The determination of distribution eligibility is done as part of the new course creation process (https://registrar.rice.edu/facstaff/courseprocess/). As part of an annual roll call (https://registrar.rice.edu/facstaff/distribution_credit/) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean's Offices of each of the academic schools.

Faculty and leadership in the academic schools are responsible for ensuring that the courses identified as distribution-eligible meet the criteria as set in the General Announcements (p. 26). Students are responsible for ensuring that they meet graduation requirements (p. 26) by completing coursework designated as distribution at the time of course registration.

Additional Information

For additional information, please see the Poverty, Justice and Human Capabilities website: https://pjhc.rice.edu/.

Opportunities for the Minor in Poverty, Justice and Human Capabilities

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Susan McAshan Summer Service Internship

Declared Poverty, Justice and Human Capabilities minors are eligible to apply for funding to support a summer service internship. Students must have completed PJHC 371, PJHC 394, and at least one approved elective by the end of the spring semester before their internships. Funding supports student interns' direct service work with international or US-based community service organizations. Students receive 3 service credits upon the completion of their Susan McAshan Summer Service Internship. Additional details may be found at the PJHC website: https://pjhc.rice.edu/summer-service-internship-funding/.

Additional Information

For additional information, please see the Poverty, Justice and Human Capabilities website: https://pjhc.rice.edu/.

See https://humanities.rice.edu/student-life (https://humanities.rice.edu/student-life/) for tables of fellowships, prizes, and internships/practica that may be relevant to this minor.
Program in Writing and Communication

The mission of the Program in Writing and Communication (PWC) is to integrate the practice of analytical writing and the techniques of both oral and visual communication into the Rice curriculum, with two goals in mind: To enable our students to articulate their ideas as we prepare them for academic and professional life; and to affirm the necessity of this ability and its fundamental value to every aspect of their education and across every University department and discipline.

The PWC provides oversight for the First-Year Writing-Intensive Seminars (FWIS). FWIS are content-based, 3-credit hour seminars in which writing and communication pedagogy plays a significant role in assignments and grading. The courses reflect a range of disciplines from across the university. In addition, PWC faculty teach undergraduate communication courses under the COMM designation and courses for international graduate students (UNIV 600, UNIV 601, and UNIV 602).

The PWC also includes the Center for Academic and Professional Communication. Housed in Fondren Library, the Center supports teaching and learning through workshops, consulting, and coaching for undergraduate and graduate students and faculty. Headed by a team of communication professionals, the Center also includes a large staff of writing and communication consultants, both graduate and undergraduate, who are available for individual tutoring appointments. The Center includes facilities for on-one consultations and group work, as well as advanced technology for preparation of oral and visual presentations. Physically accessible whenever Fondren Library is open, the Center is virtually accessible around the clock through the Center's website (https://pwc.rice.edu/center-academic-and-professional-communication/).

For additional information regarding the Program in Writing and Communication, please see the program’s website at: https://pwc.rice.edu/.

All first-year students must pass the Composition Examination and complete a content-based First-Year Writing Intensive Seminar (FWIS) course during their first year at Rice.

Students who receive an unsatisfactory score on the Composition Exam must successfully complete FWIS 100 during the fall of their first year and prior to enrolling in one of the required content-based FWIS courses.

For courses that satisfy the First-Year Writing Intensive Seminar University Graduation Requirement (p. 26), please see Rice's Course Catalog (https://courses.rice.edu).

The Program in Writing and Communication does not currently offer an academic program at the graduate level.

Program Director
Jennifer Wilson

Teaching Fellows
Mark Celeste
Jessica Hagan
Brittany Henry

Department and Code Legend
Note: Internally the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
- Course offerings/subject code: FWIS

Psychological Sciences
Contact Information
Psychological Sciences
https://psychology.rice.edu/
464 Sewall Hall
713-348-4856
Eduardo Salas
Department Chair
eduardo.salas@rice.edu

Philip T. Kortum
Director of Undergraduate Studies
pkortum@rice.edu

Randi Martin
Psychology: Cognitive and Affective Neuroscience Graduate Program
rmartin@rice.edu

Christopher P. Fagundes
Psychology: Health Psychology and Behavioral Medicine Research Graduate Program
christopher.fagundes@rice.edu

Mike Byrne
Psychology: Human-Computer Interaction and Human Factors Graduate Program
byrne@rice.edu

Fred Oswald
Psychology: Industrial-Organizational Psychology Graduate Program
foswald@rice.edu

Fred Oswald
Psychology: Psychometrics and Quantitative Psychology Graduate Program
foswald@rice.edu

The Department of Psychological Science’s undergraduate program offers the core preparation found across the nation’s leading graduate schools of psychology, combined with advanced courses and research opportunities offered by the nation’s leading scholars and teachers in psychological science. Programs of study may be tailored to graduate school and future careers in several major fields of psychology, as well as in medicine, law, business, or education.
Program emphasis in graduate study is on doctoral training. An important feature of our doctoral program is its strong research orientation. Graduate students are expected to spend most of their time actively engaged in research and are expected to acquire a high level of research and statistical competence. Faculty research interests and PhD major concentrations for graduate students include:

- **Cognitive and Affective Neuroscience**: understanding the psychology and neuroscience behind basic mental activities (e.g., perceiving, attending, remembering) and higher forms of behavior (e.g., memory, language, social cognition, emotion, health);
- **Health Psychology and Behavioral Medicine Research**: understanding how behaviors, cognitions, and emotions impact mental and physical health; designing and testing evidence based interventions to reduce health risk and improve quality of life; examining biological factors underlying risk, resilience, and mechanisms of change;
- **Human-Computer Interaction and Human Factors**: understanding interactions between humans and other elements of a physical system, and the application of theories, principles, data, and other methods of design that optimize human well-being and overall system performance and usability;
- **Industrial-Organizational Psychology**: understanding human behavior in organizational and work situations, addressing research problems such as motivation at work, the aging workforce, discrimination in the workplace, job performance, and team training;
- **Psychometrics and Quantitative Psychology**: understanding specialized skills related to appropriate and innovative study design; statistical modeling and analysis; and interpretation of psychological measures, experiments, and interventions.

Beginning Fall 2019, the Department of Psychological Sciences will offer a terminal non-thesis master's program in Human-Computer Interaction and Human Factors, which examines the scientific consideration of people in the design of products, services, and systems.

**Bachelor’s Program**

- Bachelor of Arts (BA) Degree with a Major in Psychology (p. 787)

**Master's Program**

- Master of Arts (MA) Degree in the field of Psychology*
- Master of Human-Computer Interaction and Human Factors (MHCIHF) Degree (p. 478)

**Doctoral Program**

- Doctor of Philosophy (PhD) Degree in the field of Psychology
  - and a Major Concentration in Cognitive and Affective Neuroscience (p. 790)
  - and a Major Concentration in Health Psychology and Behavioral Medicine Research (p. 793)
  - and a Major Concentration in Human-Computer Interaction and Human Factors (p. 793)
  - and a Major Concentration in Industrial-Organizational Psychology (p. 794)
  - and a Major Concentration in Psychometrics and Quantitative Psychology (p. 796)

* Although students are not normally admitted to a Master of Arts (MA) degree program, graduate students may earn the MA as they work towards the PhD.  

Chair
Eduardo Salas

Professors
Margaret E. Beier
Michael D. Byrne
James L. Dannemiller
Patricia DeLucia
Michelle ‘Mikki’ R. Hebl
Randi C. Martin
Frederick L. Oswald
James R. Pomerantz

Associate Professors
Christopher P. Fagundes
Eden King
Philip T. Kortum
David M. Lane

Assistant Professors
Bryan T. Denny
Simon J. Fischer-Baum
Danielle King
Stephanie Leal

Professors Emeriti
Richard R. Batsell
Sarah A. Burnett
Jennifer M. George
Kenneth R. Laughery
Stephan J. Motowidlo
H. Albert Napier
David J. Schneider

Lecturers
Özge Gürcanlı
Chase L. Lesane-Brown
D. Colette Nicolaou
Sandra V. Parsons
Carissa A. Zimmerman

Professors, Joint Appointments
Rick K. Wilson
Jing Zhou

Associate Professor, Joint Appointment
D. Brent Smith

Adjunct Professors
Michael S. Beauchamp
John H. Byrne
Lorenzo Cohen
John M. Cornwell
Robert M. Dantzer
J. David Dickman
J. David Dickman
Jacoba ‘Cobi’ Heijnen
P. Richard ‘Dick’ Jeanneret
Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: PSYC

Department Description and Code
• Psychological Sciences: PSYS

Undergraduate Degree Description and Code
• Bachelor of Arts degree: BA

Undergraduate Major Description and Code
• Major in Psychology: PSYC

Graduate Degree Descriptions and Codes
• Master of Arts degree: MA
• Master of Human-Computer Interaction and Human Factors degree: MHCIHF
• Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code
• Degree Program in Human-Computer Interaction and Human Factors: HCIF
• Degree Program in Psychology: PSYC

Graduate Major Concentration Descriptions and Codes
• Major Concentration in Cognitive and Affective Neuroscience: PCAN (attached to the PhD degree)
• Major Concentration in Health Psychology and Behavioral Medicine Research: PHBM (attached to the PhD degree)
• Major Concentration in Human-Computer Interaction and Human Factors: PHCI (attached to the PhD degree)
• Major Concentration in Industrial-Organizational Psychology: PIOP (attached to the PhD degree)
• Major Concentration in Psychometrics and Quantitative Psychology: PPQP (attached to the PhD degree)

CIP Code and Description

• HCIF Major/Program: CIP Code/Title: 30.3101 - Human Computer Interaction
• PSYC Major/Program: CIP Code/Title: 42.0101 - Psychology, General
• PCAN Major Concentration: CIP Code/Title: 26.1501 - Neuroscience
• PHBM Major Concentration: CIP Code/Title: 42.2810 - Health/Medical Psychology
• PHCI Major Concentration: CIP Code/Title: 30.3101 - Human Computer Interaction
• PIOP Major Concentration: CIP Code/Title: 42.2804 - Industrial and Organizational Psychology
• PPQP Major Concentration: CIP Code/Title: 42.2708 - Psychometrics and Quantitative Psychology

1 Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Bachelor of Arts (BA) Degree with a Major in Psychology

Program Learning Outcomes for the BA Degree with a Major in Psychology

Upon completing the BA degree with a major in Psychology, students will be able to:

1. Describe key concepts, principles, and overarching themes in psychology, drawing on a broad knowledge base in psychology and its content domains.
2. Understand research methods, and develop and apply research skills. They will be able to explain different research methods used by psychologists, and design and conduct scientific studies to address psychological questions using appropriate research methods. Students will follow the APA Ethics Code in the treatment of human and nonhuman participants in the design, data collection, interpretation, and reporting of psychological research. Students will be able to generalize research conclusions appropriately based on the parameters of particular research methods.
3. Understand the applications of psychology. They will be able to describe major areas (e.g., clinical, cognitive, counseling, human factors, industrial/organizational) and emerging applied areas (e.g., health, forensics, media) of psychology. They will be able to identify appropriate applications of psychology in solving problems, such as: the pursuit and effect of healthy lifestyles; the origin and treatment of abnormal behavior; psychological tests and measurement; psychology-based interventions in areas such as clinical, cognitive, counseling, educational, human factors, and industrial/organizational psychology; and the resolution of interpersonal and intercultural conflicts. Students will be able to articulate how psychological principles can be used to explain social issues and inform public policy. Students will be able to apply psychological concepts, theories, and research findings as these relate to everyday life.
Requirements for the BA Degree with a Major in Psychology

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Psychology must complete:

- A minimum of 15 courses (47 credit hours) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 9 courses (27 credit hours) taken at the 300-level or above.

Once enrolled at Rice, students must obtain approval from the department to transfer courses taken at any other college or university.

The 5 courses listed below (comprising 17 credit hours) must be completed to satisfy the Core Requirements for this major. Students are strongly encouraged to complete the Core Requirements before taking the upper-level courses that comprise their Elective Requirements.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department's Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier. Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

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<td>Total Credit Hours Required for the BA Degree with a Major in Psychology</td>
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### Degree Requirements

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<td>INTRODUCTION TO SOCIAL PSYCHOLOGY</td>
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<td>PSYC 203</td>
<td>INTRODUCTION TO COGNITIVE PSYCHOLOGY</td>
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<td>STATISTICAL METHODS-PSYCHOLOGY</td>
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<td>PSYC 340</td>
<td>RESEARCH METHODS - PSYCHOLOGY</td>
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### Elective Requirements

Select a total of 10 additional courses from departmental (PSYC) course offerings.

### Footnotes and Additional Information

- Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.
- Students are strongly encouraged to complete the Core Requirements before taking the upper-level courses that comprise the Elective Requirements.
- No substitutions or transfer credits are allowed for PSYC 339, SOSC 302, or PSYC 340. In addition, students should complete PSYC 339 or SOSC 302 and PSYC 340 preferably by the end of their sophomore year.
- Students may take up to 12 credit hours (combined) of PSYC 485 and/or PSYC 488 to apply toward the major, but only 3 of the 12 credit hours may be from PSYC 488.

### Policies for the BA Degree with a Major in Psychology

#### Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [https://oaa.rice.edu](https://oaa.rice.edu). Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

#### Departmental Honors Program

For additional information, please see the Psychological Sciences website: [https://psychology.rice.edu/](https://psychology.rice.edu/)

### Opportunities for the BA Degree with a Major in Psychology

#### Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

#### Departmental Honors Program

Qualified students may apply to the honors program during preregistration in the spring semester of their junior year. A written proposal for the project must be submitted by the end of the second week of classes in the fall of their senior year, and the faculty will decide on final admission to the honors program by the end of the fourth week of classes. Admission to the honors program requires a major GPA of 3.70 and an overall GPA of 3.50, completion of PSYC 339 or SOSC 302, and completion of or concurrent enrollment in PSYC 340. To graduate
with departmental honors, students must complete the requirements for the major, a written honors thesis approved by a faculty committee, and other requirements as determined by their honors committee. Detailed information about the honors program is available from the instructor of the course or the department website (https://psychology.rice.edu/).

Additional Information
For additional information, please see the Psychological Sciences website: https://psychology.rice.edu/

Doctor of Philosophy (PhD) Degree in the field of Psychology

Program Learning Outcomes for the MA and PhD Degrees in the field of Psychology

Upon completing the MA and PhD degrees in the field of Psychology, students will be able to:

1. Describe key concepts, principles, and overarching themes in psychology and develop a comprehensive knowledge of scientific theories and empirical findings in a specialty area.
2. Explain different research methods used by psychologists, and design and conduct studies to address psychological questions using appropriate research methods. They will analyze data from any of a wide variety of research designs using appropriate univariate, multivariate, and/or graphical methods. Students will demonstrate that they follow the APA Ethics Code in the treatment of human and nonhuman participants in the design, data collection, interpretation, and reporting of psychological research.
3. Apply scientific reasoning to interpret psychological phenomena. They will be able to identify methodological and statistical problems in published research and evaluate the appropriateness of conclusions derived from psychological research.
4. Write a paper that clearly summarizes previous research, details methods used in the research, presents statistical analyses, and relates the findings to previous research and theory. They will communicate results—through writing, tables, and graphs—that clearly and accurately reflect research findings. Students will present their research and answer questions in a formal setting.

Requirements for the MA and PhD Degrees in the field of Psychology

The MA degree is a thesis master's degree. For general university requirements, please see Thesis Master’s Degrees (p. 68). For general university requirements for PhD degrees, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). For both MA and PhD degrees, students must complete a research thesis, including a public oral defense. Required coursework is determined by the student’s Research Interest Group (cognitive and affective neuroscience, human factors/human-computer interaction, industrial/organizational, or psychometrics and quantitative psychology). Students must complete an admission-to-candidacy procedure to establish their expertise in their chosen specialty. Competence in a foreign language is not required. For additional information on each Research Interest Group (RIG), please see the Department of Psychological Sciences Graduate Program (https://psychology.rice.edu/graduate/).

Research Interest Groups (RIGs)

- **Cognitive and Affective Neuroscience**: The Cognitive RIG seeks an understanding of such basic mental activities as perceiving, attending, remembering, learning, judging, verbalizing, and imagining. The Affective Neuroscience RIG investigates the relationship between the human brain and higher forms of behavior, including sensation, perception, attention, memory, language, social cognition, emotion, emotion regulation, and health.
- **Human Factors/Human-Computer Interaction**: The Human Factors/Human-Computer Interaction RIG investigates interactions among humans and other elements of a system. We are especially concerned with the interaction of humans with computer systems.
- **Industrial/Organizational Psychology**: The Industrial and Organizational (I/O) RIG studies human behavior in organizational and work situations. Topics include motivation at work, the aging workforce, discrimination in the workplace, job performance, and team training.
- **Psychometrics and Quantitative Psychology**: Psychological science critically depends on data that are reliable, accurate, valid, and fair. Serving this purpose, PhD students in the Psychometrics and Quantitative Psychology RIG obtain specialized skills related to the substantive development; statistical modeling and analysis; and resulting interpretation of psychological measures, experiments, and interventions.

The program has a strong research orientation, and whether or not students plan to pursue a research career, they are expected to spend a large portion of their graduate years actively engaged in research.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the PhD Degree in the field of Psychology</td>
<td>90</td>
</tr>
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</table>

Policies for the PhD Degree in the field of Psychology

Department of Psychological Sciences Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Psychological Sciences publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Psychology_Graduate_Handbook.pdf

Additional Information
For additional information, please see the Psychological Sciences website: https://psychology.rice.edu/

Opportunities for the PhD Degree in the field of Psychology

Additional Information
For additional information, please see the Psychological Sciences website: https://psychology.rice.edu/
Doctor of Philosophy (PhD) Degree in the field of Psychology and a Major Concentration in Cognitive and Affective Neuroscience

Program Learning Outcomes for the PhD Degree in the field of Psychology and a Major Concentration in Cognitive and Affective Neuroscience

Upon completing the PhD degree in the field of Psychology and a major concentration in Cognitive and Affective Neuroscience, students will be able to:

1. Apply theoretical and methodological tools necessary to carry out independent research in cognitive neuroscience.
2. Write an independent and original thesis that is of sufficient quality to merit publication in a top cognitive psychology or cognitive neuroscience journal.
3. Conduct a focused review of the literature and develop a research design to carry out independent research.
4. Defend their research design and data analysis choices by presenting their paper in a seminar environment.
5. Communicate their research effectively by writing clearly, concisely and cogently.
6. Read critically and assess research manuscripts related to their field of study and in other fields.

Requirements for the MA and PhD Degrees in the field of Psychology

MA Degree Program

The MA degree is a thesis master's degree. For general university requirements, please see Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Although students are not normally admitted to study for an MA in Psychology, graduate students may earn the MA degree after obtaining approval of their candidacy for the PhD. For general university requirements for PhD degrees, please see Doctoral Degrees (p. 65). For both MA and PhD degrees, students must complete a research thesis, including a public oral defense. Required coursework is determined by the student's major concentration. Students must complete an admission-to-candidacy procedure to establish their expertise in their chosen major concentration. Competence in a foreign language is not required.

Summary

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<th>Code</th>
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<tr>
<td>Total Credit Hours Required for the MA Degree in the field of Psychology</td>
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<td></td>
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</table>

Requirements for the PhD Degree in the field of Psychology

PhD Degree Program

For general university requirements, please see Doctoral Degrees (https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-doctoral-degrees/). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). In addition, students pursuing the PhD degree in the field of Psychology must:

- Complete all coursework with a minimum grade of B- (2.67 grade points) in each required course.
- Complete all of the course requirements in their major concentration.
- Successfully complete and present the first-year project in May of the first year.
- Successfully complete and present the second-year project in May of the second year.
- Write and defend a thesis. The thesis committee must be in the area of Cognitive and Affective Neuroscience and be overseen by a Psychology faculty member affiliated with the Cognitive and Affective Neuroscience Major Concentration.

Students who have not previously completed a master's degree in Psychology or a related field, must successfully defend a master's thesis and earn the MA degree in Psychology. Students who come to Rice with a master's degree in a related field can be exempted from this requirement.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Credit Hours Required for the PhD Degree in the field of Psychology and a Major Concentration in Cognitive and Affective Neuroscience</td>
<td>90</td>
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Degree Requirements for the PhD Degree in the field of Psychology and a Major Concentration in Cognitive and Affective Neuroscience

Core Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
<td>PSYC 502 / STAT 509</td>
<td>ADVANCED PSYCHOLOGICAL STATISTICS I</td>
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<tr>
<td>PSYC 503 / STAT 510</td>
<td>ADVANCED PSYCHOLOGICAL STATISTICS II</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 520</td>
<td>FOUNDATIONS OF COGNITIVE PSYCHOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 574 / NEUR 508</td>
<td>INTRODUCTION TO COGNITIVE NEUROSCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 577</td>
<td>INTRODUCTION TO FUNCTIONAL NEUROANATOMY</td>
<td>2-3</td>
</tr>
<tr>
<td>PSYC 660</td>
<td>PROFESSIONAL ISSUES</td>
<td>3</td>
</tr>
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</table>

Custom Core Courses

Select 1 course from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>PSYC 529</td>
<td>COGNITIVE RESEARCH SEMINAR</td>
<td>1-3</td>
</tr>
<tr>
<td>PSYC 532</td>
<td>HEALTH RESEARCH SEMINAR</td>
<td></td>
</tr>
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</table>

Neuroscience Core Courses
Select 2 courses from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>PSYC 575 / NEUR 501</td>
<td>ADVANCED COGNITIVE NEUROSCIENCE: ATTENTION AND PERCEPTION</td>
</tr>
<tr>
<td>PSYC 576 / NEUR 502</td>
<td>ADVANCED COGNITIVE NEUROSCIENCE: HIGHER MENTAL FUNCTIONS</td>
</tr>
<tr>
<td>PSYC 586</td>
<td>SOCIAL AND AFFECTIVE NEUROSCIENCE</td>
</tr>
</tbody>
</table>

Cognitive Core Courses
Select 2 courses from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>PSYC 524</td>
<td>MEMORY</td>
</tr>
<tr>
<td>PSYC 525</td>
<td>PSYCHOLINGUISTICS</td>
</tr>
<tr>
<td>PSYC 527</td>
<td>REASONING, DECISION MAKING, PROBLEM SOLVING</td>
</tr>
<tr>
<td>PSYC 581</td>
<td>VISION SCIENCE</td>
</tr>
</tbody>
</table>

Affective/Health Track Core Courses
Select 2 courses from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>PSYC 546</td>
<td>PSYCHONEUROIMMUNOLOGY</td>
</tr>
<tr>
<td>PSYC 547</td>
<td>FOUNDATIONS OF HEALTH PSYCHOLOGY</td>
</tr>
<tr>
<td>PSYC 550</td>
<td>FOUNDATIONS OF SOCIAL PSYCHOLOGY</td>
</tr>
</tbody>
</table>

Elective Requirements
Select 2 courses from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>BIOE 592</td>
<td>SENSORY NEUROENGINEERING</td>
</tr>
<tr>
<td>NEUR 430 / ELEC 484</td>
<td>FUNDAMENTALS OF HUMAN NEUROIMAGING</td>
</tr>
<tr>
<td>NEUR 505</td>
<td>OPTICAL IMAGING</td>
</tr>
<tr>
<td>PSYC 511</td>
<td>HISTORY AND SYSTEMS OF PSYCHOLOGY</td>
</tr>
<tr>
<td>PSYC 522</td>
<td>INFORMATION PROCESSING AND ATTENTION</td>
</tr>
<tr>
<td>PSYC 524</td>
<td>MEMORY</td>
</tr>
<tr>
<td>PSYC 525</td>
<td>PSYCHOLINGUISTICS</td>
</tr>
<tr>
<td>PSYC 527</td>
<td>REASONING, DECISION MAKING, PROBLEM SOLVING</td>
</tr>
<tr>
<td>PSYC 543</td>
<td>COMPUTATIONAL MODELING OF COGNITIVE PROCESSES</td>
</tr>
<tr>
<td>PSYC 546</td>
<td>PSYCHONEUROIMMUNOLOGY</td>
</tr>
<tr>
<td>PSYC 550</td>
<td>FOUNDATIONS OF SOCIAL PSYCHOLOGY</td>
</tr>
<tr>
<td>PSYC 552</td>
<td>EMOTION REGULATION</td>
</tr>
<tr>
<td>PSYC 575 / NEUR 501</td>
<td>ADVANCED COGNITIVE NEUROSCIENCE: ATTENTION AND PERCEPTION</td>
</tr>
<tr>
<td>PSYC 576 / NEUR 502</td>
<td>ADVANCED COGNITIVE NEUROSCIENCE: HIGHER MENTAL FUNCTIONS</td>
</tr>
<tr>
<td>PSYC 578</td>
<td>COGNITIVE NEUROPSYCHOLOGY: THEORIES AND METHODS</td>
</tr>
<tr>
<td>PSYC 580</td>
<td>DEVELOPMENTAL COGNITIVE NEUROSCIENCE</td>
</tr>
<tr>
<td>PSYC 581</td>
<td>VISION SCIENCE</td>
</tr>
<tr>
<td>PSYC 586</td>
<td>SOCIAL AND AFFECTIVE NEUROSCIENCE</td>
</tr>
<tr>
<td>PSYC 590</td>
<td>ADVANCED TOPICS IN NEUROSCIENCE</td>
</tr>
<tr>
<td>PSYC 620</td>
<td>ADVANCED TOPICS IN COGNITIVE PSYCHOLOGY</td>
</tr>
<tr>
<td>PSYC 621</td>
<td>TOPICS IN MEMORY</td>
</tr>
<tr>
<td>PSYC 622</td>
<td>TOPICS IN PSYCHOLINGUISTICS</td>
</tr>
<tr>
<td>PSYC 665</td>
<td>SEMINAR IN GENES AND COGNITION</td>
</tr>
<tr>
<td>PSYC 681</td>
<td>PERCEPTUAL ORGANIZATION</td>
</tr>
</tbody>
</table>

Second-Year Project

Theorist Requirement
Completion and public defense of a thesis

Additional Coursework as Approved by Department
Total Credit Hours Minimum of 90

Footnotes and Additional Information
1. Students enrolled in the PhD degree major concentration in Cognitive and Affective Neuroscience must select either PSYC 529 or PSYC 532 and attend the seminar each semester throughout their enrollment.
2. Students enrolled in the PhD degree major concentration in Cognitive and Affective Neuroscience can select UT School of Public Health courses, subject to approval by department.
3. Elective options PSYC 590, PSYC 620, PSYC 621, and PSYC 622 may only be taken once.

Policies for the PhD Degree in the field of Psychology

Department of Psychological Sciences Graduate Program Handbook
The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Psychological Sciences publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Psychology_Graduate_Handbook.pdf

Additional Information
For additional information, please see the Psychological Sciences website: https://psychology.rice.edu/

Opportunities for the PhD Degree in the field of Psychology

Additional Information
For additional information, please see the Psychological Sciences website: https://psychology.rice.edu/

Doctor of Philosophy (PhD) Degree in the field of Psychology and a Major Concentration in Health Psychology and Behavioral Medicine Research

Program Learning Outcomes for the PhD Degree in the field of Psychology and a Major Concentration in Health Psychology and Behavioral Medicine Research

Upon completing the PhD degree in the field of Psychology and a major concentration in Health Psychology and Behavioral Medicine Research, students will be able to:

1. Apply the theoretical tools necessary to carry out independent research in health psychology.
2. Apply the methodological and statistical tools necessary to carry out independent research in health psychology.

3. Conduct a focused literature review tied to an independent research question, design and run a health research study, and write up the results in an APA formatted paper.

4. Communicate and defend their research designs and modeling choices when presenting papers and presentations.

5. Write an independent and original dissertation that is of sufficient quality to merit publication in a top journal within the field of health psychology.

Requirements for the MA and PhD Degrees in the field of Psychology

MA Degree Program

The MA degree is a thesis master’s degree. For general university requirements, please see Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Although students are not normally admitted to study for an MA in Psychology, graduate students may earn the MA degree after obtaining approval of their candidacy for the PhD. For general university requirements for PhD degrees, please see Doctoral Degrees (p. 65). For both MA and PhD degrees, students must complete a research thesis, including a public oral defense. Required coursework is determined by the student’s major concentration. Students must complete an admission-to-candidacy procedure to establish their expertise in their chosen major concentration. Competence in a foreign language is not required.

Summary

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<tr>
<th>Code</th>
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<tbody>
<tr>
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</tbody>
</table>

Total Credit Hours Required for the MA Degree in the field of Psychology 30

Requirements for the PhD Degree in the field of Psychology

PhD Degree Program

For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). In addition, students pursuing the PhD degree in the field of Psychology must:

• Complete all coursework with a minimum grade of B- (2.67 grade points) in each required course.
• Complete all of the course requirements in their major concentration.
• Successfully complete and present the first-year project in May of the first year.
• Successfully complete and present the second-year project in May of the second year.
• Write and defend a thesis. The thesis committee must be in the area of Health Psychology and Behavioral Medicine Research and be overseen by a Psychology faculty member affiliated with the Health Psychology and Behavioral Medicine Research Major Concentration.

Students who have not previously completed a master’s degree in Psychology or a related field, must successfully defend a master’s thesis and earn the MA degree in Psychology. Students who come to Rice with a master’s degree in a related field can be exempted from this requirement.

Degree Requirements for the PhD Degree in the field of Psychology and a Major Concentration in Health Psychology and Behavioral Medicine Research

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
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</table>

Total Credit Hours Required for the PhD Degree in the field of Psychology and a Major Concentration in Health Psychology and Behavioral Medicine Research 90

Core Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>PSYC 502 / STAT 509</td>
<td>ADVANCED PSYCHOLOGICAL STATISTICS I</td>
<td>4</td>
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<tr>
<td>PSYC 503 / STAT 510</td>
<td>ADVANCED PSYCHOLOGICAL STATISTICS II</td>
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</tr>
<tr>
<td>PSYC 520</td>
<td>FOUNDATIONS OF COGNITIVE PSYCHOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 532</td>
<td>HEALTH RESEARCH SEMINAR</td>
<td>1-3</td>
</tr>
<tr>
<td>PSYC 546</td>
<td>PSYCHONEUROIMMUNOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>or PSYC 586</td>
<td>SOCIAL AND AFFECTIVE NEUROSCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 547</td>
<td>FOUNDATIONS OF HEALTH PSYCHOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 550</td>
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Statistical Requirements

Select 1 course from the following:

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<tr>
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<td>PSYC 601</td>
<td>MULTIVARIATE STATISTICS</td>
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</tr>
<tr>
<td>PSYC 602</td>
<td>PSYCHOMETRICS</td>
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Professional Issues

<table>
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<tr>
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<th>Title</th>
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<tbody>
<tr>
<td>PSYC 660</td>
<td>PROFESSIONAL ISSUES</td>
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Elective Requirements

Select 3 courses from the following:

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<th>Title</th>
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</thead>
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<tr>
<td>PSYC 511</td>
<td>HISTORY AND SYSTEMS OF PSYCHOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 546</td>
<td>PSYCHONEUROIMMUNOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 586</td>
<td>SOCIAL AND AFFECTIVE NEUROSCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 630</td>
<td>ADVANCED TOPICS IN I/O</td>
<td>3</td>
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<td>PSYC 631</td>
<td>FOUNDATIONS OF INDIVIDUAL DIFFERENCES</td>
<td>3</td>
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<tr>
<td>PSYC 636</td>
<td>ORGANIZATIONAL PSYCHOLOGY</td>
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<td>PSYC 651</td>
<td>TOPICS IN SOCIAL PSYCHOLOGY</td>
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First-Year Project

Second-Year Project

Thesis Requirement

Additional Coursework as Approved by Department

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
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</table>

Minimum of 90

Footnotes and Additional Information

1 Students may select other elective courses if approved by an advisor in consultation with the faculty under the Major Concentration.
Policies for the PhD Degree in the field of Psychology

Department of Psychological Sciences Graduate Program Handbook

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Opportunities for the PhD Degree in the field of Psychology

Additional Information
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Doctor of Philosophy (PhD) Degree in the field of Psychology and a Major Concentration in Human-Computer Interaction and Human Factors

Program Learning Outcomes for the PhD Degree in the field of Psychology and a Major Concentration in Human-Computer Interaction and Human Factors

Upon completing the PhD degree in the field of Psychology and a major concentration in Human-Computer Interaction and Human Factors, students will be able to:

1. Apply theoretical and methodological tools to carry out independent research in human-computer interaction and human factors.
2. Write an independent and original thesis that is of sufficient quality to merit publication in a top human factors/human-computer interaction journal.
3. Conduct a focused review of the literature and develop a research design to carry out independent research.
4. Communicate and defend their research design and modeling choices when presenting their papers and/or presentations.
5. Communicate their research effectively by writing clearly, concisely, and cogently.
6. Read critically and assess research manuscripts related to their field of study and in other fields.

Requirements for the MA and PhD Degrees in the field of Psychology

MA Degree Program
The MA degree is a thesis master's degree. For general university requirements, please see Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Although students are not normally admitted to study for an MA in Psychology, graduate students may earn the MA degree after obtaining approval of their candidacy for the PhD. For general university requirements for PhD degrees, please see Doctoral Degrees (p. 65). For both MA and PhD degrees, students must complete a research thesis, including a public oral defense. Required coursework is determined by the student's major concentration. Students must complete an admission-to-candidacy procedure to establish their expertise in their chosen major concentration. Competence in a foreign language is not required.

Requirements for the PhD Degree in the field of Psychology

PhD Degree Program
For general university requirements, please see Doctoral Degrees (https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-doctoral-degrees/). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). In addition, students pursuing the PhD degree in the field of Psychology must:

- Complete all coursework with a minimum grade of B- (2.67 grade points) in each required course.
- Complete all of the course requirements in their major concentration.
- Successfully complete and present the first-year project in May of the first year.
- Successfully complete and present the second-year project in May of the second year.
- Write and defend a thesis. The thesis committee must be in the area of Human-Computer Interaction and Human Factors and be overseen by a Psychology faculty member affiliated with the Human-Computer Interaction and Human Factors Major Concentration.

Students who have not previously completed a master's degree in Psychology or a related field, must successfully defend a master's thesis and earn the MA degree in Psychology. Students who come to Rice with a master's degree in a related field can be exempted from this requirement.

Summary

<table>
<thead>
<tr>
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<th>Title</th>
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</thead>
<tbody>
<tr>
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</tbody>
</table>

Total Credit Hours Required for the MA Degree in the field of Psychology 30

Total Credit Hours Required for the PhD Degree in the field of Psychology and a Major Concentration in Human-Computer Interaction and Human Factors 90
Degree Requirements for the PhD Degree in the field of Psychology and a Major Concentration in Human-Computer Interaction and Human Factors

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSYC 502 / STAT 509</td>
<td>ADVANCED PSYCHOLOGICAL STATISTICS I</td>
<td>4</td>
</tr>
<tr>
<td>PSYC 503 / STAT 510</td>
<td>ADVANCED PSYCHOLOGICAL STATISTICS II</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 520</td>
<td>FOUNDATIONS OF COGNITIVE PSYCHOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 531</td>
<td>HF/HCI RESEARCH SEMINAR</td>
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<td>PSYC 540</td>
<td>FOUNDATIONS OF ENGINEERING PSYCHOLOGY</td>
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</tr>
<tr>
<td>PSYC 541</td>
<td>HUMAN-COMPUTER INTERACTION</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 609</td>
<td>METHODS IN HUMAN-COMPUTER INTERACTION</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 660</td>
<td>PROFESSIONAL ISSUES</td>
<td>3</td>
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</table>

Elective Requirements

Select 5 courses from the following: 15

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>PSYC 504</td>
<td>COMPUTER APPLICATIONS IN PSYCHOLOGY</td>
</tr>
<tr>
<td>PSYC 522</td>
<td>INFORMATION PROCESSING AND ATTENTION</td>
</tr>
<tr>
<td>PSYC 524</td>
<td>MEMORY</td>
</tr>
<tr>
<td>PSYC 525</td>
<td>PSYCHOLOGICALITY</td>
</tr>
<tr>
<td>PSYC 527</td>
<td>REASONING, DECISION MAKING, PROBLEM SOLVING</td>
</tr>
<tr>
<td>PSYC 530</td>
<td>FOUNDATIONS OF I-O PSYCHOLOGY</td>
</tr>
<tr>
<td>PSYC 543</td>
<td>COMPUTATIONAL MODELING OF COGNITIVE PROCESSES</td>
</tr>
<tr>
<td>PSYC 581</td>
<td>VISION SCIENCE</td>
</tr>
<tr>
<td>PSYC 601</td>
<td>MULTIVARIATE STATISTICS</td>
</tr>
<tr>
<td>PSYC 602</td>
<td>PSYCHOMETRICS</td>
</tr>
<tr>
<td>PSYC 630</td>
<td>ADVANCED TOPICS IN I/O</td>
</tr>
<tr>
<td>PSYC 634</td>
<td>PERSONNEL PSYCHOLOGY</td>
</tr>
<tr>
<td>PSYC 640</td>
<td>TOPICS IN HUMAN-COMPUTER INTERACTION</td>
</tr>
</tbody>
</table>

First-Year Project

Second-Year Project

Thesis Requirement

Completion and public defense of thesis

Additional Coursework as Approved by Department

Total Credit Hours Minimum of 90

Policies for the PhD Degree in the field of Psychology

Department of Psychological Sciences Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Psychological Sciences publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Psychology_Graduate_Handbook.pdf

Additional Information

For additional information, please see the Psychological Sciences website: https://psychology.rice.edu/

Opportunities for the PhD Degree in the field of Psychology

Additional Information

For additional information, please see the Psychological Sciences website: https://psychology.rice.edu/

Doctor of Philosophy (PhD) Degree in the field of Psychology and a Major Concentration in Industrial-Organizational Psychology

Program Learning Outcomes for the PhD Degree in the field of Psychology and a Major Concentration in Industrial-Organizational Psychology

Upon completing the PhD degree in the field of Psychology and a major concentration in Industrial-Organizational Psychology, students will be able to:

1. Apply the theoretical tools necessary to carry out independent research in industrial-organizational psychology.
2. Apply the methodological and statistical tools necessary to carry out independent research in industrial-organizational psychology.
3. Conduct a focused literature review tied to an independent research question.
4. Develop a research design to carry out independent research.
5. Communicate research effectively by writing clearly, concisely, and cogently.
6. Read critically and assess research manuscripts related to their field of study and in other psychological and multidisciplinary arenas.
7. Communicate and defend their research designs and modeling choices when presenting papers and/or presentations.
8. Write an independent and original thesis that is of sufficient quality to merit publication in a top journal within industrial-organizational psychology.

Requirements for the MA and PhD Degrees in the field of Psychology

MA Degree Program

The MA degree is a thesis master’s degree. For general university requirements, please see Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Although students are not normally admitted to study for an MA in Psychology, graduate students may earn the MA degree after obtaining approval of their candidacy for the PhD. For general university requirements for PhD degrees, please
see Doctoral Degrees (p. 65). For both MA and PhD degrees, students must complete a research thesis, including a public oral defense. Required coursework is determined by the student's major concentration. Students must complete an admission-to-candidacy procedure to establish their expertise in their chosen major concentration. Competence in a foreign language is not required.

**Summary**

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Credit Hours Required for the MA Degree in the field of Psychology</td>
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**Requirements for the PhD Degree in the field of Psychology**

**PhD Degree Program**

For general university requirements, please see Doctoral Degrees (https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-doctoral-degrees/). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). In addition, students pursuing the PhD degree in the field of Psychology must:

- Complete all coursework with a minimum grade of B (2.67 grade points) in each required course.
- Complete all of the course requirements in their major concentration.
- Successfully complete and present the first-year project in May of the first year.
- Successfully complete and present the second-year project in May of the second year.
- Write and defend a thesis. The thesis committee must be in the area of Industrial-Organizational Psychology and be overseen by a Psychology faculty member affiliated with the Industrial-Organizational Psychology Major Concentration.

Students who have not previously completed a master's degree in Psychology or a related field, must successfully defend a master’s thesis and earn the MA degree in Psychology. Students who come to Rice with a master's degree in a related field can be exempted from this requirement.

**Summary**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>Total Credit Hours Required for the PhD Degree in the field of Psychology and a Major Concentration in Industrial-Organizational Psychology</td>
<td></td>
<td>90</td>
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</tbody>
</table>

**Degree Requirements for the PhD Degree in the field of Psychology and a Major Concentration in Industrial-Organizational Psychology**

**Core Requirements**

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>PSYC 502 / STAT 509</td>
<td>ADVANCED PSYCHOLOGICAL STATISTICS I</td>
<td>4</td>
</tr>
<tr>
<td>PSYC 503 / STAT 510</td>
<td>ADVANCED PSYCHOLOGICAL STATISTICS II</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 530</td>
<td>FOUNDATIONS OF I-O PSYCHOLOGY</td>
<td>3</td>
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</table>

**Substantive Courses**

Select 3 courses from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>PSYC 533</td>
<td>I-O PSYCHOLOGY RESEARCH SEMINAR</td>
<td>1-3</td>
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<td>PSYC 634</td>
<td>PERSONNEL PSYCHOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 636</td>
<td>ORGANIZATIONAL PSYCHOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 660</td>
<td>PROFESSIONAL ISSUES</td>
<td>3</td>
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</table>

**Statistical Courses**

Select 2 courses from the following:

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>PSYC 507</td>
<td>RESEARCH METHODS</td>
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</tr>
<tr>
<td>PSYC 601</td>
<td>MULTIVARIATE STATISTICS</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 602</td>
<td>PSYCHOMETRICS</td>
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</tbody>
</table>

**Additional Courses for Breadth and Depth**

<table>
<thead>
<tr>
<th>Code</th>
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</thead>
<tbody>
<tr>
<td>PSYC 511</td>
<td>HISTORY AND SYSTEMS OF PSYCHOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 520</td>
<td>FOUNDATIONS OF COGNITIVE PSYCHOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 540</td>
<td>FOUNDATIONS OF ENGINEERING PSYCHOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 550</td>
<td>FOUNDATIONS OF SOCIAL PSYCHOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 631</td>
<td>FOUNDATIONS OF INDIVIDUAL DIFFERENCES</td>
<td>3</td>
</tr>
</tbody>
</table>

**Policies for the PhD Degree in the field of Psychology**

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**Additional Information**

For additional information, please see the Psychological Sciences website: https://psychology.rice.edu/
Opportunities for the PhD Degree in the field of Psychology

Additional Information

For additional information, please see the Psychological Sciences website: https://psychology.rice.edu/

Doctor of Philosophy (PhD) Degree in the field of Psychology and a Major Concentration in Psychometrics and Quantitative Psychology

Program Learning Outcomes for the PhD Degree in the field of Psychology and a Major Concentration in Psychometrics and Quantitative Psychology

Upon completing the PhD degree in the field of Psychology and a major concentration in Psychometrics and Quantitative Psychology, students will be able to:

1. Apply the statistical and measurement concepts necessary to carry out independent research involving psychological measurement.
2. Communicate research involving psychometrics and psychological measurement effectively by writing clearly, concisely, and cogently.
3. Read critically and assess research manuscripts for their psychometric content, across psychological and multidisciplinary arenas.
4. Communicate research by presenting papers and/or presentations.
5. Write an independent and original thesis that includes a strong emphasis in psychometrics and quantitative psychology.

Requirements for the MA and PhD Degrees in the field of Psychology

MA Degree Program

The MA degree is a thesis master’s degree. For general university requirements, please see Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Although students are not normally admitted to study for an MA in Psychology, graduate students may earn the MA degree after obtaining approval of their candidacy for the PhD. For general university requirements for PhD degrees, please see Doctoral Degrees (p. 65). For both MA and PhD degrees, students must complete a research thesis, including a public oral defense. Required coursework is determined by the student’s major concentration. Students must complete an admission-to-candidacy procedure to establish their expertise in their chosen major concentration. Competence in a foreign language is not required.

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<tr>
<td>PSYC 602</td>
<td>PSYCHOMETRICS</td>
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<td>PSYC 631</td>
<td>FOUNDATIONS OF INDIVIDUAL DIFFERENCES</td>
<td>3</td>
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</table>

Elective Requirements

Select 3 courses from the following:

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<tr>
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<tbody>
<tr>
<td>PSYC 543</td>
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</tr>
<tr>
<td>PSYC 601</td>
<td>MULTIVARIATE STATISTICS</td>
</tr>
<tr>
<td>PSYC 635</td>
<td>MULTILEVEL MODELING IN PSYCHOLOGICAL RESEARCH</td>
</tr>
<tr>
<td>PSYC 637</td>
<td>META-ANALYSIS IN PSYCHOLOGICAL RESEARCH</td>
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</table>

Requirements for the PhD Degree in the field of Psychology

PhD Degree Program

For general university requirements, please see Doctoral Degrees (https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-doctoral-degrees/). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). In addition, students pursuing the PhD degree in the field of Psychology must:

- Complete all coursework with a minimum grade of B- (2.67 grade points) in each required course.
- Complete all of the course requirements in their major concentration.
- Successfully complete and present the first-year project in May of the first year.
- Successfully complete and present the second-year project in May of the second year.
- Write and defend a thesis. The thesis committee must be in the area of Psychometrics and Quantitative Psychology and be overseen by a Psychology faculty member affiliated with the Psychometrics and Quantitative Psychology Major Concentration.

Students who have not previously completed a master’s degree in Psychology or a related field, must successfully defend a master’s thesis and earn the MA degree in Psychology. Students who come to Rice with a master’s degree in a related field can be exempted from this requirement.

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<tr>
<td>PSYC 631</td>
<td>FOUNDATIONS OF INDIVIDUAL DIFFERENCES</td>
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</table>

Total Credit Hours Required for the PhD Degree in the field of Psychology and a Major Concentration in Psychometrics and Quantitative Psychology

90

Degree Requirements for the PhD Degree in Psychology and a Major Concentration in Psychometrics and Quantitative Psychology

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tbody>
<tr>
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<td>PSYC 507</td>
<td>RESEARCH METHODS</td>
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</tr>
<tr>
<td>PSYC 602</td>
<td>PSYCHOMETRICS</td>
<td>3</td>
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<tr>
<td>PSYC 631</td>
<td>FOUNDATIONS OF INDIVIDUAL DIFFERENCES</td>
<td>3</td>
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</table>

Elective Requirements

Select 3 courses from the following:

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<td>PSYC 637</td>
<td>META-ANALYSIS IN PSYCHOLOGICAL RESEARCH</td>
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### PSYC 638  STRUCTURAL EQUATION MODELING

<table>
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<td>First-Year Project</td>
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<td>Second-Year Project</td>
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<tr>
<td>Thesis Requirement</td>
<td></td>
</tr>
<tr>
<td>Completion and public defense of a thesis</td>
<td></td>
</tr>
<tr>
<td>Additional Coursework as Approved by Department</td>
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</tr>
<tr>
<td>Total Credit Hours</td>
<td>Minimum of 90</td>
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</tbody>
</table>

**Footnotes and Additional Information**

1. Elective courses selected must be approved by department.

**Policies for the PhD Degree in the field of Psychology**

**Department of Psychological Sciences Graduate Program Handbook**

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**Opportunities for the PhD Degree in the field of Psychology**

**Additional Information**

For additional information, please see the Psychological Sciences website: [https://psychology.rice.edu/](https://psychology.rice.edu/)

**Religion**

**Contact Information**

Religion  
[https://reli.rice.edu/](https://reli.rice.edu/)  
225 Humanities Building  
713-348-5201  

**Elias K. Bongmba**  
Department Chair  
bongmba@rice.edu

The Religion department’s undergraduate major is built to be as flexible as possible so that students may pursue individual interests and interdisciplinary goals. The major provides students with the opportunity to explore mainline religious traditions and marginal/repressed religious currents within multicultural and transnational contexts. Students will gain religious literacy while studying the historical, social, cultural, psychological, philosophical, and cognitive dynamics of religion and religious experience.

The department also offers an undergraduate minor for students who wish to master a core body of basic knowledge about the study of religion and have the opportunity to get a broad overview of the study of Religion as a field which is outside their major focus of study at Rice.

The department is well-known for its graduate program in the study of Religion which provides students with the opportunity to apprentice with premier faculty and tailor their program of study to their interests. While vibrant coursework in traditional religions is offered, the department is especially known for an emphasis on heterodoxy and multiculturalism. As part of its graduate program, the Religion department offers a Master of Arts and a PhD degree. Additionally, the Certificate in Gnosticism, Esotericism, and Mysticism (GEM) is an extra graduate-level credential the department offers to degree-seeking graduate students.

**Bachelor’s Program**

- Bachelor of Arts (BA) Degree with a Major in Religion  
  (p. 798)

**Minor**

- Minor in Religion  
  (p. 804)

**Master’s Program**

- Master of Arts (MA) Degree in the field of Religion  
  (p. 802)(thesis terminal master’s degree)  
- Master of Arts (MA) Degree in the field of Religion*

**Doctoral Program**

- Doctor of Philosophy (PhD) Degree in the field of Religion  
  (p. 801)

**Certificate**

- Certificate in Gnosticism, Esotericism and Mysticism  
  (p. 463)  
- Although students are not normally admitted to a Master of Arts (MA) degree program, graduate students may earn the MA as they work towards the PhD.

**Chair**

Elias K. Bongmba

**Director of Undergraduate Studies**

Niki Clements

**Director of Graduate Studies (MA)**

Claire Fanger

**Director of Graduate Studies (PhD)**

William B. Parsons

**Professors**

Elias K. Bongmba  
Marcia Brennan  
David Cook  
April D. DeConick  
Matthias Henze  
Anne C. Klein  
Jeffrey J. Kripal  
William B. Parsons  
Anthony B. Pinn  
John M. Stroup
Bachelor of Arts (BA) Degree with a Major in Religion

Program Learning Outcomes for the BA Degree with a Major in Religion

Upon completing the BA degree with a major in Religion, students will be able to:

1. Develop and apply critical toolkit to the study of religion and religious traditions including (inter)disciplinary methodologies and theories at a proficient level.
   (Critical Skills for the Study of Religion: Theory, Method, and (Inter)Disciplinarity)

2. Understand and interpret religious traditions by examining religion(s) as historical, social, and cultural phenomena. When appropriate, attention is given to the impact of globalization, immigration, colonialism, and other forms of transnational and multi-cultural (non)religious exchange at a proficient level.
   (Historical, Social, (Multi-)Cultural Dimensions of Religion)

3. Understand and interpret the subjective dimensions of religion(s) through analyses that explore the psychological, philosophical, and cognitive dynamics of religion and religious experience at a proficient level.
   (Psychological, Philosophical, and Cognitive Dimensions of Religion)

4. Understand and interpret religious traditions by examining the plurality of religious voices and expressions, including currents that have been marginalized, neglected, repressed, and censored in a variety of sociological, psychological, philosophical, and political ways at a proficient level.
   (Religious Plurality and Marginal Currents)

5. Develop the ability to read religious texts in their original languages and perform translations of texts when appropriate to the student's course of study at a proficient level.
   (Foreign Language Skills)

Requirements for the BA Degree with a Major in Religion

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Religion must complete:

- A minimum of 10 courses (30 credit hours) to satisfy major requirements.
- A minimum of 120 courses to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 6 courses (18 credit hours) taken at the 300-level or above.
- A maximum of 2 courses (6 credit hours) from study abroad or transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor, or where applicable, the department's Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
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<th>Credit Hours</th>
</tr>
</thead>
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<td>RELM</td>
<td>Minor: CIP Code/Title: 38.0201 - Religion/Religious Studies</td>
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<td>Certificate: CIP Code/Title: 38.0299 - Religion/Religious Studies, Other</td>
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Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/
## Degree Requirements

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<th>Code</th>
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<td></td>
<td>American Religions (see course list below)</td>
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<td>Select 1 course from Indigenous African Religions/American</td>
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<td>Religions/Buddhism/Hinduism (see course list below)</td>
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<td>RELI 407</td>
<td>ARCHIVES OF THE IMPOSSIBLE</td>
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<td>SECRET RELIGION</td>
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<td>RELI 416</td>
<td>NEW TESTAMENT / CHRISTIAN ORIGINS</td>
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<td>RELI 417</td>
<td>GNOSTIC AMERICA</td>
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<td>RELI 421</td>
<td>FOUCALUT &amp; THE HERMENUTICS OF SELF</td>
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<td>RELIGION AND POLITICS IN AFRICA</td>
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<td>HISTORY AND METHODS: NINETEENTH CENTURY</td>
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<td>HISTORY AND METHODS: TWENTIETH CENTURY</td>
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<td>MAGIC AND POPULAR RELIGION</td>
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<td>VISIONS AND VISIONARY PRACTICES: MEDIEVAL TO MODERN</td>
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<td>RELI 449</td>
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<td>MYSTICISM: THEORIES AND METHODS</td>
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<td>RELI 470</td>
<td>BUDDHIST WISDOM TEXTS</td>
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<td>KABBALAH SEMINAR</td>
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**Total Credit Hours Required for the Major in Religion** 30

**Additional Credit Hours to Complete BA Degree Requirements** 30

## University Graduation Requirements

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<td>Total Credit Hours</td>
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### Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1. Selection of courses should be worked out programmatically with a faculty member advisor so that at least 3 courses form a concentrated area of study.

2. The Senior Project course is either a Seminar or Independent Study with a required research paper selected with advisor approval. See advisor for more information.

## Course Lists to Satisfy Requirements

### Judaism/Christianity/Islam/African-American Religions

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<td>RELI 105 / MDEM 105</td>
<td>INTRODUCTION TO MEDIEVAL CHRISTIAN THOUGHT</td>
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<td>RELI 108</td>
<td>INTRODUCTION TO JUDAISM</td>
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<tr>
<td>RELI 112</td>
<td>COMPARING CHRISTIANITIES</td>
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<tr>
<td>RELI 113</td>
<td>INTRODUCTION TO CHRISTIANITY IN AFRICA</td>
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<tr>
<td>RELI 116 / MDEM 116</td>
<td>MYSTICISM THROUGHOUT THE AGES</td>
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<td>RELI 124</td>
<td>RELIGION AND THE ART OF HAPPINESS</td>
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<td>INTRODUCTION TO BIBLICAL HEBREW II</td>
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<td>INTERMEDIATE BIBLICAL HEBREW III</td>
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<td>RELI 157</td>
<td>RELIGION AND HIP HOP CULTURE IN AMERICA</td>
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<td>RELI 158</td>
<td>LIBERATION THEOLOGIES</td>
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<tr>
<td>RELI 203 / HIST 201</td>
<td>JUDAISM OF JESUS AND HILLEL</td>
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<td>RELI 213</td>
<td>THE PROPHET JEREMIAH: THE BIBLICAL BOOK AND ITS RECEPTION IN JUDAISM AND CHRISTIANITY</td>
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<td>RELI 215 / FILM 215</td>
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<td>RELI 217</td>
<td>SHIFISM: ASSASSINS AND AYATULLAH</td>
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<td>THE LIFE OF THE PROPHET MUHAMMAD</td>
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<td>THE BOOK OF GENESIS</td>
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<td>RELI 294</td>
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<td>JESUS AND THE GOSPELS</td>
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<td>RELI 343  / HART 347</td>
<td>SEMINAR ON LOVE</td>
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<td>CHRISTIANITY AND ISLAM IN AFRICA</td>
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<td>RELI 350  / MDEM 350</td>
<td>DEMONS, MENTAL ILLNESS AND MEDICINE</td>
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<td>MAJOR ISSUES IN CONTEMPORARY ISLAM</td>
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<td>WHAT’S RELIGIOUS ABOUT BLACK RELIGION?</td>
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<td>RELIGIOUS TOLERANCE IN THE CRUCIBLE OF GLOBALIZATION</td>
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<td>PAUL AND THE NEW TESTAMENT</td>
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<td>THE MESSIAH</td>
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<td>LOST JUDAISMS: THE APOCRYPHAL WRITINGS</td>
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<td>RELI 383</td>
<td>THE DEAD SEA SCROLLS</td>
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<td>PILGRIMAGE AND CRUSADE</td>
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<td>RELI 385  / HIST 381</td>
<td>GOD, TIME AND HISTORY</td>
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<td>RELI 387</td>
<td>WESTERN ESOTERICISM: METHOD AND THEORY</td>
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<td>THE PSALMS AND THEIR POETIC AFTERLIFE</td>
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<td>SEARCH FOR GOD IN THE POSTMODERN WORLD</td>
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<td>RELI 391  / MDEM 391</td>
<td>THE REFORMATION &amp; ITS RESULTS</td>
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<td>RELI 395</td>
<td>LOSING YOUR RELIGION IN FILM &amp; FICTION &amp; MUSIC</td>
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<td>NEW TESTAMENT / CHRISTIAN ORIGINS</td>
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<td>HISTORY AND METHODS: NINETEENTH CENTURY</td>
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<td>ISLAM’S MYSTICAL AND ESOTERIC TRADITION</td>
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**Indigenous African Religions/American Religions/Buddhism/Hinduism**

**Code** | **Title**                                                      | **Credit Hours** |
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<td>RELI 232  / ASIA 232</td>
<td>RELIGIONS FROM INDIA</td>
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<td>RELIGION AND HIP HOP CULTURE IN AMERICA</td>
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<td>RELI 322  / ASIA 322</td>
<td>INTRODUCTION TO BUDDHISM</td>
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<td>ADVANCED TIBETAN LANGUAGE &amp; CULTURE</td>
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<td>SHAMANS, SAINTS, &amp; SAGES</td>
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<td>MIND AND ART, FILM AND LITERATURE IN BUDDHISM</td>
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<td>MUTANTS AND MYSTICS: RACE, SEXUALITY, AND THE FUTURE OF THE HUMANITIES</td>
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</table>
Departmental Honors Program

Qualified undergraduates may choose the option of writing a senior thesis and submitting it to the department for consideration to receive Distinction in Research and Creative Works. For details about the submission process and this honors award, visit the department's website. To complete the thesis, the student elects RELI 400, Senior Thesis. Students must have a minimum 3.20 GPA in Religion courses prior to enrolling in RELI 400, a Religion faculty supervisor, and the permission of the Undergraduate Director. Further details are available upon consultation with the department's Director of Undergraduate Studies.

Additional Information

For additional information, please see the Religion website: https://reli.rice.edu/

See https://humanities.rice.edu/student-life (https://humanities.rice.edu/student-life/) for tables of fellowships, prizes, and internships/practica that may be relevant to this major.

Doctor of Philosophy (PhD) Degree in the field of Religion

Program Learning Outcomes for the MA and PhD Degrees in the field of Religion

Upon completing the MA and PhD degrees in the field of Religion, students will be able to:

1. Develop and apply critical toolkit to the study of religion and religious traditions, including (inter)disciplinary methodologies and theories at a professional level.
   (Critical Skills for the Study of Religion: Theory, Method and (Inter)Disciplinarity)

2. Understand and interpret religious traditions by examining religion(s) as historical, social, and cultural phenomena. When appropriate, attention is given to the impact of globalism, immigration, colonialism, and other forms of transnational and multi-cultural (non)religious exchanges at a professional level.
   (Historical, Social, (Multi-)Cultural Dimensions of Religion)

3. Understand and interpret the subjective dimensions of religion(s) through analyses that explore the psychological, philosophical, and cognitive dynamics of religion and religious experience at a professional level.
   (Psychological, Philosophical and Cognitive Dimensions of Religion)

4. Understand and interpret religions traditions by examining the plurality of religious voice and expressions, including currents that have been marginalized, neglected, repressed, and censored in a variety of sociological, psychological, philosophical, and political ways at a professional level.
   (Religious Plurality and Marginal Currents)

5. Develop the ability to read and understand relevant scholarly research/literature that has been published in foreign languages. Develop the ability to read religious texts in their original languages and perform translations of texts when appropriate to the student's course of study at a professional level.
   (Foreign Language Skills)
6. Develop the ability to communicate effectively (inter)disciplinary knowledge and critical research in the classroom, at professional conferences, and in academic publications at a professional level.

(Communication: Pedagogy and Professionalism)

Requirements for the MA and PhD Degrees in the field of Religion

MA Degree Program

The MA degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Although students are not normally admitted to study for this non-thesis MA, graduate students may earn the MA after obtaining approval of their candidacy for the PhD.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</table>

Total Credit Hours Required for the MA Degree in the field of Religion 30

Requirements for the PhD Degree in the field of Religion

PhD Degree Program

For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). The graduate program accepts a limited number of qualified students. A distinguished undergraduate record and high scores on the Graduate Record Examination (GRE) are essential, and an advanced degree in the humanities is desirable. Students admitted into the program normally will receive financial assistance in the form of a tuition waiver and a stipend. As part of their training and in return for their stipends, students are expected to perform a minimum amount of services in return for their stipend by assisting the department as needed.

The PhD degree in the field of Religion is a five to eight year program. Students pursuing the PhD degree in the field of Religion must complete the following:

- A minimum of 36 credit hours taken in 500-level and 600-level seminars.
- 2 Graduate Methods Seminars: RELI 527 and RELI 559.
- Successful completion of the second-year review.
- Passing grades on reading examinations in 2 secondary research languages (French and German) before taking qualifying exams.
- Passing grades in 4 comprehensive examinations.
- Oral discussion of thesis proposal.
- Satisfactory completion of thesis and oral defense.

Summary

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Total Credit Hours Required for the PhD Degree in the field of Religion 90

Reading Lists

Reading lists are available for all Qualifying Exams. Students are expected to familiarize themselves with this material enough that they draw on it on their exams and the thesis itself. The graduate seminar is, in part, an introduction to areas of the reading list and to the techniques for engaging in deep, independent reading.

Policies for the PhD Degree in the field of Religion

Department of Religion Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Department of Religion publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Religion_PhD_Graduate_Handbook.pdf

Additional Information

For additional information, please see the Religion website: https://reli.rice.edu/

Opportunities for the PhD Degree in the field of Religion

Professional Development

Opportunities are available to teach undergraduate courses in the department. Students are encouraged to pursue teaching opportunities at colleges and universities. Limited funds also are available for students to attend conferences to present their research. The department encourages these and other efforts to prepare students for academic careers.

Additional Information

For additional information, please see the Religion website: https://reli.rice.edu/

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this degree.

Master of Arts (MA) Degree in the field of Religion

Program Learning Outcomes for the MA Degree in the field of Religion

Upon completing the MA degree in the field of Religion, students will be able to:

1. Develop and apply critical toolkit to the study of religion and religious traditions, including (inter)disciplinary methodologies and theories at a level of mastery.
   (Critical Skills for the Study of Religion: Theory, Method and (Inter)Disciplinarity)

2. Understand and interpret religious traditions by examining religion(s) as historical, social, and cultural phenomena. When appropriate, attention is given to the impact of globalization, immigration, colonialism, and other forms of transnational and multi-cultural (non)religious exchange at a level of mastery.
   (Historical, Social, (Multi-)Cultural Dimensions of Religion)
3. Understand and interpret the subjective dimensions of religion(s) through analyses that explore the psychological, philosophical, and cognitive dynamics of religion and religious experience at a level of mastery. *(Psychological, Philosophical, and Cognitive Dimensions of Religion)*

4. Understand and interpret religious traditions by examining the plurality of religious voices and expressions, including currents that have been marginalized, neglected, repressed, and censored in a variety of sociological, psychological, philosophical, and political ways at a level of mastery. *(Religious Plurality and Marginal Currents)*

5. Develop the ability to read and understand relevant scholarly research/literature that has been published in foreign languages. Develop the ability to read religious texts in their original languages and perform translations of texts when appropriate to the student’s course of study at a level of mastery. *(Foreign Language Skills)*

### Requirements for the MA Degree in the field of Religion

The MA degree is a thesis master’s degree. For general university requirements, please see Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MA degree in the field of Religion must complete:

- A minimum of 10 courses (30 credit hours) to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
- A minimum of 2 courses (6 credit hours) from the Graduate Methods Seminar Requirement.
- A minimum of 8 courses (24 credit hours) of graduate-level coursework in departmental (RELI) course offerings with a minimum grade of B- (2.67). At least 12 credit hours of the RELI coursework must be seminars at the 500 or 600-level, where research papers are required.
- A secondary language reading exam (French or German).
- A comprehensive exam on Method and Theory in the study of religion.
- A master’s thesis developed from a paper in a course that represents the student’s interests in the study of religion.
- An oral defense of thesis with student and three faculty members who have worked with the student in the Department of Religion. Candidacy, defense, and thesis submission will follow the guidelines described here (p. 68).
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 3.00 or higher in all Rice coursework that satisfies requirements for the thesis master’s degree with a minimum grade of B- (2.67 grade points) in departmental (RELI) course offerings.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

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### Degree Requirements

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<td>RELI 559</td>
<td>HISTORY AND METHODS: TWENTIETH CENTURY</td>
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</tr>
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### Policies for the MA Degree in the field of Religion

#### Department of Religion Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Department of Religion publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Religion_MA_Graduate_Handbook.pdf

#### Admission

Students will apply for admission to the MA program online (see https://reli.rice.edu for details). Each January, the faculty in the Religion Department will evaluate the applications and select the MA students for the next academic year.

#### Application for Degree

The student must file a petition to receive the MA. This petition can be obtained from the Graduate Administrator and must be approved and signed by the Chair of the Department and submitted to the Office of Graduate Studies. In exceptional cases, when a student who has completed the terminal MA, applies to the PhD program, and is admitted, the coursework already completed by the student may be applied toward the PhD requirements.

#### Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

#### Additional Information

For additional information, please see the Religion website: https://reli.rice.edu/
Opportunities for the MA Degree in the field of Religion

Additional Information

For additional information, please see the Religion website: https://reli.rice.edu/

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this degree.

Minor in Religion

Program Learning Outcomes for the Minor in Religion

Upon completing the minor in Religion, students will be able to:

1. Demonstrate knowledge of the critical toolkit used to the study of religion and religious traditions, including (inter)disciplinary methodologies and theories at a basic level.
   (Critical Skills for the Study of Religion: Theory, Method and (Inter)Disciplinarity)

2. Gain basic objective knowledge of the beliefs, practices, and institutional histories of the world's religions.
   (Religious Literacy)

Requirements for the Minor in Religion

Students pursuing the minor in Religion must complete:

- A minimum of 6 courses (18 hours) to satisfy minor requirements.
- A minimum of 3 courses (9 credit hours) taken at the 300-level or above.
- No courses from study abroad or transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor's academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the minor’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/)). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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Minor Requirements

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<tr>
<td>Religious Traditions</td>
<td>6</td>
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Select 1 course from each of the following categories (see course lists below):

- Judaism/Christianity/Islam/African-American Religions
- Indigenous African Religions/American Religions/ Buddhism/Hinduism

Elective Requirements

Select 3 courses from departmental (RELI) course offerings. 9

Total Credit Hours 18

Course Lists to Satisfy Requirements

Please Note: The following list of courses can be used to satisfy the requirements of the minor. Specific course offerings may vary from semester to semester. As noted above with minor requirements, in certain instances, courses not on the official list may be substituted upon approval of the minor's academic advisor. Students and their academic advisors should identify and clearly document the courses to be taken.

Judaism/Christianity/Islam/African-American Religions

Select 1 course from the following:

- RELI 104 / MDEM 103 INTRODUCTION TO JEWISH MYSTICISM
- RELI 105 / MDEM 105 INTRODUCTION TO MEDIEVAL CHRISTIAN THOUGHT
- RELI 108 INTRODUCTION TO JUDAISM
- RELI 112 COMPARING CHRISTIANITIES
- RELI 113 INTRODUCTION TO CHRISTIANITY IN AFRICA
- RELI 116 / MDEM 116 MYSTICISM THROUGHOUT THE AGES
- RELI 124 RELIGION AND THE ART OF HAPPINESS
- RELI 126 INTRODUCTION TO BIBLICAL HEBREW II
- RELI 127 INTERMEDIATE BIBLICAL HEBREW III
- RELI 157 RELIGION AND HIP HOP CULTURE IN AMERICA
- RELI 158 LIBERATION THEOLOGIES
- RELI 203 / HIST 201 JUDAISM OF JESUS AND HILLEL
- RELI 213 THE PROPHET JEREMIAH: THE BIBLICAL BOOK AND ITS RECEPTION IN JUDAISM AND CHRISTIANITY
- RELI 215 / FILM 215 MYSTIC CINEMA: KABBALAH IN FILM
- RELI 217 SHI'ISM: ASSASSINS AND AYATULLAH
- RELI 221 / ASIA 221 THE LIFE OF THE PROPHET MUHAMMAD
- RELI 223 QUR’AN AND COMMENTARY
- RELI 243 THE BOOK OF GENESIS
- RELI 270 INTRODUCTION TO THE BLACK CHURCH IN THE UNITED STATES
- RELI 271 / MDEM 271 MEDIEVAL POPULAR CHRISTIANITY
- RELI 282 INTRODUCTION TO CHRISTIANITY
- RELI 294 RELIGION IN FICTION AND FILM
- RELI 301 NIETZSCHE AND RELIGIOUS THOUGHT
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<tr>
<td>RELI 304</td>
<td>JESUS AND THE GOSPELS</td>
</tr>
<tr>
<td>RELI 343</td>
<td>SEMINAR ON LOVE</td>
</tr>
<tr>
<td>RELI 348</td>
<td>CHRISTIANITY AND ISLAM IN AFRICA</td>
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<tr>
<td>RELI 350 / MDEM 350</td>
<td>DEMONS, MENTAL ILLNESS AND MEDICINE</td>
</tr>
<tr>
<td>RELI 356</td>
<td>MAJOR ISSUES IN CONTEMPORARY ISLAM</td>
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<tr>
<td>RELI 357</td>
<td>WHAT’S RELIGIOUS ABOUT BLACK RELIGION?</td>
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<tr>
<td>RELI 359</td>
<td>RELIGIOUS TOLERANCE IN THE CRUCIBLE OF GLOBALIZATION</td>
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<tr>
<td>RELI 365</td>
<td>PAUL AND THE NEW TESTAMENT</td>
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<td>RELI 369</td>
<td>READING WRIGHT: THEISM AND ATHEISM IN THE WRITINGS OF RICHARD WRIGHT</td>
</tr>
<tr>
<td>RELI 381</td>
<td>THE MESSIAH</td>
</tr>
<tr>
<td>RELI 382</td>
<td>LOST JUDAISMS: THE APOCRYPHAL WRITINGS</td>
</tr>
<tr>
<td>RELI 383</td>
<td>THE DEAD SEA SCROLLS</td>
</tr>
<tr>
<td>RELI 384</td>
<td>PILGRIMAGE AND CRUSADE</td>
</tr>
<tr>
<td>RELI 385 / HIST 381</td>
<td>GOD, TIME AND HISTORY</td>
</tr>
<tr>
<td>RELI 387</td>
<td>WESTERN ESOTERICISM: METHOD AND THEORY</td>
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<td>RELI 388</td>
<td>THE PSALMS AND THEIR POETIC AFTERLIFE</td>
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<tr>
<td>RELI 390</td>
<td>SEARCH FOR GOD IN THE POSTMODERN WORLD</td>
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<tr>
<td>RELI 391</td>
<td>THE REFORMATION &amp; ITS RESULTS</td>
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<td>RELI 395</td>
<td>LOSING YOUR RELIGION IN FILM &amp; FICTION &amp; MUSIC</td>
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<td>RELI 406</td>
<td>CHRISTIANITY AND LATE ANTIQUITY</td>
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<td>RELI 415</td>
<td>SECRET RELIGION</td>
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<td>RELI 416</td>
<td>NEW TESTAMENT / CHRISTIAN ORIGINS</td>
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<tr>
<td>RELI 424</td>
<td>RELIGION AND POLITICS IN AFRICA</td>
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<td>RELI 426</td>
<td>RELIGION AND LITERATURE IN AFRICA</td>
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<td>RELI 427</td>
<td>HISTORY AND METHODS: NINETEENTH CENTURY</td>
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<td>RELI 428</td>
<td>HISTORY AND METHODS: TWENTIETH CENTURY</td>
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<tr>
<td>RELI 430</td>
<td>RELIGION, PSYCHOLOGY &amp; CULTURE</td>
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<tr>
<td>RELI 440</td>
<td>ISLAM’S MYSTICAL AND ESOTERIC TRADITION</td>
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<tr>
<td>RELI 441 / ASIA 441</td>
<td>MAGIC AND POPULAR RELIGION</td>
</tr>
<tr>
<td>RELI 442</td>
<td>CLASSICAL AND CONTEMPORARY ARABIC TEXTS</td>
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<tr>
<td>RELI 449</td>
<td>EARLY CHRISTIAN CONTROVERSIES</td>
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<tr>
<td>RELI 458</td>
<td>MYSTICISM: THEORIES AND METHODS</td>
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<tr>
<td>RELI 472</td>
<td>KABBALAH SEMINAR</td>
</tr>
<tr>
<td>RELI 476 / FREN 324 / POLI 324</td>
<td>FROM DECOLONIZATION TO GLOBALIZATION</td>
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<tr>
<td>RELI 481</td>
<td>GNOSTICISM SEMINAR</td>
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<tr>
<td>RELI 488</td>
<td>THE HISTORY OF RELIGIONS SCHOOLS</td>
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**Indigenous African Religions/African American Religions/Buddhism/Hinduism**

Select 1 course from the following:

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<tr>
<td>RELI 111</td>
<td>INTRODUCTION TO AFRICAN RELIGIONS</td>
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<td>RELI 113</td>
<td>INTRODUCTION TO CHRISTIANITY IN AFRICA</td>
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<tr>
<td>RELI 157</td>
<td>RELIGION AND HIP HOP CULTURE IN AMERICA</td>
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<td>RELI 230 / ASIA 230</td>
<td>ASIAN RELIGIONS IN AMERICA</td>
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<tr>
<td>RELI 231 / ASIA 231</td>
<td>AMERICAN METAPHYSICAL RELIGION</td>
</tr>
<tr>
<td>RELI 233 / TIBT 233</td>
<td>INTRODUCTION TO TIBETAN LANGUAGE, LITERATURE AND CULTURE</td>
</tr>
<tr>
<td>RELI 234 / TIBT 234</td>
<td>INTERMEDIATE TIBETAN LANGUAGE, LITERATURE AND CULTURE</td>
</tr>
<tr>
<td>RELI 270</td>
<td>INTRODUCTION TO THE BLACK CHURCH IN THE UNITED STATES</td>
</tr>
<tr>
<td>RELI 311</td>
<td>RELIGION AND HIP HOP CULTURE IN AMERICA</td>
</tr>
<tr>
<td>RELI 322 / ASIA 322</td>
<td>INTRODUCTION TO BUDDHISM</td>
</tr>
<tr>
<td>RELI 332 / TIBT 332</td>
<td>ADVANCED TIBETAN LANGUAGE &amp; CULTURE</td>
</tr>
<tr>
<td>RELI 333</td>
<td>KNOWING BODY/GLOWING MIND: BUDDHIST ARTS OF CONTEMPLATION AND ANALYSIS</td>
</tr>
<tr>
<td>RELI 337</td>
<td>SHAMANS, SAINTS, &amp; SAGES</td>
</tr>
<tr>
<td>RELI 340</td>
<td>THEOLOGY IN AFRICA</td>
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<tr>
<td>RELI 342 / ANTH 343</td>
<td>NEW RELIGIOUS MOVEMENTS IN AFRICA</td>
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<td>RELI 357</td>
<td>WHAT’S RELIGIOUS ABOUT BLACK RELIGION?</td>
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<td>RELI 359</td>
<td>RELIGIOUS TOLERANCE IN THE CRUCIBLE OF GLOBALIZATION</td>
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<td>RELI 369</td>
<td>READING WRIGHT: THEISM AND ATHEISM IN THE WRITINGS OF RICHARD WRIGHT</td>
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<tr>
<td>RELI 378</td>
<td>MIND AND ART, FILM AND LITERATURE IN BUDDHISM</td>
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<tr>
<td>RELI 393</td>
<td>MUTANTS AND MYSTICS: RACE, SEXUALITY, AND THE FUTURE OF THE HUMANITIES</td>
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<tr>
<td>RELI 417</td>
<td>GNOSTIC AMERICA</td>
</tr>
<tr>
<td>RELI 423 / ANTH 423</td>
<td>AFRICAN MYTHS AND RITUALS</td>
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<td>RELI 424</td>
<td>RELIGION AND POLITICS IN AFRICA</td>
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<td>RELI 426</td>
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<td>RELI 433</td>
<td>TIBETAN LANGUAGE AND CULTURE</td>
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<tr>
<td>RELI 458</td>
<td>MYSTICISM: THEORIES AND METHODS</td>
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Policies for the Minor in Religion

Program Restrictions and Exclusions

Students pursuing the minor in Religion should be aware of the following program restriction:

• As noted in Majors, Minors, and Certificates (p. 11), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the minor in Religion should be aware of the following departmental transfer credit guidelines:

• Transfer credit coursework cannot be used to count towards the minor.

Distribution Credit Information

The determination of distribution eligibility is done as part of the new course creation process (https://registrar.rice.edu/facstaff/courseprocess/). As part of an annual roll call (https://registrar.rice.edu/facstaff/distribution_credit/) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean's Offices of each of the academic schools.

Faculty and leadership in the academic schools are responsible for ensuring that the courses identified as distribution-eligible meet the criteria as set in the General Announcements (p. 26). Students are responsible for ensuring that they meet graduation requirements (p. 26) by completing coursework designated as distribution at the time of course registration.

Distribution courses from Religion (RELI) are broad-based, accessible to non-majors, and provide a foundation that enables students to integrate knowledge from multiple perspectives.

Additional Information

For additional information, please see the Religion website: https://reli.rice.edu/

Opportunities for the Minor in Religion

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Science Teaching

Contact Information

Science Teaching
http://space.rice.edu/MST/
224 Herman Brown Hall
713-348-4634
Patricia H. Reiff
Program Director
reiff@rice.edu

The Master of Science Teaching (MST) degree is a content-based, non-thesis, advanced degree primarily directed towards inservice middle school, IPC (Integrated Physics and Chemistry), Physics, or Astronomy high school teachers and other Education and Public Outreach (EPO) professionals. The goal of the program is to provide content and skills to inservice and preservice K-12 and informal educators, so that they will become proficient in, and able to teach, all the Planetary, Astronomy, and Space Science topics included in the Next Generation Science Standards and the State of Texas science standards.

The teachers who finish the program are encouraged to become master teachers in their school district, multiplying the impact of the program manifold by giving workshops and other inservice programs to other teachers, both in-state and across the country.

Science Teaching does not currently offer an academic program at the undergraduate level.

Master's Program

• Master of Science Teaching (MST) Degree (p. 807)

Director
Patricia H. Reiff

Application Review Committee
David Alexander
B. Paul Padley
Patricia H. Reiff

Advisory Council
David Alexander
Robert F. Curl, Jr. (Professor Emeritus)
Jason H. Hafner
Neal F. Lane (Professor Emeritus)
Linda M. McNeil
Carolyn A. Nichol
Anne Papakonstantinou
B. Paul Padley

Additional Information

For additional information, please see the Science Teaching website: https://humanities.rice.edu/student-life/ for tables of fellowships, prizes, and internships/practica that may be relevant to this minor.
Rice University

Patricia H. Reiff
Carolyn Sumners

Educational Professionals
Matthew Cushing
Carolyn Nichol
Anne Papakonstantinou
Richard Parr
Judy Radigan
Patricia H. Reiff
Carolyn Sumners

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
- Course offerings/subject codes: Courses from various subjects may apply towards this program.

Department Description and Code
- Physics and Astronomy: PHYS

Graduate Degree Description and Code
- Master of Science Teaching degree: MST

Graduate Degree Program Description and Code
- Degree Program in Science Teaching: STEA

CIP Code and Description
1
- STEA Major/Program: CIP Code/Title: 13.1316 - Science Teacher Education/General Science Teacher Education

1 Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Master of Science Teaching (MST) Degree

Program Learning Outcomes for the MST Degree
Upon completing the MST degree, students will be able to:

1. Solve problems based on Kepler’s Laws and Newton’s Laws using non-calculus mathematical techniques.
2. Demonstrate best practices for teaching scientific content.
3. Present an oral report on a scientific topic using presentation software such as Powerpoint.
4. Learn how to use scientific and astronomical equipment such as telescopes, digital cameras, GPS, and electronic devices, including multimeters, and/or portable planetariums.
5. Prepare a Final Project, which will include scientific research, educational research, and/or curriculum creation or analysis.

Requirements for the MST Degree
The MST degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MST degree must complete:

- A minimum of 30 credit hours to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University.
- A minimum of 15 credit hours from Content or Content/Skills Courses.
- A final project. Students will prepare a final project which will include scientific research, educational research, and/or curriculum creation or analysis.

The requirements for one area of specialization. The MST degree program offers nine areas of specialization:

- Astronomy, or
- Computer Science, or
- Earth Science, or
- Engineering, or
- Informal Science, or
- Integrated Physics and Chemistry (IPC), or
- Mathematics, or
- Middle School Science, or
- Physics.

- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree.

Each student will have a 3-person committee, with at least 2 members from the tenure-track faculty, to approve the student’s proposed program, advise on which specific courses will best suit the student’s needs, and approve their final project. At least 1 of the members of the committee will be an experienced Education Professional, who will ensure the appropriateness of the courses to the educator’s program. At least 1 person of the committee will be an expert in the content area that is the student’s primary teaching interest.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degwerk/officialcertifer/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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2019-2020 General Announcements
PDF Generated 1/29/2020
Degree Requirements

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<td>Core Requirements</td>
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<tr>
<td>ASTR 502</td>
<td>TEACHING EARTH AND SPACE SCIENCE</td>
<td></td>
</tr>
<tr>
<td>ASTR 503</td>
<td>ASTRONOMY FOR TEACHERS</td>
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<td>ASTR 530</td>
<td>TEACHING ASTRONOMY LABORATORY</td>
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<tr>
<td>ESCI 511</td>
<td>PUTTING EARTH SCIENCE INTO ACTION</td>
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<tr>
<td>PHYS 501</td>
<td>PHYSICS OF HAM RADIO FOR TEACHERS</td>
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<td></td>
<td>Additional Content/Skills or Education Courses</td>
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<tr>
<td>EDUC 519</td>
<td>TEACHING AND LEARNING WITH INQUIRY</td>
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<tr>
<td>EDUC 520</td>
<td>TEACHING DIVERSE LEARNERS</td>
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<tr>
<td>EDUC 563</td>
<td>THEORY AND METHODS: MATHEMATICS</td>
<td></td>
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<tr>
<td></td>
<td>Research or Practicum</td>
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<tr>
<td>ESCI 515</td>
<td>GEOPHYSICAL FIELD WORK FOR EDUCATORS</td>
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<td>PHYS 800</td>
<td>GRADUATE RESEARCH</td>
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</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the MST Degree</td>
<td>30</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1  Astronomy, Computer Science, Earth Science, Engineering, Informal Science, Integrated Physics and Chemistry (IPC), Mathematics, Middle School Science, and Physics are example areas of specialization.

2  At least 9 credit hours should be directly related to the student's major area of specialization. There may be some courses at the 400-level that satisfy this requirement, but students should be aware that if they take courses at the 400-level, they may need to take additional courses at the 500-level or above to satisfy overall degree requirements. Students may also satisfy the requirement, upon approval of their graduate committee, by completing courses from departmental (ASTR, BIOC, CHEM, EBIO, EDUC, ENGI, ESCI, MATH, NSCI, or PHYS) course offerings at the 500-level or above.

3  Students may also satisfy the requirement, upon approval of their graduate committee, by completing courses from departmental (ASTR, BIOC, CHEM, EBIO, EDUC, ENGI, ESCI, MATH, NSCI, or PHYS) course offerings.

4  Students must complete, at a minimum, 3 credit hours from graduate research or teaching practicum (ESCI 515 or PHYS 800), developing a research project in conjunction with a science or educational advisor.

Policies for the MST Degree

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program's advisor when considering transfer credit possibilities.

Social Policy Analysis

Contact Information

Social Policy Analysis
https://sopa.rice.edu
102 Herzstein Hall
713-348-2694
Melissa J. Marschall
Program Director
marschal@rice.edu

The central focus of Rice University's Social Policy Analysis program is policy design, analysis, and communication. Interdisciplinary in nature, the curriculum's emphasis is on integrating rigorous instruction in theory and method with hands-on, skills-based instruction by social science faculty. The primary goal of the program is to train Rice students to obtain the specialized knowledge, skill and experience to be leaders in the field of social policy analysis.

The Social Policy Analysis program focuses on the evaluation of alternative interventions that proposed to improve human well-being. Graduates will be able to answer questions like: Which early interventions lead to greater educational attainment for low-income children? Which juvenile rehabilitation programs are more likely to reduce the recurrence of criminal behavior? How does healthcare policy influence our daily health behaviors? Without evidence-based research and rigorous evaluations to test these ideas, there is no way to know which solutions work and for whom. In a time of limited resources and rising demands, our leaders need the analytical expertise to make a demonstrable, sustained impact on the most pressing issues facing our cities and nation. The Social Policy Analysis program will train Rice students to meet these needs.

Bachelor's Program

- Bachelor of Arts (BA) degree with a major in Social Policy Analysis (p. 809)

Social Policy Analysis does not currently offer an academic program at the graduate level.

Director and Undergraduate Advisor

Melissa J. Marschall, Political Science

Advisory Board

Chase Lesane-Brown, Psychological Sciences
Flávio Cunha, Economics
Robert M. Stein, Political Science
**Program Learning Outcomes for the Bachelor of Arts (BA) Degree with a Major in Social Policy Analysis**

Upon completing the BA degree with a major in Social Policy Analysis, students will be able to:

1. Understand social policy as an interdisciplinary field and demonstrate the ability to synthesize key knowledge, theories, and research across different disciplines in the social sciences.
2. Develop critical analysis, problem solving and research skills in order to design and evaluate evidence-based interventions for social problems.
3. Demonstrate the ability to communicate policy research and findings in written and oral formats.

**Requirements for the BA Degree with a Major in Social Policy Analysis**

For general university requirements, see [Graduation Requirements](p. 26). Students pursuing the BA degree with a major in Social Policy Analysis must complete:

- A minimum of 14 courses (42-43 credit hours, depending on course selection) to satisfy major requirements.
- A minimum of 120 credit hours required to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 6 courses (18-19 credit hours, depending on course selection) taken at the 300-level or above.
- A maximum of 2 courses (6 credit hours) from study abroad or transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s [Official Certifier](https://registrar.rice.edu/facstaff/degeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Social Policy Analysis</td>
<td>42-43</td>
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<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Social Policy Analysis</td>
<td>120</td>
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**Degree Requirements**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I ¹ ⁴</td>
<td>3</td>
</tr>
<tr>
<td>or MATH 105</td>
<td>AP/OTH CREDIT IN CALCULUS I</td>
<td></td>
</tr>
<tr>
<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
<td>3</td>
</tr>
<tr>
<td>or MATH 106</td>
<td>AP/OTH CREDIT IN CALCULUS II</td>
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</table>

1. Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: [https://nces.ed.gov/ipeds/cipcode/](https://nces.ed.gov/ipeds/cipcode/)

---

**Rice University**

**Ruth N. Lopez Turley, Sociology**

**Affiliated Faculty**

Dominic C. Boyer, Anthropology  
Paul Brace, Political Science  
Jenifer L. Bratter, Sociology  
Tony N. Brown, Sociology  
Sergio Chavez, Sociology  
Flávio Cunha, Economics  
Justin T. Denney, Sociology  
Elaine Howard Ecklund, Sociology  
James Elliott, Sociology  
Christopher P. Fagundes, Psychological Sciences  
Bridget K. Gorman, Sociology  
Vivian Ho, Economics  
Mark P. Jones, Political Science  
Ruth Tolbert Kimbro, Sociology  
Stephen L. Klineberg, Sociology (Professor Emeritus)  
Chase Lesane-Brown, Psychological Sciences  
Melissa J. Marschall, Political Science  
Steve H. Murdock, Sociology  
Nancy A. Niedzielski, Linguistics  
Robert M. Stein, Political Science  
Ruth N. Lopez Turley, Sociology  
Kenneth Wolpin, Economics
Bachelor of Arts (BA) Degree with a Major in Social Policy Analysis

Core Requirements
Foundations Coursework
ECON 100 PRINCIPLES OF ECONOMICS 3
POLI 210 INTRODUCTION TO AMERICAN POLITICS 3
POLI 338 / SOSC 301 POLICY ANALYSIS 3
SOPA 200 APPROACHES TO SOCIAL POLICY 3

Select 1 course from the following: 3-4
ECON 307 / STAT 310 PROBABILITY AND STATISTICS
SOSC 302 QUANTITATIVE ANALYSIS FOR THE SOCIAL SCIENCES

Advanced Coursework
SOPA 400 SOPA CAPSTONE RESEARCH SEMINAR I 3
SOPA 401 SOPA CAPSTONE RESEARCH SEMINAR II 3

Elective Requirements 15

Students must complete a total of 5 courses from the Areas of Specialization listed below. At least 1 course must be taken from each of the 3 Areas of Specialization (see below for course lists for each Area of Specialization):

- Groups and Identities
- Institutions
- Policies, Processes, and Outcomes

Total Credit Hours Required for the Major in Social Policy Analysis 42-43

Additional Credit Hours to Complete BA Degree Requirements 17-18

University Requirements* 60

Total Credit Hours 120

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 MATH 111 and MATH 112 may substitute for the MATH 101 requirement.

Course Lists to Satisfy Requirements

Elective Requirements

Students must complete a total of 5 courses (15 credit hours) from the Areas of Specialization listed below as electives. At least 1 course (3 credit hours) must be taken from each of the 3 Areas of Specialization. The remaining 2 courses (6 credit hours) may be taken from any of the Areas of Specialization. Below is an illustrative list of courses. Student may consult with the major advisor to apply courses not on this list.

Area of Specialization: Groups and Identities

Select at least 1 course from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 354 / SWGS 353</td>
<td>ILLNESS, DISABILITY, AND THE GENDERED BODY</td>
<td></td>
</tr>
<tr>
<td>LING 205 / SWGS 205</td>
<td>LANGUAGE AND SOCIETY</td>
<td></td>
</tr>
<tr>
<td>LING 303</td>
<td>LANGUAGE AND GENDER</td>
<td></td>
</tr>
<tr>
<td>LING 322</td>
<td>LANGUAGE AND ETHNICITY</td>
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</tbody>
</table>

Area of Specialization: Institutions

Select at least 1 course from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>ANTH 326</td>
<td>LAW, POWER AND CULTURE</td>
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<tr>
<td>ANTH 340</td>
<td>NEOLIBERALISM AND GLOBALIZATION</td>
<td></td>
</tr>
<tr>
<td>ANTH 341 / HURC 341</td>
<td>MUSEUMS AND HERITAGE: EXHIBITING ART, EXHIBITING CULTURE</td>
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<tr>
<td>ANTH 345</td>
<td>THE POLITICS OF THE PAST: ARCHAEOLOGY IN SOCIAL CONTEXT</td>
<td></td>
</tr>
<tr>
<td>ECON 210</td>
<td>BEHAVIORAL ECONOMICS</td>
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<tr>
<td>ECON 239</td>
<td>LAW AND ECONOMICS</td>
<td></td>
</tr>
<tr>
<td>ECON 260</td>
<td>MICROECONOMICS AND PUBLIC POLICY</td>
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<tr>
<td>ECON 265</td>
<td>MICROECONOMICS AND PUBLIC POLICY TOWARDS BUSINESS</td>
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<td>ECON 270</td>
<td>MACROECONOMICS AND PUBLIC POLICY</td>
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<tr>
<td>ECON 275</td>
<td>INTERNATIONAL MACROECONOMICS AND PUBLIC POLICY</td>
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<tr>
<td>ECON 343</td>
<td>CORPORATE FINANCE</td>
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<tr>
<td>ECON 355</td>
<td>FINANCIAL MARKETS</td>
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</tr>
<tr>
<td>ECON 365 / HIST 365</td>
<td>WORLD ECONOMIC HISTORY</td>
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<td>ECON 435</td>
<td>INDUSTRIAL ORGANIZATION</td>
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<tr>
<td>ECON 493</td>
<td>ADVANCED TOPICS IN LAW AND ECONOMICS</td>
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<tr>
<td>ECON 452</td>
<td>RELIGION, ETHICS, AND ECONOMICS</td>
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<tr>
<td>ECON 455</td>
<td>MONEY AND BANKING</td>
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<tr>
<td>POLI 301</td>
<td>STATE POLITICS</td>
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<td>POLI 315</td>
<td>ELECTIONS AND VOTING BEHAVIOR</td>
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<td>POLI 317</td>
<td>THE CONGRESS</td>
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2019-2020 General Announcements
PDF Generated 1/29/2020
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<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tr>
<td>ENST 446</td>
<td>LAB IN ENGAGED URBAN SUSTAINABILITY AND LIVABILITY RESEARCH</td>
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<tr>
<td>POLI 260 / LEAD 260</td>
<td>ADVOCATING FOR IDEAS TO CHANGE THE WORLD</td>
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<td>POLI 315</td>
<td>ELECTIONS AND VOTING BEHAVIOR</td>
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<td>POLI 322</td>
<td>POLITICS OF INFLUENCE IN THE UNITED STATES</td>
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<td>POLI 329</td>
<td>HEALTH POLICY</td>
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<tr>
<td>POLI 337</td>
<td>PUBLIC POLICY</td>
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<td>POLI 348</td>
<td>URBAN POLITICS LAB</td>
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<td>POLI 356</td>
<td>REPRESENTATION AND POLICY MAKING</td>
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<td>POLI 432</td>
<td>URBAN POLITICS</td>
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<td>POLI 435</td>
<td>SEMINAR ON MONEY AND POLITICS</td>
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<td>POLI 438</td>
<td>RACE AND PUBLIC POLICY</td>
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<td>POLI 440</td>
<td>RESEARCH SEMINAR ON PUBLIC POLICY</td>
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<tr>
<td>POLI 441 / ENST 441</td>
<td>GOVERNING THE ENVIRONMENTAL COMMONS</td>
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<td>POLI 445</td>
<td>SEMINAR IN JUDICIAL PROCESS AND BEHAVIOR</td>
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<td>POLI 466</td>
<td>POLITICAL PARTIES AND VOTING BEHAVIOR IN WESTERN DEMOCRACIES</td>
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<tr>
<td>PSYC 345</td>
<td>HEALTH PSYCHOLOGY</td>
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<tr>
<td>PSYC 346</td>
<td>STRESS AND HEALTH ACROSS THE LIFESPAN</td>
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<tr>
<td>PSYC 345</td>
<td>POLLUTION AND PSYCHOLOGICAL DEVELOPMENT</td>
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<td>PSYC 445</td>
<td>ADVANCED SEMINAR IN HEALTH PSYCHOLOGY</td>
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<td>SMGT 361</td>
<td>SPORT FINANCE AND COMMUNITY ENGAGEMENT</td>
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<tr>
<td>SOCI 321</td>
<td>CRIMINOLOGY</td>
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<tr>
<td>SOCI 327</td>
<td>SUPERVISED RESEARCH I</td>
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<tr>
<td>SOCI 328</td>
<td>SUPERVISED RESEARCH II</td>
<td></td>
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<tr>
<td>SOCI 340</td>
<td>SOCIOLOGY OF IMMIGRATION</td>
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<tr>
<td>SOCI 344</td>
<td>SOCIOLOGY OF MENTAL HEALTH</td>
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<tr>
<td>SOCI 345</td>
<td>MEDICAL SOCIOLOGY</td>
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<td>SOCI 350</td>
<td>URBAN TRANSPORTATION</td>
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<td>SOCI 366</td>
<td>HOUSING AND SCHOOLS: THE SOCIAL LOCATIONS OF INEQUALITY</td>
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<td>SOCI 367 / ENST 367</td>
<td>ENVIRONMENTAL SOCIOLOGY</td>
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<td>SOCI 368</td>
<td>SOCIOLOGY OF DISASTER</td>
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<td>SOCI 406</td>
<td>BASIC DEMOGRAPHIC TECHNIQUES</td>
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<tr>
<td>SOCI 422</td>
<td>SOCIAL AUTOPSIES: HOW SOCIETY KILLS US</td>
<td></td>
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<tr>
<td>SOCI 425</td>
<td>POPULATION HEALTH SEMINAR</td>
<td></td>
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<tr>
<td>SOCI 451</td>
<td>IMMIGRATION IN A GLOBAL WORLD</td>
<td></td>
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<tr>
<td>SOCI 465 / SWGS 465</td>
<td>GENDER AND HEALTH</td>
<td></td>
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<tr>
<td>SOCS 300</td>
<td>BAKER INSTITUTE INTRODUCTION TO PUBLIC POLICY</td>
<td></td>
</tr>
<tr>
<td>SOCS 464 / BUSI 464 / GLHT 464</td>
<td>SOCIAL ENTREPRENEURSHIP</td>
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</tbody>
</table>

**Area of Specialization: Policies, Processes, and Outcomes**

Select at least 1 course from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>ANTH 332 / ENST 332</td>
<td>THE SOCIAL LIFE OF CLEAN ENERGY</td>
</tr>
<tr>
<td>ARCH 455</td>
<td>HOUSING AND URBAN PROGRAMS: ISSUES IN POLICY</td>
</tr>
<tr>
<td>ECON 415</td>
<td>LABOR ECONOMICS</td>
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<tr>
<td>ECON 418</td>
<td>ECONOMIC FORECASTING</td>
</tr>
<tr>
<td>ECON 432</td>
<td>POLITICAL ECONOMY</td>
</tr>
<tr>
<td>ECON 437 / ENST 437</td>
<td>ENERGY ECONOMICS</td>
</tr>
<tr>
<td>ECON 450</td>
<td>ECONOMIC DEVELOPMENT</td>
</tr>
<tr>
<td>ECON 462</td>
<td>ECONOMICS OF HUMAN CAPITAL</td>
</tr>
<tr>
<td>ECON 470</td>
<td>MARKET DESIGN</td>
</tr>
<tr>
<td>ECON 479</td>
<td>ECONOMIC MODELING AND PUBLIC POLICY</td>
</tr>
<tr>
<td>ECON 480 / ENST 480</td>
<td>ENVIRONMENTAL ECONOMICS</td>
</tr>
<tr>
<td>ECON 481</td>
<td>HEALTH ECONOMICS</td>
</tr>
<tr>
<td>ECON 483</td>
<td>PUBLIC FINANCE</td>
</tr>
<tr>
<td>ECON 484</td>
<td>PUBLIC ECONOMICS</td>
</tr>
<tr>
<td>ENST 445</td>
<td>SEMINAR IN URBAN SUSTAINABILITY AND LIVABILITY RESEARCH METHODS AND APPLICATIONS</td>
</tr>
</tbody>
</table>
Policies for the BA Degree with a Major in Social Policy Analysis

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines
Students pursuing the major in Social Policy Analysis should be aware of the following program-specific transfer credit guidelines:

• No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing may apply towards the major.
• Request for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information
For additional information, please see the Social Policy Analysis website: https://sopa.rice.edu/

Opportunities for the BA Degree with a Major in Social Policy Analysis

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Additional Information
For additional information, please see the Social Policy Analysis website: https://sopa.rice.edu/

Sociology

Contact Information
Sociology
https://sociology.rice.edu/
592 Sewall Hall
713-348-4831

James Elliott
Department Chair
jre5@rice.edu

Elaine Howard Ecklund
Graduate Program Director
ehe@rice.edu

Sergio Chavez
Undergraduate Program Director
sergio.chavez@rice.edu

Sociology is a branch of the social sciences that evolved in response to the revolutionary social changes of the 19th century, such as industrialization and urbanization, that ushered in the modern era. Sociology’s founding fathers include Emile Durkheim, Max Weber, Karl Marx, Herbert Spencer, and George Herbert Mead. They explored how social relationships and interactions affect individuals and large-scale social institutions, including religion, government, and education.

Today, sociologists use qualitative techniques, including ethnography; participant observation; and case studies of a variety of social phenomena, processes, and problems as methods for exploring the meaning of social life and culture to those who live it, and in building inductive theory. Quantitative techniques engage in hypothesis testing of established theories and concepts, using techniques that include experimental designs, survey questionnaires, and network analysis. Sociology as a discipline includes “ways of knowing” that link it closely to methods of the natural sciences, and more interpretive and critical perspectives that are closer to scholarship in the humanities.

Opportunities for the BA Degree with a Major in Social Policy Analysis

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Additional Information
For additional information, please see the Social Policy Analysis website: https://sopa.rice.edu/

Sociology

Contact Information
Sociology
https://sociology.rice.edu/
592 Sewall Hall
713-348-4831

James Elliott
Department Chair
jre5@rice.edu

Elaine Howard Ecklund
Graduate Program Director
ehe@rice.edu

Sergio Chavez
Undergraduate Program Director
sergio.chavez@rice.edu

Bachelor’s Program
• Bachelor of Arts (BA) Degree with a Major in Sociology (p. 813)

Minor
• Minor in Sociology (p. 816)

Master’s Program
• Master of Arts (MA) Degree in the field of Sociology*

Doctoral Program
• Doctor of Philosophy (PhD) Degree in the field of Sociology (p. 815)

* Although students are not normally admitted to a Master of Arts (MA) degree program, graduate students may earn the MA degree as they work towards the PhD.

Chair
James Elliott

Professors
Jennifer L. Bratter
Tony N. Brown
Elaine Howard Ecklund
James Elliott
Bridget K. Gorman
Rachel Tolbert Kimbro
Ruth N. Lopez Turley

Associate Professors
Sergio Chavez
Assistant Professors
Max Besbris
Brielle Bryan
Anna Rhodes
Elizabeth Roberto

Professors Emeriti
Chandler Davidson
Elizabeth Long
William Martin
Steve H. Murdock
Stephen L. Klineberg

Professor in the Practice
Richard R. Johnson

Senior Lecturer
Robert Werth

Lecturer
Craig Considine

Adjunct Professors
Roland B. Smith, Jr.

Adjunct Associate Professor
Robin Paige

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: SOCI

Department Description and Code
• Sociology: SOCI

Undergraduate Degree Description and Code
• Bachelor of Arts degree: BA

Undergraduate Major Description and Code
• Major in Sociology: SOCI

Undergraduate Minor Description and Code
• Minor in Sociology: SOCY

Graduate Degrees and Codes
• Master of Arts degree: MA
• Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code
• Degree Program in Sociology: SOCI

CIP Code and Description
• SOCI Major/Program: CIP Code/Title: 45.1101 - Sociology
• SOCY Minor: CIP Code/Title: 45.1101 - Sociology

Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Bachelor of Arts (BA) Degree with a Major in Sociology

Program Learning Outcomes for the BA Degree with a Major in Sociology
Upon completing the BA degree with a major in Sociology, students will be able to:

1. Understand the functions of theory and its use in the social sciences. Students will be familiar with key social theorists in the field. Students will understand key theoretical concepts and be comfortable using them beyond the classroom.

2. Gain richer understanding of the social world, including class, race, gender, ethnicity, education, family, occupation, deviancy, health, and global citizenship as well as how the human social world impacts its environment.

3. Apply sociological knowledge and training to understand theory and policy oriented around issues of human well-being in the US and globally, including how to understand the relationship between inequality and factors like race, class, gender, and education.

4. Apply methodological, theoretical, and research skills to carry out empirical research projects.

Requirements for the BA Degree with a Major in Sociology
For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Sociology must complete:

• A minimum of 11 courses (33-34 credit hours, depending on course selection) to satisfy major requirements.
• A minimum of 120 credit hours to satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
• A minimum of 10 courses (30-31 credit hours, depending on course selection) taken at the 300-level or above.
• A maximum of 5 courses (15 credit hours) from study abroad or transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degneworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.
Summary

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<td>Total Credit Hours Required for the BA Degree with a Major in Sociology</td>
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Degree Requirements

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<td>Core Requirements</td>
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<td></td>
<td>SOCI 101 Introduction to Sociology</td>
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<td>SOCI 380 Social Theory</td>
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<td></td>
<td>SOCI 381 Research Methods</td>
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<td>SOCI 382 Social Statistics</td>
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<tr>
<td></td>
<td>or SOSC 302 Quantitative Analysis for the Social Sciences</td>
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<td>Select 7 elective courses from departmental (SOCI) course offerings at the 300-level or above</td>
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</tr>
<tr>
<td></td>
<td>Additional Credit Hours to Complete BA Degree Requirements</td>
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<td>University Graduation Requirements (p. 26)*</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>120</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAR upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

Policies for the BA Degree with a Major in Sociology

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in Sociology should be aware of the following departmental transfer credit guidelines:

- No more than 5 courses (15 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the major.
- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.
- Transfer credit coursework from online-only courses cannot be used to count towards the major.

Additional Information

For additional information, please see the Sociology website: https://sociology.rice.edu.

Opportunities for the BA Degree with a Major in Sociology

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Departmental Honors Program

The Sociology Department Honors Program is designed to provide sociology majors with the opportunity to sharpen their research skills and deepen their understanding of the discipline through a 2- to 3-semester program of directed independent research and writing. The program also offers the opportunity for formal recognition, through Departmental Honors, of those undergraduates who have demonstrated unusual competence in sociology by successfully completing a sustained independent research project. Small grants for honors thesis research are generously supported by the Chandler and Ian Davidson Scholars Fund as well as the Walter Hall Scholars program.

Eligibility

To be eligible for the Departmental Honors Program, students must have:

- Taken at least 4 sociology courses beyond SOCI 101 Introduction to Sociology, including SOCI 381 Research Methods. If their project requires statistical analysis, students should also complete SOCI 382 Social Statistics (or SOSC 302 Quantitative Analysis for the Social Sciences) before beginning their research.
- An A- (3.67) GPA in all sociology courses taken.

Application Process

1. During the fall and early spring semester of their junior year, students are invited to consult with tenured and tenure-track members of the faculty about a potential thesis topic. All students must have at least 1 tenured or tenure-track faculty member in the sociology department as their thesis chair. The student must submit a written description of their proposed research project to the chosen faculty member for approval of their topic and review of their proposal, as well as secure agreement of the chosen faculty member(s) to serve as their thesis committee chair.
2. Once a thesis supervisor has been identified, the student must submit a written description of their proposed research project to the departmental undergraduate advisor. The proposal should be 2-3 pages in length, double-spaced, and is due by April 1st of their junior year. It should include a signed statement from the chosen faculty member agreeing to serve as their chair advisor.
3. The sociology faculty will vote on the merits of the proposed thesis project at their monthly faculty meeting in mid-April. If approved, the student may begin work on their thesis immediately, or at a start time agreed upon with their thesis supervisor (including summer semester, if desired).
Program
Students in the Honors Program register for 2 successive semesters in Directed Honors Research (SOCI 492 and SOCI 493). An honors thesis typically involves much discussion over both semesters between the student and their tenure or tenure-track advisor. Students should meet early in the process to agree on ground rules for the project, to choose the other members of the thesis committee (made up of one additional faculty member, who serves as a reader and ad-hoc advisor), and to set up a schedule for discussions and submission of written work. It is the department’s experience that students who work alone without much consultation with faculty are less likely to succeed in their project than students who maintain close contact with their advisor and the department. Students are also encouraged to include other members of the committee in discussion of the thesis, especially as the project nears completion, so that their feedback can be incorporated before the final draft of the project is submitted.

Students normally begin by conducting a thorough review of the relevant literature, formulating hypotheses that grow out of the literature review, and proposing a research design that clearly describes how the data for the project are to be collected and analyzed. The research itself is usually carried out in the fall semester of the senior year (and sometimes in the summer following the junior year), and is analyzed, written up, and defended as a completed Honor’s Thesis during the spring semester of the senior year. (Students are encouraged to examine several previously written theses, which are available in the sociology department.)

In addition to the student’s primary advisor, the thesis is read and evaluated by the faculty members, sometimes from other departments, who make up the student’s thesis committee.

Program Timeline
• A first draft of the final thesis must be turned in to the committee members no later than February 1st of the student’s senior year.
• After receiving feedback on the project, the student will have until the last Monday in March to submit a final draft of the senior thesis to their committee.
• A short presentation (10-15 minutes) of the final thesis project must be given to the full sociology faculty by mid-April. Faculty will vote on whether to grant Departmental Honors to the student at the conclusion of their presentation.

Additional Information
For additional information, please see the Sociology website: https://sociology.rice.edu/.

Requirements for the MA and PhD Degrees in the field of Sociology
For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MA and PhD degrees in the field of Sociology must complete:

• A minimum of 90 credit hours to satisfy degree requirements

The PhD program is a five-year degree program. The Sociology department does not admit students seeking only a master’s degree. The MA degree is a thesis master’s degree. For general university requirements, please see Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students will normally obtain a master’s degree after two years of study and research as a student progresses toward the PhD, and will usually need an additional three years to complete the requirements for a PhD. The coursework is sequenced and will typically be completed in two and a half years. By this point, students will be required to have written their Master’s thesis and completed their Master’s degree. This leaves one semester to take the comprehensive exams and two years to complete the thesis. Each student will attend a monthly Teaching and Professionalization Workshop that the department will hold throughout the academic school year.

Summary

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<thead>
<tr>
<th>Code</th>
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<td>Total Credit Hours Required for the PhD Degree in the field of Sociology</td>
<td>90</td>
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Degree Requirements

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<td>SOCI 526</td>
<td>CONTEMPORARY THEORY</td>
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<tr>
<td>SOCI 541</td>
<td>QUALITATIVE RESEARCH METHODS</td>
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</tr>
<tr>
<td>SOCI 580</td>
<td>CLASSICAL THEORY</td>
<td>3</td>
</tr>
<tr>
<td>SOCI 582</td>
<td>QUANTITATIVE DATA ANALYSIS I</td>
<td>3</td>
</tr>
<tr>
<td>SOCI 583</td>
<td>QUANTITATIVE DATA ANALYSIS II</td>
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<td>SOCI 596</td>
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<td>SOCI 605</td>
<td>NON-THESIS GRADUATE RESEARCH</td>
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<td>SOCI 606</td>
<td>THESIS RESEARCH</td>
<td>3</td>
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<td>SOCI 608</td>
<td>GRADUATE RESEARCH DESIGN</td>
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<td>SOCI 610</td>
<td>PROFESSIONALIZATION WORKSHOP</td>
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<td>SOCI 700</td>
<td>DISSERTATION RESEARCH</td>
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<td>UNIV 500</td>
<td>PRINCIPLES OF EFFECTIVE COLLEGE TEACHING</td>
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</table>

or UNIV 501 RESEARCH ON TEACHING AND LEARNING

Elective Requirements, Comprehensive Exams, and Thesis

Total Credit Hours | 90

Doctor of Philosophy (PhD) Degree in the field of Sociology

Program Learning Outcomes for the MA and PhD Degrees in the field of Sociology

Upon completing the MA and PhD degrees in the field of Sociology, students will be able to:

1. Understand and apply the role of theory in sociology.
2. Demonstrate understanding and application of both qualitative and quantitative sociological methods.
3. Demonstrate expertise in at least two specialty areas within sociology.
Footnotes and Additional Information
1 It is recommended that the required coursework be taken in the sequence prescribed by the department of Sociology (see below). Note that semesters 5-10 will consist of Electives, Comprehensive Exams, and Thesis as determined by the department until degree completion.

Proposed Plan-of-Study
The following represents the current recommended sequence in which students pursuing the MA and PhD degrees in the field of Sociology complete the required coursework.

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<tr>
<th>Course</th>
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<th>Credit Hours</th>
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<td>1st Semester</td>
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<td>SOCI 580 or SOCI 526</td>
<td>CLASSICAL THEORY or CONTEMPORARY THEORY</td>
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<tr>
<td>SOCI 608</td>
<td>GRADUATE RESEARCH DESIGN</td>
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<td>Credit Hours</td>
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<td>2nd Semester</td>
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<td>SOCI 541</td>
<td>QUALITATIVE RESEARCH METHODS</td>
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<td>SOCI 582 &amp; SOCI 541</td>
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<td>SOCI 596</td>
<td>STATISTICAL PROGRAMMING</td>
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<td>SOCI 610</td>
<td>PROFESSIONALIZATION WORKSHOP</td>
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<tr>
<td>Elective two</td>
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<tr>
<td>Credit Hours</td>
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<td>3rd Semester</td>
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<td>SOCI 526 or SOCI 580</td>
<td>CONTEMPORARY THEORY or CLASSICAL THEORY</td>
<td>3</td>
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<tr>
<td>SOCI 583</td>
<td>QUANTITATIVE DATA ANALYSIS II</td>
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</tr>
<tr>
<td>SOCI 541</td>
<td>QUALITATIVE RESEARCH METHODS</td>
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<td>SOCI 610</td>
<td>PROFESSIONALIZATION WORKSHOP</td>
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<tr>
<td>Credit Hours</td>
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<td>4th Semester</td>
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<td>PROFESSIONALIZATION WORKSHOP</td>
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<td>UNIV 501</td>
<td>RESEARCH ON TEACHING AND LEARNING</td>
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<td>Elective three</td>
<td>Elective three</td>
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<td>Total Credit Hours</td>
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Policies for the PhD Degree in the field of Sociology
Department of Sociology Graduate Program Handbook
The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Sociology publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Sociology_Graduate_Handbook.pdf

Admission
Students are admitted on a competitive basis. Admitted students must have a Baccalaureate degree (BA or BS) or equivalent, a minimum 3.00 (B) GPA in undergraduate work, and the intent to complete a PhD in sociology. We consider GRE scores, undergraduate GPA, letters of recommendation, writing samples, a personal essay, and professional experience when making admission decisions for the PhD program. We strongly encourage applications from women and minority groups.

The Sociology department does not admit students seeking only a masters degree. The Master of Arts degree is earned as a student progresses toward the PhD. Students who currently hold a Master’s Degree are welcome to apply. However, PhD students must complete four semesters of residency and coursework at Rice University. At the department’s discretion, some credits may transfer from other graduate programs.

Additional Information
For additional information, please see the Sociology website: https://sociology.rice.edu/

Opportunities for the PhD Degree in the field of Sociology

Additional Information
For additional information, please see the Sociology website: https://sociology.rice.edu/

Minor in Sociology
Program Learning Outcomes for the Minor in Sociology
Upon completing the minor in Sociology, students will be able to:

1. Gain a richer understanding of the social world, including class, race, gender, ethnicity, education, family, occupation, deviancy, health and global citizenship as well as how the human social world impacts its environment.

2. Apply sociological knowledge and training to understand theory and policy oriented around issues of human well-being in the US and globally, including how to understand the relationship between inequality and factors like race, class, gender and education.

3. Gain an in-depth understanding of the role of theory OR research methods, depending on their preference. This means they will be able to apply sociological knowledge and training to understand theory and policy oriented around issues of human well-being in the US and globally, including how to understand the relationship between inequality and factors like race, class, gender and education. Alternatively, students will be able to apply methodological, theoretical, and research skills to carry out empirical research projects.

Requirements for the Minor in Sociology
Students pursuing the minor in Sociology must complete:

• A minimum of 6 courses (18 credit hours) to satisfy minor requirements.
• A minimum of 5 courses (15 credit hours) taken at the 300-level or above.
• A maximum of 2 courses (6 credit hours) from study abroad or transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the minor’s Official Certifier [https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/]). Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

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### Minor Requirements

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<td>INTRODUCTION TO SOCIOLOGY</td>
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<td>SOCI 380</td>
<td>SOCIAL THEORY</td>
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<tr>
<td>or SOCI 381</td>
<td>RESEARCH METHODS</td>
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</table>

|        | Elective Requirements                           |              |
|        | Select 3 courses from departmental (SOCI) course offerings at the 300-level or above | 9            |
|        | Select 1 course from departmental (SOCI) course offerings at the 400-level | 3            |
|        | Total Credit Hours                              | 18           |

### Policies for the Minor in Sociology

#### Program Restrictions and Exclusions

Students pursuing the minor in Sociology should be aware of the following program restriction:

• As noted in Majors, Minors, and Certificates (p. 11), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

#### Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: [https://oaa.rice.edu](https://oaa.rice.edu). Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

#### Departmental Transfer Credit Guidelines

Students pursuing the minor in Sociology should be aware of the following departmental transfer credit guidelines:

• No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the minor.

• Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

• Transfer credit coursework from online-only courses cannot be used to count towards the minor.

### Additional Information

For additional information, please see the Sociology website: [https://sociology.rice.edu/](https://sociology.rice.edu/).

### Opportunities for the Minor in Sociology

#### Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) ([summa cum laude](https://sociology.rice.edu/), [magna cum laude](https://sociology.rice.edu/)), and [Distinction in Research and Creative Work](https://sociology.rice.edu/) (p. 48). Some departments have department-specific Honors awards or designations.

### Additional Information

For additional information, please see the Sociology website: [https://sociology.rice.edu/](https://sociology.rice.edu/).

### Space Studies

#### Contact Information

Space Studies  
[https://profms.rice.edu/](https://profms.rice.edu/)  
203 Keck Hall  
713-348-3188  

Dagmar Beck  
Program Director  
dkbeck@rice.edu  

David Alexander  
Faculty Co-Director  
dalex@rice.edu  

Andrew Meade  
Faculty Co-Director  
meade@rice.edu  

The professional master's degree in Space Studies is a collaboration between the Wiess School of Natural Sciences and the George R. Brown School of Engineering, and is geared to help individuals increase their knowledge of space engineering and related science, program management, and policy. The program includes advanced engineering, biological, and physical science classes and introduces students to economics, public policy, and management disciplines, which impact space commercialization and national policy. It focuses on training engineers and scientists interested in program management, providing them with the tools to face the complex challenges inherent in US space policy, human and robotic space exploration, science in space exploration, and technology development.

The MS in Space Studies (MSSpS) degree is part of the professional science master’s (PSM) program at Rice housed in the Wiess School of Natural Sciences. It focuses on training students in Space Engineering...
and Science with the intent of creating new opportunities for those students interested in working in the space technology industry or related government entities, e.g. NASA, as well as governmental relations positions in non-profit organizations, industry, and academic institutions. These master’s degrees are designed for students seeking to gain further technical core expertise coupled with enhanced management, communication, and leadership skills, instilling a level of scholastic proficiency that exceeds that of the bachelor’s level, and creating the cross-functional aptitudes needed in modern industry and government.

A coordinated MBA/MSSpS degrees program is also offered in conjunction with the Jesse H. Jones Graduate School of Business.

Space Studies does not currently offer an academic program at the undergraduate level.

**Master’s Program**
- Master of Science in Space Studies (MSSpS) Degree (p. 818)

**Coordinated Program**
- Master of Science in Space Studies (MSSpS) Degree / Master of Business Administration (MBA) Degree (p. 820)

**Directors**
David Alexander
Andrew J. Meade

**Professors**
Christopher M. Johns-Krull
Adrian Lenardic
Marcia K. O’Malley
Tayfun E. Tezduyar
Frank R. Toffoletto

**Associate Professor**
Stephen J. Bradshaw

**Research Professor**
Erzsébet Merényi

**Adjunct Professors**
Ramon Gonzalez
Hadley Wickham

**Description and Code Legend**
*Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:*

**Course Catalog/Schedule**
- Course offerings/subject codes: Courses from various subjects may apply toward the graduate degree.

**Department Description and Code**
- Physics and Astronomy: PHYS

**Graduate Degree Description and Code**
- Master of Science in Space Studies degree: MSSpS

**Graduate Degree Program Description and Code**
- Degree Program in Space Studies: SPST

**CIP Code and Description**
- SPST Major/Program: CIP Code/Title: 14.0201 - Aerospace, Aeronautical and Astronautical/Space Engineering

**Master of Science in Space Studies (MSSpS) Degree**

**Program Learning Outcomes for the MSSpS Degree**

Upon completing the MSSpS Degree, students will be able to:

1. Achieve advanced science, engineering, and computational skills and a broad understanding of the methodologies applied in the space industry.
2. Gain real life experience in solving technical problems in a science and technology environment.
3. Develop business and communication skills to bridge the gap between science and business.

**Requirements for the MSSpS Degree**
The MSSpS degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MSSpS degree must complete:

- A minimum of 15 courses (minimum of 39 credit hours) to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University.
- A 3-6 month internship. Instead of a thesis, at the conclusion of their internship, students must present their internship project in both oral and written form as part of the Professional Master’s Project (NSCI 512). Part-time students who already work in their area of study may request approval to fulfill the internship requirement by working on a specific, pre-approved project with their current employer.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree.

**Note:** Some of the listed courses are not offered every year, and some may also have prerequisites or require instructor permission.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into
Degree Works by the department or program’s Official Certifier [https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/]. Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tr>
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<td>Total Credit Hours Required for the MSSpS Degree</td>
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**Degree Requirements**

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<thead>
<tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Core Requirements</td>
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<tr>
<td></td>
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<td>Core Technical Courses</td>
</tr>
<tr>
<td>ASTR 570</td>
<td>SOLAR SYSTEM PHYSICS</td>
<td>3</td>
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<tr>
<td>MECH 572</td>
<td>AEROSPACE SYSTEMS ENGINEERING</td>
<td>3</td>
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<tr>
<td>STAT 605</td>
<td>R FOR DATA SCIENCE</td>
<td>3</td>
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<tr>
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<td></td>
<td>Core Science and Engineering Courses</td>
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<td>Select 2 courses (minimum of 6 credit hours) from the following: 6</td>
</tr>
<tr>
<td>ASTR 554</td>
<td>ASTROPHYSICS OF THE SUN</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 540 / CHBE 640</td>
<td>METABOLIC ENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td>ESCI 540</td>
<td>EARTH’S ATMOSPHERE</td>
<td>3</td>
</tr>
<tr>
<td>ESCI 660</td>
<td>GEOLOGICAL AND GEOPHYSICAL FLUID DYNAMICS</td>
<td>3</td>
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<tr>
<td>MECH 554 / BIOE 554 / CEVE 554</td>
<td>COMPUTATIONAL FLUID MECHANICS</td>
<td>3</td>
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<tr>
<td>MECH 592</td>
<td>DESIGN FOR AEROSPACE ENVIRONMENTS</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Core Statistics/Computation Courses</td>
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<td>Select 2 courses (minimum of 6 credit hours) from the following: 6</td>
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<tr>
<td>CAAM 550</td>
<td>NUMERICAL ANALYSIS I</td>
<td>3</td>
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<td>CEVE 528 / ENGI 528</td>
<td>ENGINEERING ECONOMICS</td>
<td>3</td>
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<tr>
<td>ESCI 650</td>
<td>REMOTE SENSING</td>
<td>3</td>
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<td>MECH 554 / BIOE 554 / CEVE 554</td>
<td>COMPUTATIONAL FLUID MECHANICS</td>
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<tr>
<td>PHYS 517</td>
<td>COMPUTATIONAL PHYSICS</td>
<td>3</td>
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<tr>
<td>STAT 502 / COMP 502 / ELEC 502</td>
<td>NEURAL MACHINE LEARNING I</td>
<td>3</td>
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<td>STAT 541</td>
<td>MULTIVARIATE ANALYSIS</td>
<td>3</td>
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<tr>
<td>STAT 615</td>
<td>REGRESSION AND LINEAR MODELS</td>
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<td>Cohort Courses</td>
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<td>NSCI 501</td>
<td>PROFESSIONAL MASTER’S SEMINAR</td>
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<td>NSCI 502</td>
<td>SPACE STUDIES SEMINAR</td>
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<td>NSCI 511</td>
<td>SCIENCE POLICY, AND ETHICS</td>
<td>3</td>
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<td>NSCI 512</td>
<td>PROFESSIONAL MASTER’S PROJECT</td>
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<td>NSCI 610 / ENGI 610</td>
<td>MANAGEMENT FOR SCIENCE AND ENGINEERING</td>
<td>3</td>
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<tr>
<td></td>
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<td>Three to Six Month Internship</td>
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</table>

A three to six month internship is required

**Elective Requirements**

Select a minimum of 3 courses (minimum of 9 credit hours) from 9 of the following areas, depending on the student’s individual interests and career goals:

**Engineering**
- CEVE 504 ATOMSPHERIC PARTICULATE MATTER
- CEVE 511 ATMOSPHERIC PROCESSES
- CEVE 576 / MECH 576 STRUCTURAL DYNAMIC SYSTEMS
- COMP 598 / ELEC 598 / MECH 598 INTRODUCTION TO ROBOTICS
- ENGI 515 LEADING TEAMS AND INNOVATION
- ENGI 614 LEARNING HOW TO INNOVATE?
- MECH 554 / BIOE 554 / CEVE 554 COMPUTATIONAL FLUID MECHANICS
- MECH 574 TURBULENCE
- MECH 578 ORBITAL MECHANICS AND MISSION DESIGN
- MECH 579 LAUNCH VEHICLE AND SPACECRAFT DESIGN
- MECH 591 GAS DYNAMICS
- MECH 592 DESIGN FOR AEROSPACE ENVIRONMENTS
- MECH 594 INTRODUCTION TO AERONAUTICS
- MECH 596 INTRODUCTION TO FLIGHT MECHANICS
- MECH 691 INTRODUCTION TO HYPERSONIC AERODYNAMICS

**Sciences (Astro Science/Earth Science/Life Sciences)**
- ASTR 542 NEBULAR ASTROPHYSICS
- ASTR 554 ASTROPHYSICS OF THE SUN
- ASTR 555 PROTOSTARS AND PLANETS
- ASTR 565 COMPACT OBJECTS
- BIOE 540 / CHBE 640 METABOLIC ENGINEERING
- BIOL 544 DEVELOPMENTAL NEUROBIOLOGY
- BIOL 545 ADVANCED MOLECULAR BIOLOGY AND GENETICS
- BIOL 570 COMPUTATION WITH BIOLOGICAL DATA
- BIOL 580 / CHBE 580 PROTEIN ENGINEERING
- ESCI 540 EARTH’S ATMOSPHERE
- ESCI 581 TOPICS IN PLANETARY DYNAMICS AND MAGMATIC PROCESSES
- ESCI 667 GEOMECHANICS
- ESCI 672 EARTH SYSTEMS MODELING: NUMERICAL TECHNIQUES AND APPLICATIONS
- MGMT 633 / BIOE 633 ROLES OF PHYSICIANS, SCIENTISTS, ENGINEERS AND MBA’S IN HIGH-TECH STARTUPS

**Management and Entrepreneurship**
- ENGI 515 LEADING TEAMS AND INNOVATION
Opportunities for the MSSpS Degree

Fifth-Year Master’s Degree Option for Rice Undergraduate Students

Rice students have an option to pursue the Master of Science in Space Studies (MSSpS) degree by adding an additional fifth year to their four undergraduate years of science studies.

Advanced Rice undergraduate students in good academic standing may apply to the MSSpS degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master’s degree program. A plan of study will need to be approved by the student’s undergraduate advisor, the Professional Science Master’s (PSM) program director, and the MSSpS program director.

As part of this option and opportunity, Rice undergraduate students:

• must complete the requirements for a bachelor’s degree and the master’s degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
• should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
• more information on this Undergraduate - Graduate Concurrent Enrollment opportunity, including specific information on the registration process can be found here (p. 17).

Additional Information

For additional information, please see the Space Studies website: https://profms.rice.edu/

Master of Science in Space Studies (MSSpS) Degree / Master of Business Administration (MBA) Degree

Program Learning Outcomes for the MSSpS Degree

Upon completing the MSSpS Degree, students will be able to:

1. Achieve advanced science, engineering, and computational skills and a broad understanding of the methodologies applied in the space industry.
2. Gain real life experience in solving technical problems in a science and technology environment.
3. Develop business and communication skills to bridge the gap between science and business.

Program Learning Outcomes for the MBA Degree

Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.

Footnotes and Additional Information

1 Note: Some of the listed courses are not offered every year, and other coursework may be offered that satisfies the stated requirements upon approval. Depending on the student’s background or interest, course substitutions for any required or elective course may be approved by the program’s academic advisor. Students should consult with their academic advisors before enrolling.

2 Practical experience is offered via a three to six month immersion. The internship will be under the guidance of a host company, government agency, or non-profit organization. At the conclusion of the internship, students must present a summary of their internship project in both oral and written form for the cohort course Professional Master’s Project (NSCI 512). Part-time students who already work in their area of study may fulfill the internship requirements by working on an approved project with their current employer.

Policies for the MSSpS Degree

Professional Science Master’s Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Professional Science Master’s Program publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Professional_Science_Masters_Handbook.pdf

Admission

Admission to graduate study in Space Studies is open to qualified students holding a bachelor’s degree in a related science or engineering program that included course work in general physics, chemistry, calculus, linear algebra, and differential equations. Good scores from the general Graduate Record Examination (GRE), good critical thinking and communication skills, and strong quantitative abilities. Statistics, introductory economics, and computer skills preferred. Department faculty evaluate the previous academic record and credentials of each applicant individually and make admission decisions.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

Additional Information

For additional information, please see the Space Studies website: https://profms.rice.edu/
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.

3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MSSpS/MBA Coordinated Degrees Program

Students may earn a coordinated MBA degree and a Master of Science degree from the Wiess School of Natural Sciences Professional Science Master's (PSM) program in the following fields:

- Bioscience and Health Policy (MSBHP)
- Environmental Analysis (MSEA)
- Space Studies (MSSpS)
- Subsurface Geoscience (MSSG)

For the coordinated MBA/Master of Science degree from the Professional Science Master's (PSM) program, students must complete:

- A minimum of 75 credit hours in approved coursework, including:
  - A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the Professional Science Master's (PSM) degree requirements
  - A minimum of 30 credit hours in the corresponding science discipline
  - All PSM degree-specific requirements
  - A three to six month internship
  - A minimum of 45 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the MBA degree requirements
  - A minimum of 45 credit hours of business coursework
  - All MBA core requirements, the global field experience, custom core requirements, and coordinated elective requirements

Students plan their course schedules in consultation with the Wiess School of Natural Sciences PSM program director and with the Jones Graduate School of Business Registrar Department. Coordinated degree candidates can fulfill requirements for both degrees within 3 academic years.

For general university requirements, see Graduate Degrees (p. 49). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Candidates in the MBA/Master of Science degree from the Professional Science Master’s (PSM) program must complete all requirements as listed for both degrees, and must apply and be accepted in both degree programs.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Footnotes and Additional Information

1 To fulfill the remaining requirements for the coordinated MBA degree program, students must complete an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours. The second year of the program is dedicated entirely to MBA elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. MBA electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.
Policies for the MSSpS/MBA Coordinated Degrees Program

Additional Information
For additional information on these two degrees:

1. Please see the Space Studies website: https://profms.rice.edu/
2. Please see the Jones Graduate School of Business website: https://business.rice.edu/

Opportunities for the MSSpS/MBA Coordinated Degrees Program

Additional Information
For additional information on these two degrees:

1. Please see the Space Studies website: https://profms.rice.edu/
2. Please see the Jones Graduate School of Business website: https://business.rice.edu/

Spanish, Portuguese and Latin American Studies

Contact Information
Spanish, Portuguese and Latin American Studies
https://spanishandportuguese.rice.edu/
307 Rayzor Hall
713-348-5451

Luis Duno-Gottberg
Department Chair
ld4@rice.edu

The department of Spanish, Portuguese and Latin American Studies offers two majors: Spanish and Portuguese, and Latin American Studies. The major in Spanish and Portuguese focuses on the literatures and cultures of the Spanish and Portuguese-speaking nations of the world and on Spanish and Portuguese linguistics. The department stresses linguistic competence, interdisciplinary study, and a transnational perspective on Spanish, Latin American, and Brazilian literature and culture. In addition to courses on the novel, poetry, and the essay, the department also offers the opportunity to study film, art, cultural theory, translation, and gender. Qualified students may undertake independent work.

The major in Latin American Studies is an interdisciplinary major designed to further understanding of the cultures, histories, and politics of Latin America as viewed from regional and global perspectives. For more information, see Latin American Studies (p. 515).

Bachelor’s Programs

• Bachelor of Arts (BA) Degree with a Major in Latin American Studies (p. 516)
• Bachelor of Arts (BA) Degree with a Major in Spanish and Portuguese (p. 822)

Spanish, Portuguese and Latin American Studies does not currently offer an academic program at the graduate level.

Chair
Luis Duno-Gottberg

Professors
Luis Duno-Gottberg
Beatriz Gonzáles-Stephan
M. Rafael Salaberry
Nicolas Shumway

Associate Professors
José F. Aranda, Jr.
Gisela Heffes

Assistant Professors
Sophie Esch
Esther Fernández

Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code for Latin American Studies: LASR
• Course offerings/subject code for Portuguese: PORT
• Course offerings/subject code for Spanish: SPAN
• Course offerings/subject code for Spanish and Portuguese: SPPO

Department Description and Code
• Spanish, Portuguese and Latin American Studies: SPLA

Undergraduate Degree Description and Code
• Bachelor of Arts degree: BA

Undergraduate Major Descriptions and Codes
• Major in Latin American Studies: LASR
• Major in Spanish and Portuguese: SPPO

CIP Code and Description

1 LASR Major/Program: CIP Code/Title: 05.0107 - Latin American Studies
• SPPO Major/Program: CIP Code/Title: 16.0999 - Romance Languages, Literatures, and Linguistics, Other

1 Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Bachelor of Arts (BA) Degree with a Major in Spanish and Portuguese
Program Learning Outcomes for the BA Degree with a Major in Spanish and Portuguese

Upon completing the BA degree with a major in Spanish and Portuguese, students will be able to:

1. Demonstrate an advanced level of communicative proficiency when writing, speaking, listening to, reading and translating Spanish or Portuguese, including a high degree of ability in interacting with native Spanish or Portuguese speakers and text.

2. Demonstrate analytical competence and independent and critical thinking skills by analyzing and responding to Spanish or Portuguese communications, including: identifying and evaluating arguments, ideas, and evidence, constructing critical responses to Spanish or Portuguese texts, and pursuing independent study or research in some facet of Spanish or Portuguese language or culture.

3. Demonstrate advanced knowledge of the social, historical, political, and cultural aspects of the Spanish-speaking world and Spanish-speaking communities and apply this knowledge to reading and analyzing authentic cultural products, including literature, art, and film. They will understand how these cultural products reflect or construct facets of the Spanish-speaking world’s history, culture, and identity.

Requirements for the BA Degree with a Major in Spanish and Portuguese

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Spanish and Portuguese must complete:

• A minimum of 10 courses (30 credit hours) to satisfy major requirements.
• A minimum of 120 credit hours to satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
• A minimum of 10 courses (30 credit hours) taken at the 300-level or above.
• A maximum of 4 courses (12 credit hours) from study abroad or transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

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<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tbody>
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<td>Total Credit Hours Required for the Major in Spanish and Portuguese</td>
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<td>Total Credit Hours Required for the BA Degree with a Major in Spanish and Portuguese</td>
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### Degree Requirements

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<tr>
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<td><strong>Core Requirements</strong></td>
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<tr>
<td>SPPO 330</td>
<td>HISPANIC WRITING SEMINAR</td>
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<tr>
<td>or SPPO 331</td>
<td>BRASIL ATUAL</td>
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<td>SPPO 332</td>
<td>APPROACHES TO HISPANIC LITERATURES</td>
<td>3</td>
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<tr>
<td></td>
<td><strong>Advanced Coursework in Spanish and Portuguese</strong></td>
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<tr>
<td></td>
<td>Hispanic Linguistics</td>
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<td>Select 1 course from the following:</td>
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<tr>
<td>SPPO 340</td>
<td>INTRODUCTION TO SPANISH LINGUISTICS</td>
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<tr>
<td>or SPPO 341</td>
<td>DIALECTS IN CONTACT: SEARCHING FOR THE 'INTERNATIONAL' FORM OF SPANISH</td>
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<tr>
<td>or SPPO 360</td>
<td>SECOND LANGUAGE ACQUISITION: LINGUISTIC, COGNITIVE AND SOCIAL DIMENSIONS</td>
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<td><strong>Survey</strong></td>
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<td>Select 2 courses from Survey courses (any course offerings between course numbers SPPO 340 and SPPO 359)</td>
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<td></td>
<td><strong>Advanced</strong></td>
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<tr>
<td>Select 2 courses from Advanced courses (any course offerings between course numbers SPPO 360 and SPPO 399)</td>
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<tr>
<td></td>
<td><strong>Seminar</strong></td>
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<td>Select 2 courses from Seminar courses (any course offerings between course numbers SPPO 401 and SPPO 489)</td>
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<td><strong>Elective Requirements</strong></td>
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<td>Select 2 courses from the following:</td>
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<tr>
<td>SPAN 303</td>
<td>ADVANCED SPANISH FOR HERITAGE STUDENTS</td>
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<tr>
<td>SPAN 321</td>
<td>SPECIAL TOPICS: ADVANCED SPANISH I</td>
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<td>SPAN 322</td>
<td>SPECIAL TOPICS: ADVANCED SPANISH II</td>
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<td>SPAN 325</td>
<td>SPECIAL TOPICS: ADVANCED SPANISH III</td>
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<tr>
<td>Any Spanish and Portuguese (SPPO) course offerings at the 330 course number or above</td>
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<tr>
<td>Any department approved elective course (see course list below)</td>
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<td><strong>Total Credit Hours Required for the Major in Spanish and Portuguese</strong></td>
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<td>Additional Credit Hours to Complete BA Degree Requirements</td>
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<td>University Graduation Requirements (p. 26)</td>
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<td><strong>Total Credit Hours</strong></td>
<td>120</td>
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### Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

1 If either SPPO 340 or SPPO 341 is selected as the Hispanic Linguistics course, it will fulfill 1 of the 2 required Survey courses between course numbers SPPO 340 and SPPO 359.

2 If SPPO 360 is selected as the Hispanic Linguistics course, it will fulfill 1 of the 2 required Advanced courses between course numbers SPPO 360 and SPPO 399.
Course List to Satisfy Requirements

Elective Requirements

Students must complete 2 elective courses (6 credit hours). These may be selected from SPAN 303, SPAN 321, SPAN 322, or SPAN 325, or from Spanish and Portuguese (SPPO) course offerings at the 330 course number or higher, or from the department approved electives listed below.

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<tr>
<td>ANTH 361</td>
<td>LATIN AMERICAN TOPICS</td>
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<td>HART 265</td>
<td>A VISUAL CULTURE TRAVELOGUE: ART AND POLITICS IN MODERN LATIN AMERICA</td>
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<td>HART 310 / ARCH 315</td>
<td>BRAZIL BUILT: THE CLINIC, THE TROPICAL, AND THE AESTHETIC</td>
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<td>HART 375 / ARCH 375</td>
<td>LATIN-EUROPE/LATIN-AMERICA: THE AESTHETICS AND POLITICS OF MODERN CITIES</td>
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<td>HART 465</td>
<td>LATIN AMERICAN BODIES: ON MODERNISM</td>
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<tr>
<td>HIST 220</td>
<td>MEXICO: 1910 TO PRESENT</td>
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<tr>
<td>HIST 221</td>
<td>UNITED STATES AND LATIN AMERICAN RELATIONS</td>
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<td>HIST 226</td>
<td>COLONIAL SPANISH AMERICA</td>
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<td>HIST 227</td>
<td>LATIN AMERICAN CULTURAL TRADITIONS</td>
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<td>MODERN LATIN AMERICA</td>
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<td>HIST 251 / LASR 251</td>
<td>CONTINUITIES AND CHANGES IN RIO DE JANEIRO: A SOCIAL AND ARCHITECTURAL HISTORY</td>
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<td>HIST 324</td>
<td>COEXISTENCE IN MEDIEVAL SPAIN</td>
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<td>LATIN AMERICAN PERSPECTIVES</td>
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<td>RIO DE JANEIRO: A SOCIAL AND ARCHITECTURAL HISTORY</td>
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<td>LATINO POLITICS IN THE UNITED STATES</td>
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<td>POLI 459</td>
<td>SEX, GENDER, AND POLITICAL REPRESENTATION IN LATIN AMERICA</td>
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</table>

Departmental Transfer Credit Guidelines

Students pursuing the major in Spanish and Portuguese should be aware of the following departmental transfer credit guidelines:

- No more than 4 courses (12 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the major.
- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Distribution Credit Information

The determination of distribution eligibility is done as part of the new course creation process (https://registrar.rice.edu/facstaff/courseprocess/). As part of an annual roll call (https://registrar.rice.edu/facstaff/distribution_credit/) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean’s Offices of each of the academic schools.

Faculty and leadership in the academic schools are responsible for ensuring that the courses identified as distribution-eligible meet the criteria as set in the General Announcements (p. 26). Students are responsible for ensuring that they meet graduation requirements (p. 26) by completing coursework designated as distribution at the time of course registration.

Distribution courses from Spanish, Portuguese and Latin American Studies deal in questions of broad humanistic interest, including topics in history, literature, linguistics, culture, and art and film. They utilize methodologies characteristic of the Humanities, prompting students to probe a variety of components in the literary, cultural, and social life of Spanish and Portuguese-speaking communities.

Additional Information

For additional information, please see the Spanish, Portuguese, and Latin American Studies website: https://spanishandportuguese.rice.edu/

Opportunities for the BA Degree with a Major in Spanish and Portuguese

Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Departmental Honors

The department offers to outstanding majors the opportunity to do honors work during their final year of study. Honors work consists of an independent research project leading to a thesis and is undertaken under the direction of a departmental faculty member. Every year, the department also presents the Cervantes Award for Outstanding Seniors to its top students. Students wishing to do honors work must submit a thesis proposal to be approved by the department before the end of the semester prior to the semester in which they will register for the honors thesis (SPPO 495).
Additional Information
For additional information, please see the Spanish, Portuguese, and Latin American Studies website: https://spanishandportuguese.rice.edu/
See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this major.

Sport Management

Contact Information

Sport Management
https://sport.rice.edu/
2nd Floor, Tudor Fieldhouse
713-348-5764

Clark D. Haptonstall
Department Chair
hapton@rice.edu

Sport Management is an interdisciplinary field of study that draws from a wide range of academic disciplines, including business, management, law, and communication. The thoroughly interdisciplinary emphasis of the sport management major aims to educate students in the skills and theory necessary to assume leadership roles both in and out of the sport industry.

Career preparation for leadership and entrepreneurial positions is the ultimate goal of the sport management major at Rice. Students will acquire a solid academic and practical foundation and thus will be competitive for opportunities that include entering the sport business industry or applying to the country’s best law and business schools.

Bachelor's Programs

- Bachelor of Arts (BA) Degree with a Major in Sport Management
  - and a Major Concentration in Sport Analytics (p. 825)
  - and a Major Concentration in Sport Law (p. 827)
  - and a Major Concentration in Sport Leadership (p. 829)

Sport Management does not currently offer an academic program at the graduate level.

Chair and Professor in the Practice
Clark D. Haptonstall

Associate Professors
James G. Disch

Professors in the Practice
Diane Crossey
Steven Rackley
Tom Stallings

Lecturer
Kit Ashby

Adjunct Lecturers
Chris Canetti
Jeff Luhnow
Daryl Morey
Carrie Potter

Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
- Course offerings/subject code: SMGT

Program Description and Code
- Sport Management: SMGT

Undergraduate Degree Description and Code
- Bachelor of Arts degree: BA

Undergraduate Major Description and Code
- Major in Sport Management: SMGT

Undergraduate Major Concentration Descriptions and Codes
- Major Concentration in Sport Analytics: SPAS
- Major Concentration in Sport Law: SPLW
- Major Concentration in Sport Leadership: SPLE

CIP Code and Description

- SMGT Major/Program: CIP Code/Title: 31.0504 - Sport and Fitness Administration/Management
- SPAS Major Concentration: CIP Code/Title: 45.0102 - Research Methodology and Quantitative Methods
- SPLW Major Concentration: CIP Code/Title: 22.0000 - Legal Studies, General
- SPLE Major Concentration: CIP Code/Title: 31.0504 - Sport and Fitness Administration/Management

1 Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Bachelor of Arts (BA) Degree with a Major in Sport Management and a Major Concentration in Sport Analytics

Program Learning Outcomes for the BA Degree with a Major in Sport Management and a Major Concentration in Sport Analytics

Upon completing the BA Degree with a major in Sport Management and a major concentration in Sport Analytics, students will be able to:
1. Communicate the models in sport analytics, both written and orally.
2. Analyze data using statistical analysis, data mining, and visualization.
3. Provide recommendations for business decisions based on data analysis.
4. Produce a marketing plan specific to a product in the sport industry.
5. Develop and hone professional skills through classroom learning and experiential learning through a steady progression of internships with added responsibilities.

Requirements for the BA Degree with a Major in Sport Management and a Major Concentration in Sport Analytics

For general university requirements, see Graduation Requirements (p. 26).

Students pursuing the BA degree with a major in Sport Management and must complete:

- A minimum of 15 courses (46-48 credit hours, depending on major concentration declared) to satisfy major requirements.
- A minimum of 120 hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 9-10 courses (28-31 credit hours, depending on major concentration declared) taken at the 300-level or above.
- The requirements of a major concentration. When students declare the major (p. 11) in Sport Management, students must additionally identify and declare one of three major concentrations, either in:
  - Sport Analytics (p. 826): designed to prepare our graduates as to how to properly use big data to make educated decisions in the sport management industry, or
  - Sport Law (p. 827): designed to prepare our graduates for law school, or
  - Sport Leadership (p. 829) designed to prepare our graduates for management, leadership, and entrepreneurial roles within the sport industry.

Because of the common core requirements, it is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (registrar@rice.edu).

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

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Degree Requirements

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<td>Sport Leadership</td>
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</table>

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

<table>
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<td>Capstone Requirement</td>
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| SMGT 490 | SEMINAR IN SPORTS ANALYTICS 

Footnotes and Additional Information

1 Students must complete this course after all required courses have been completed.
Policies for the BA Degree with a Major in Sport Management and a Major Concentration in Sport Analytics

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the major in Sport Management should be aware of the following departmental transfer credit guidelines:

• Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information
For additional information, please see the Sport Management website: https://sport.rice.edu/.

Opportunities for the BA Degree with a Major in Sport Management and a Major Concentration in Sport Analytics

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Internships
Students are required to complete at least one internship prior to graduation, often with one of the professional teams in Houston (Rockets, Astros, Texans, Dynamo, etc.). Students also will receive networking and out-of-class developmental training, as these play a significant role in obtaining high-profile positions in collegiate and professional sports.

Additional Information
For additional information, please see the Sport Management website: https://sport.rice.edu/.

Bachelor of Arts (BA) Degree with a Major in Sport Management and a Major Concentration in Sport Law

Program Learning Outcomes for the BA Degree with a Major in Sport Management and a Major Concentration in Sport Law
Upon completing the BA Degree with a major in Sport Management and a major concentration in Sport Law, students will be able to:

1. Explain the relationship between the sports industry and the legal sector.
2. Demonstrate an understanding of the role of risk management in the sport industry.
3. Compare legal concepts and governing bodies as they relate to the sport industry.
4. Describe the concepts of morality and the theories of ethics as they apply to sport.
5. Produce a marketing plan specific to a product in the sport industry.
6. Develop and hone professional skills through classroom learning and experiential learning through a steady progression of internships with added responsibilities.
7. Communicate, at an elite level, both orally and in writing.

Requirements for the BA Degree with a Major in Sport Management and a Major Concentration in Sport Law
For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Sport Management must complete:

• A minimum of 15 courses (46-48 credit hours, depending on major concentration declared) to satisfy major requirements.
• A minimum of 120 hours to satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
• A minimum of 9-10 courses (28-31 credit hours, depending on major concentration declared) taken at the 300-level or above.
• The requirements of a major concentration. When students declare the major (p. 11) in Sport Management, students must additionally identify and declare one of three major concentrations, either in:
  • Sport Analytics (p. 826): designed to prepare our graduates as to how to properly use big data to make educated decisions in the sport management industry, or
  • Sport Law (p. 827): designed to prepare our graduates for law school, or
  • Sport Leadership: (p. 829) designed to prepare our graduates for management, leadership, and entrepreneurial roles within the sport industry.

Because of the common core requirements, it is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (%20Registrar@rice.edu).

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degeworks/).
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### Degree Requirements

#### Core Requirements

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</table>

#### Major Concentration

Select 1 from the following Major Concentrations (see below for Major Concentration requirements):

- Sport Analytics
- Sport Law
- Sport Leadership

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### Policies for the BA Degree with a Major in Sport Management and a Major Concentration in Sport Law

#### Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [https://oaa.rice.edu](https://oaa.rice.edu). Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

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- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

### Additional Information

For additional information, please see the Sport Management website: [https://sport.rice.edu/](https://sport.rice.edu/).

### Opportunities for the BA Degree with a Major in Sport Management and a Major Concentration in Sport Law

#### Academic Honors

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#### Internships

Students are required to complete at least one internship prior to graduation, often with one of the professional teams in Houston (Rockets, Astros, Texans, Dynamo, etc.). Students also will receive networking and out-of-class developmental training, as these play a significant role in obtaining high-profile positions in collegiate and professional sports.
Students pursuing the major concentration in Sport Law are encouraged to enroll in SOSC 405 and/or SOSC 406 in order to receive out-of-class developmental training.

Additional Information
For additional information, please see the Sport Management website: https://sport.rice.edu/.

Bachelor of Arts (BA) Degree with a Major in Sport Management and a Major Concentration in Sport Leadership

Program Learning Outcomes for the BA Degree with a Major in Sport Management and a Major Concentration in Sport Leadership

Upon completing the BA Degree with a major in Sport Management and a major concentration in Sport Leadership, students will be able to:

1. Apply a diverse set of fundamental principles and skills, including skills in business, finance, and marketing that would be necessary to produce or evaluate an event from beginning to end (from marketing and media promotion, to budget and sales, to execution and post-event evaluation).
2. Utilize critical thinking skills in analyzing sport management issues as well as in managerial planning and decision making.
3. Communicate, at an elite level, both orally and in writing.
4. Describe the concepts of morality and theories of ethics as they apply to sport.
5. Produce a marketing plan specific to product in the sport industry.
6. Develop and hone professional skill through classroom learning and experiential learning through a steady progression of internships with added responsibilities.

Requirements for the BA Degree with a Major in Sport Management and a Major Concentration in Sport Leadership

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Sport Management must complete:

- A minimum of 15 courses (46-48 credit hours, depending on major concentration declared) to satisfy major requirements.
- A minimum of 120 hours to satisfy degree requirements.
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- A minimum of 9-10 courses (28-31 credit hours, depending on major concentration declared) taken at the 300-level or above.
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Major Concentration

Select 1 from the following Major Concentrations (see below for Major Concentration requirements):

- Sport Analytics
- Sport Law
- Sport Leadership

Total Credit Hours Required for the Major in Sport Management

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</table>
Footnotes and Additional Information
* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

Major Concentration: Sport Leadership
Students must complete a total of 5 courses (15 credit hours) as listed below to satisfy the requirements for the major concentration in Sport Leadership.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMGT 350</td>
<td>SPORT ETHICS</td>
<td>3</td>
</tr>
<tr>
<td>SMGT 366</td>
<td>EVENT MANAGEMENT</td>
<td>3</td>
</tr>
<tr>
<td>SMGT 377</td>
<td>SPORT MANAGEMENT INTERNSHIP 2</td>
<td>3</td>
</tr>
</tbody>
</table>

Elective Requirement
Select 2 courses from the following: 6

- BUSI 310 LEADING PEOPLE IN ORGANIZATIONS
- BUSI 390 STRATEGIC MANAGEMENT
- BUSI 463 ENTREPRENEURIAL STRATEGY
- BUSI 464 / GLHT 464 / SOSC 464 SOCIAL ENTREPRENEURSHIP
- ECON 210 BEHAVIORAL ECONOMICS
- SMGT 360 SALES & REVENUE GENERATION IN SPORT
- SMGT 361 SPORT FINANCE AND COMMUNITY ENGAGEMENT
- SMGT 365 SPORT MEDIATION
- SMGT 405 RESEARCH IN SPORT MANAGEMENT
- SMGT 415 THEORIES OF HIGH LEVEL PERFORMANCE
- SMGT 460 BUSINESS ANALYSIS IN SPORT
- SMGT 466 SPORT PUBLIC RELATIONS
- SMGT 470 SPORT MANAGEMENT SEMINAR
- SOSC 444 CONSULTING PRACTICUM

Total Credit Hours 15

Policies for the BA Degree with a Major in Sport Management and a Major Concentration in Sport Leadership

Transfer Credit
For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the major in Sport Management should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

Additional Information
For additional information, please see the Sport Management website: https://sport.rice.edu/.

Opportunities for the BA Degree with a Major in Sport Management and a Major Concentration in Sport Leadership

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Internships
Students are required to complete at least one internship prior to graduation, often with one of the professional teams in Houston (Rockets, Astros, Texans, Dynamo, etc.). Students also will receive networking and out-of-class developmental training, as these play a significant role in obtaining high-profile positions in collegiate and professional sports.

Additional Information
For additional information, please see the Sport Management website: https://sport.rice.edu/.

Statistics

Contact Information
Statistics
https://statistics.rice.edu/
2103 Duncan Hall
713-348-6032

Rudy Guerra
Department Chair
rguerra@rice.edu

Marek Kimmel
Associate Department Chair
kimmel@rice.edu

Statistics coursework acquaints students with the role played in the modern world by probabilistic and statistical ideas and methods. Students grow familiar with both the theory and the application of techniques in common use as they are trained in statistical research.

The flexibility of the undergraduate program allows students to concentrate on theoretical or applied training, or they may link their studies in statistics to work in other related departments.

The graduate program has areas of specialization in applied probability, Bayesian methodology, bioinformatics, biomathematics,
biostatistics, computational finance, data visualization, environmental health, functional data analysis, graphical models, large and complex data, machine and statistical learning, networks, neuroscience, nonparametric function estimation, social sciences, statistical computing, spatial statistics, stochastic processes, systems biology, time series analysis, and urban analytics. Statistics is a cornerstone of the campus wide data science initiative.

A coordinated MBA/MStat degrees program is also offered in conjunction with the Jesse H. Jones Graduate School of Business.

Bachelor's Program
• Bachelor of Arts (BA) Degree with a Major in Statistics (p. 832)

Minors
• Minor in Financial Computation and Modeling (p. 450)
• Minor in Statistics (p. 839)

Master's Programs
• Master of Arts (MA) Degree in the field of Statistics*
• Master of Statistics (MStat) Degree (p. 835)

Doctoral Program
• Doctor of Philosophy (PhD) Degree in the field of Statistics (p. 834)

Coordinated Programs
• Master of Statistics (MStat) Degree / Master of Business Administration (MBA) Degree (p. 837)

* Although students are not normally admitted to a Master of Arts (MA) degree program, graduate students may earn the MA as they work towards the PhD.

Chair
Rudy Guerra

Professors
Dennis Cox
Katherine Bennett Ensor
Rudy Guerra
Marek Kimmel
David W. Scott
Marina Vannucci

Associate Professor
Philip A. Ernst

Assistant Professors
Daniel R. Kowal
Meng Li
Michael Schweinberger

Research Professor
Erzsébet Merényi

Associate Research Professor
Janet Siefert

Professors in the Practice
John Dobelman
Loren Hopkins Raun

Lecturers
E. Neely Atkinson
Roberto Bertolusso

Associate Professor, Joint Appointment
Genevera I. Allen

Assistant Professor, Joint Appointment
Anshumali Shrivastava

Adjunct Professors
Kim-Anh Do
Jeffrey S. Morris
Yu Shen
Peter Thall
Hadley Wickham

Adjunct Associate Professors
Veera Baladandayuthapani
Xuelin Huang
Ying Yuan

Adjunct Assistant Professors
Michele Guindani
Chad A. Shaw
Francesco Stingo

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: STAT

Department Description and Code
• Statistics: STAT

Undergraduate Degree Description and Code
• Bachelor of Arts Degree: BA

Undergraduate Major Description and Code
• Major in Statistics: STAT

Undergraduate Minor Descriptions and Codes
• Minor in Financial Computation and Modeling: FCAM
• Minor in Statistics: STAS
Graduate Degree Descriptions and Codes

- Master of Arts degree: MA
- Master of Statistics degree: MStat
- Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code

- Degree Program in Statistics: STAT

CIP Code and Description 1

- STAT Major/Program: CIP Code/Title: 27.0501 - Statistics, General
- FCAM Minor: CIP Code/Title: 27.0305 - Financial Mathematics
- STAS Minor: CIP Code/Title: 27.0501 - Statistics, General

1 Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Bachelor of Arts (BA) Degree with a Major in Statistics

Program Learning Outcomes for the BA Degree with a Major in Statistics

Upon completing the BA degree with a major in Statistics, students will be able to:

1. Apply fundamental theory in probability and statistical inference.
2. Apply and evaluate statistical models.
3. Apply statistical computing for data analysis and data science.
4. Demonstrate competency as a professional statistician.
5. Effectively communicate as a professional statistician.

Requirements for the BA Degree with a Major in Statistics

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Statistics must complete:

- A minimum of 16 courses (49-55 credit hours, depending on course selection) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 11 courses (34 credit hours) taken at the 300-level or above.
- A maximum of 3 courses (9 credit hours) from study abroad or transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier. https://registrar.rice.edu/facstaff/degrowworks/officialcertifier/.) Students and their academic advisors should identify and clearly document the courses to be taken.

<table>
<thead>
<tr>
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<td>Total Credit Hours Required for the Major in Statistics</td>
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<tr>
<td>Total Credit Hours Required for the BA Degree with a Major in Statistics</td>
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</table>

Degree Requirements

<table>
<thead>
<tr>
<th>Degree Requirements</th>
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</thead>
<tbody>
<tr>
<td>Code</td>
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<tr>
<td>-------</td>
</tr>
<tr>
<td>Core Requirements</td>
</tr>
<tr>
<td>Mathematics</td>
</tr>
<tr>
<td>MATH 101</td>
</tr>
<tr>
<td>or MATH 105</td>
</tr>
<tr>
<td>MATH 102</td>
</tr>
<tr>
<td>or MATH 106</td>
</tr>
<tr>
<td>Select 1 from the following:</td>
</tr>
<tr>
<td>MATH 212</td>
</tr>
<tr>
<td>MATH 221</td>
</tr>
<tr>
<td>&amp; MATH 222 and HONORS CALCULUS IV</td>
</tr>
<tr>
<td>Statistical Computation</td>
</tr>
<tr>
<td>STAT 405</td>
</tr>
<tr>
<td>Basic Computing</td>
</tr>
<tr>
<td>Select 1 course from the following:</td>
</tr>
<tr>
<td>COMP 100</td>
</tr>
<tr>
<td>COMP 130</td>
</tr>
<tr>
<td>COMP 140</td>
</tr>
<tr>
<td>COMP 182</td>
</tr>
<tr>
<td>Advanced Computing</td>
</tr>
<tr>
<td>Select 1 course from the following:</td>
</tr>
<tr>
<td>COMP 215</td>
</tr>
<tr>
<td>COMP 322 / ELEC 323</td>
</tr>
<tr>
<td>COMP 330</td>
</tr>
<tr>
<td>COMP 382</td>
</tr>
<tr>
<td>CAAM 378</td>
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<tr>
<td>CAAM 440</td>
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<tr>
<td>CAAM 453</td>
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<tr>
<td>CAAM 471</td>
</tr>
<tr>
<td>CAAM 519</td>
</tr>
<tr>
<td>DSCI 302</td>
</tr>
<tr>
<td>Probability and Statistics</td>
</tr>
<tr>
<td>STAT 310 / ECON 307</td>
</tr>
</tbody>
</table>
or STAT 315 / STAT 310
DSCI 301

STAT 410 LINEAR REGRESSION 4

Elective Requirements
Select 6 elective courses from departmental (STAT) course offerings at the 300-level or above, including at least 3 courses from the following Methodology/Theory courses: 1

Methodology/Theory
STAT 411 ADVANCED STATISTICAL METHODS
STAT 413 INTRODUCTION TO STATISTICAL MACHINE LEARNING
STAT 418 PROBABILITY
STAT 419 STATISTICAL INFERENCE
STAT 421 APPLIED TIME SERIES AND FORECASTING
STAT 425 INTRODUCTION TO BAYESIAN INFERENCE
STAT 453 BIOSTATISTICS
STAT 502 / COMP 502 / ELEC 502 NEURAL MACHINE LEARNING I
COMP 502 / ELEC 502 STAT 502
STAT 541 MULTIVARIATE ANALYSIS
STAT 545 GLM & CATEGORICAL DATA ANALYSIS

Senior Capstone
STAT 435 DATA SCIENCE PROJECTS 3

Total Credit Hours Required for the Major in Statistics 49-55
Additional Credit Hours to Complete BA Degree Requirements 5-11
University Graduation Requirements (p. 26) 60
Total Credit Hours 120

Footnotes and Additional Information
* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

1 With advisor approval, 1 course (3 credit hours) from departments other than Statistics may be used as an elective. The substitution course may not be used as a replacement for 1 of the 3 required methodology/theory courses listed above. STAT 305, STAT 310, STAT 315 and STAT 385 will not count as electives. See below for typically approved coursework.

Approved Electives
With advisor approval, up to 1 course (3-4 credit hours) from the following typically approved coursework outside departmental (STAT) course offerings may be chosen to fulfill Elective Requirements.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 322</td>
<td>PRINCIPLES OF PARALLEL PROGRAMMING</td>
<td></td>
</tr>
<tr>
<td>ELEC 323</td>
<td>TOOLS AND MODELS FOR DATA SCIENCE</td>
<td></td>
</tr>
<tr>
<td>COMP 370</td>
<td>EVOLUTIONARY BIOINFORMATICS</td>
<td></td>
</tr>
<tr>
<td>ELEC 333</td>
<td>REASONING ABOUT ALGORITHMS</td>
<td></td>
</tr>
<tr>
<td>COMP 382</td>
<td>PARALLEL COMPUTING</td>
<td></td>
</tr>
<tr>
<td>COMP 430</td>
<td>INTRODUCTION TO DATABASE SYSTEMS</td>
<td></td>
</tr>
</tbody>
</table>

Policies for the BA Degree with a Major in Statistics

Program Restrictions and Exclusions
Students pursuing the major in Statistics should be aware of the following program restriction:

- Students pursuing the minor in Data Science may fulfill its requirements according to the following guidelines: i) DSCI 301 is fulfilled by STAT 310 or STAT 315; ii) DSCI 302 may be used as the STAT major’s Advanced Computing elective; and iii) DSCI 303 must be substituted with STAT 413.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the major in Statistics should be aware of the following departmental transfer credit guidelines:

- No more than 3 courses (9 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the major.
- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.
Opportunities for the BA Degree with a Major in Statistics

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Fifth-Year Master's Degree Option for Rice Undergraduate Students
Rice students have an option to pursue the Master of Statistics (MStat) degree by adding an additional fifth year to their four undergraduate years of science and engineering studies.

Advanced Rice undergraduate students in good academic standing may apply to the MStat degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master's degree program. A plan of study will need to be approved by the student's undergraduate advisor and the MStat program director.

As part of this option and opportunity, Rice undergraduate students:

- must complete the requirements for a bachelor's degree and the master's degree independently of each other (i.e., no course may be counted toward the fulfillment of both degrees).
- should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
- more information on this Undergraduate - Graduate Concurrent Enrollment opportunity, including specific information on the registration process can be found here (p. 17).

Internship and Research Opportunities
The Department of Statistics encourages its major and minors to participate in the practice of statistics through summer internships, employment and research. Information on current opportunities are posted here: https://statistics.rice.edu/undergraduate-program/opportunities. Students can also approach individual faculty about research opportunities in their group. An undergraduate advisor can talk with you about these and other possibilities.

Additional Information
For additional information, please see the Statistics website: https://statistics.rice.edu/.

Program Learning Outcomes for the MA and PhD Degrees in the field of Statistics

Upon completing the MA and PhD degrees in the field of Statistics, students will be able to:

1. Master fundamental theory in probability and statistics.
2. Become familiar with a broad range of statistical methods for applications.
4. Develop effective communication skills as a professional statistician.
5. Develop the skills to do independent research.

Requirements for the MA and PhD Degrees in the field of Statistics

MA Degree Program
The MA degree is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students awarded the MA degree in the field of Statistics should be aware that:

- The MA degree in the field of Statistics requires 30 credit hours of approved coursework as well as one of the following:
  - the completion of an original thesis and defense in a public oral examination; or
  - satisfactory performance on the PhD comprehensive examinations, and the completion of a major project.
- A candidacy MA degree is awarded to statistics PhD students through option (2) where the major project corresponds to the doctoral thesis proposal.
- An MA degree is available to PhD students in the Departments of Economics or Political Science through option (1) where the original doctoral thesis and defense is related to the MA in the field of statistics.
- The MA degree awarded in the field of statistics is a non-thesis master's degree.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total Credit Hours Required for the MA Degree in the field of Statistics</td>
</tr>
</tbody>
</table>

Requirements for the PhD Degree in the field of Statistics

PhD Degree Program
For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the PhD degree in the field of Statistics must complete:

- A minimum of 90 credit hours of approved coursework beyond the bachelor's degree and a minimum of 60 hours beyond a master's degree.
- A satisfactory performance on a required qualifying examination and an original thesis with a public oral defense.
All Statistics graduate students are assigned a limited amount of teaching and other departmental service as part of their graduate education. The assignment usually entails less than 10 hours per week, averaged over the semester. Students completing the PhD degree in 4 years will be assigned no more than 4 semesters of service.

Summary

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</table>

Total Credit Hours Required for the PhD Degree in the field of Statistics 90

Policies for the PhD Degree in the field of Statistics

Department of Statistics Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Statistics publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Statistics_Graduate_Handbook.pdf

Admission

Preparation for PhD Program: All applicants are required to take the Graduate Record Exam (GRE), and the quantitative, verbal, and analytical tests. Financial support is available for well-qualified doctoral students.

Additional Information

For additional information, please see the Statistics website: https://statistics.rice.edu/

Opportunities for the PhD Degree in the field of Statistics

Additional Master's Degrees Options

Students pursuing the PhD degree in the field of Statistics, or in the field of Economics, have the opportunity to also earn a Master of Arts (MA) degree in either the fields of Statistics or Economics, respectively. For additional information, see the Opportunities (p. 379) tab on the Economics page.

Additionally, students pursuing the PhD degree in the field of Political Science have the opportunity to also earn a Master of Arts (MA) degree in the field of Statistics. For additional information, see the Opportunities (p. 775) tab on the Political Science page.

Additional Information

For additional information, please see the Statistics website: https://statistics.rice.edu/

Master of Statistics (MStat) Degree

Program Learning Outcomes for the MStat Degree

Upon completing the MStat degree, students will be able to:

1. Master fundamental theory in probability and statistics.
2. Become familiar with a broad range of statistical methods for applications.
4. Develop effective communication skills as a professional statistician.

Requirements for the MStat Degree

The MStat degree is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MStat degree must complete:

- A minimum of 30 credit hours to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University.
- The requirements of one area of specialization (see below for areas of specialization). The MStat degree program offers four areas of specialization:
  - Bioinformatics, Statistical Genetics, and Biostatistics, or
  - Environmental Statistics, or
  - Financial Statistics and the Statistics of Risk, or
  - Statistical Computing and Data Mining.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master's degree.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
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</table>

Total Credit Hours Required for the MStat Degree 30

Degree Requirements

Summary

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<thead>
<tr>
<th>Code</th>
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</table>

Core Requirements 1

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</table>

Area of Specialization 2

Select a minimum of 2 courses (or up to 5 courses) from any of the following Areas of Specialization:

- Bioinformatics, Statistical Genetics, and Biostatistics

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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2019-2020 General Announcements
PDF Generated 1/29/2020
Master of Statistics (MStat) Degree

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<th>Code</th>
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<tr>
<td>STAT 547</td>
<td>SURVIVAL ANALYSIS</td>
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<tr>
<td>STAT 553</td>
<td>BIOSTATISTICS</td>
<td></td>
</tr>
<tr>
<td>STAT 623</td>
<td>PROBABILITY IN BIOINFORMATICS AND GENETICS</td>
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</table>

Environmental Statistics

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<tr>
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<tbody>
<tr>
<td>STAT 684</td>
<td>ENVIRONMENTAL RISK ASSESSMENT &amp; HUMAN HEALTH</td>
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<tr>
<td>CEVE 684</td>
<td>ENVIRONMENTAL RISK ASSESSMENT &amp; HUMAN HEALTH</td>
<td></td>
</tr>
<tr>
<td>STAT 685</td>
<td>ENVIRONMENTAL STATISTICS AND DECISION MAKING</td>
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Financial Statistics and the Statistics of Risk

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<tr>
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<th>Title</th>
<th>Credit Hours</th>
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</thead>
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<td>STAT 621</td>
<td>APPLIED TIME SERIES AND FORECASTING</td>
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<tr>
<td>STAT 682</td>
<td>QUANTITATIVE FINANCIAL ANALYTICS</td>
<td></td>
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<tr>
<td>STAT 686</td>
<td>MARKET MODELS</td>
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</table>

Statistical Computing and Data Mining

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<thead>
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<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>STAT 525</td>
<td>BAYESIAN STATISTICS</td>
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<tr>
<td>STAT 541</td>
<td>MULTIVARIATE ANALYSIS</td>
<td></td>
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<tr>
<td>STAT 542</td>
<td>SIMULATION</td>
<td></td>
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<tr>
<td>STAT 613</td>
<td>STATISTICAL MACHINE LEARNING</td>
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</table>

Elective Requirements

Select up to 9 credit hours of remaining coursework from approved electives in a targeted area of interest to reach 30 total credit hours.

Total Credit Hours: 30

Footnotes and Additional Information

1. These courses are normally completed by the end of the first 2 semesters.
2. Students are allowed to choose either a broad-based or specialized program of study. Depending on the student's selected specialization, the mix of required, specialization-specific and elective courses will be jointly determined by the student and the graduate advisor. Students will meet with their advisor during the first year of the program to select an individualized plan of study, with periodic tune-ups as the program progresses.
3. Students may be asked to take specific courses outside the department, depending on the incoming background of the student, and career objectives. Area of specialization and elective coursework will be chosen between the MStat student and the advisor. See below for typically approved coursework.

Approved Electives outside Statistics

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tbody>
<tr>
<td>BUSI 521</td>
<td>FINANCIAL ECONOMICS I</td>
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<tr>
<td>ECON 505</td>
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<tr>
<td>BUSI 522</td>
<td>CORPORATE FINANCE</td>
<td></td>
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<tr>
<td>CAAM 502</td>
<td>ANALYSIS II</td>
<td></td>
</tr>
<tr>
<td>CAAM 519</td>
<td>COMPUTATIONAL SCIENCE I</td>
<td></td>
</tr>
<tr>
<td>CAAM 536</td>
<td>NUMERICAL METHODS FOR PARTIAL DIFFERENTIAL EQUATIONS</td>
<td></td>
</tr>
<tr>
<td>CEVE 555</td>
<td>NUMERICAL METHODS FOR PARTIAL DIFFERENTIAL EQUATIONS</td>
<td></td>
</tr>
<tr>
<td>CAAM 554</td>
<td>NUMERICAL ANALYSIS II</td>
<td></td>
</tr>
<tr>
<td>CAAM 560</td>
<td>OPTIMIZATION THEORY</td>
<td></td>
</tr>
<tr>
<td>CAAM 564</td>
<td>NUMERICAL OPTIMIZATION</td>
<td></td>
</tr>
<tr>
<td>CAAM 571</td>
<td>LINEAR AND INTEGER PROGRAMMING</td>
<td></td>
</tr>
<tr>
<td>CEVE 678</td>
<td>APPLIED STOCHASTIC MECHANICS</td>
<td></td>
</tr>
<tr>
<td>MECH 678</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEVE 679</td>
<td>APPLIED MONTE CARLO ANALYSIS</td>
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</tr>
<tr>
<td>MECH 679</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHBE 615</td>
<td>APPLICATION OF MOLECULAR SIMULATION AND STATISTICAL MECHANICS</td>
<td></td>
</tr>
<tr>
<td>CHBE 682</td>
<td>SYSTEMS BIOLOGY OF HUMAN DISEASES</td>
<td></td>
</tr>
<tr>
<td>BIOE 682</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Approved Electives

Depending on the student's interest, up to 15 credit hours of area of specialization and elective requirements may be chosen from the following typically approved coursework, in conjunction with the MStat advisor.
Opportunities for the MStat Degree

Fifth-Year Master's Degree Option for Rice Undergraduate Students

Rice students have an option to pursue the Master of Statistics (MStat) degree by adding an additional fifth year to their four undergraduate years of science and engineering studies.

Advanced Rice undergraduate students in good academic standing may apply to the MStat degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master's degree program. A plan of study will need to be approved by the student’s undergraduate advisor and the MStat program director.

As part of this option and opportunity, Rice undergraduate students:

- must complete the requirements for a bachelor’s degree and the master's degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
- should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
- more information on this Undergraduate - Graduate Concurrent Enrollment opportunity, including specific information on the registration process can be found here (p. 17).

Additional Information

For additional information, please see the Statistics website: https://statistics.rice.edu/why-mstat

Master of Statistics (MStat) Degree / Master of Business Administration (MBA) Degree

Program Learning Outcomes for the MStat Degree

Upon completing the MStat degree, students will be able to:

1. Master fundamental theory in probability and statistics.
2. Become familiar with a broad range of statistical methods for applications.
4. Develop effective communication skills as a professional statistician.

Program Learning Outcomes for the MBA Degree

Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.

Policies for the MStat Degree

Department of Statistics Graduate Program Handbook

For more detailed information regarding the MStat degree program policies, please see Statistics department’s Graduate Handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Statistics_Graduate_Handbook.pdf

Program Restrictions and Exclusions

Students pursuing this degree should be aware of the following program restriction:

- Courses comprising the 30-credit hour requirement shall not be taken or completed on a pass/fail grading basis.

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

Additional Information

For additional information, please see the Statistics website: https://statistics.rice.edu/why-mstat
3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MStat/MBA Coordinated Degrees Program

Students may earn a coordinated MBA degree and a non-thesis Master of Engineering degree from the George R. Brown School of Engineering in the following fields:

- Chemical Engineering (MChE)
- Computational and Applied Mathematics (MCAAM)
- Computer Science (MCS)
- Industrial Engineering (MIE)
- Materials Science and Nanoengineering (MMSNE)
- Mechanical Engineering (MME)
- Statistics (MStat)

For the coordinated MBA/Master of Engineering degrees, students must complete:

- A minimum of 69 credit hours in approved coursework*, including:
  - A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the Master of Engineering degree requirements
  - A minimum of 24 credit hours in the corresponding engineering discipline
  - A minimum of 6 credit hours in elective requirements*
- A minimum of 45 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the MBA degree requirements
- A minimum of 45 credit hours of business coursework
- All MBA core requirements, the global field experience, custom core requirements, and coordinated elective requirements

*Note: A maximum of 6 credit hours of the Master of Engineering degree elective requirements may be selected from business course offerings (MGMP, MGMT, or MICO) and used to fulfill the requirements for both the MBA and the Master of Engineering degrees.

Students plan their course schedules in consultation with the George R. Brown School of Engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department. Coordinated degrees candidates can fulfill requirements for both degrees within 2 academic years.

For general university requirements, see Graduate Degrees (p. 49). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Candidates in the MBA/Master of Engineering coordinated degrees program must complete all requirements as listed for both degrees, and must apply and be accepted in both degree programs.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Coordinated Master of Engineering Degree</td>
<td>Minimum of 30</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the Coordinated MBA Degree</td>
<td>Minimum of 45</td>
</tr>
</tbody>
</table>

Coordinated MStat Degree Requirements

Students in the coordinated MBA/MStat degrees program must complete the Core Requirements and Area of Specialization of the MStat degree program (p. 835) and Coordinated MStat Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MStat Core Requirements</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>MStat Area of Specialization</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Coordinated MStat Elective Requirements</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Select a maximum of 6 credit hours of approved course offerings (MGMP, MGMT, or MICO) from the Jones Graduate School of Business at the 500-level or above</td>
<td>30</td>
</tr>
</tbody>
</table>

Coordinated MBA Degree Requirements

Students in the coordinated MBA/Master of Engineering degrees program or in the coordinated MBA/Master of Science degree from the Professional Science Master’s (PSM) degrees program must complete the Core Requirements, Global Field Experience, and Custom Core Requirements of the full-time MBA degree program (p. 214) and the Coordinated MBA Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Full-time MBA Core Requirements</td>
<td>25.5</td>
</tr>
<tr>
<td></td>
<td>Full-time MBA Global Field Experience Requirement</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>Full-time MBA Custom Core Courses</td>
<td>3-6</td>
</tr>
<tr>
<td></td>
<td>Coordinated MBA Elective Requirements</td>
<td>12-15</td>
</tr>
<tr>
<td></td>
<td>Select an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours.</td>
<td>45</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1 To fulfill the remaining requirements for the coordinated MBA degree program, students must complete an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours. (MGMT 703, MGMT 704, and MGMT 705 are not accepted as electives.) The second year of the program is dedicated entirely to MBA elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. MBA electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.
Policies for the MStat/MBA Coordinated Degrees Program

Additional Information

For additional information on these two degrees:

1. Please see the Statistics website: https://statistics.rice.edu/
2. Please see the Jones Graduate School of Business website: https://business.rice.edu/

Opportunities for the MStat/MBA Coordinated Degrees Program

Additional Information

For additional information on these two degrees:

1. Please see the Statistics website: https://statistics.rice.edu/
2. Please see the Jones Graduate School of Business website: https://business.rice.edu/

Minor in Statistics

Program Learning Outcomes for the Minor in Statistics

Upon completing the minor in Statistics, students will be able to:

1. Apply and demonstrate a foundational knowledge in fundamental theory in probability and statistical inference.
2. Apply and demonstrate a foundational knowledge in evaluating statistical models.
3. Apply and demonstrate a foundational knowledge in statistical computing for data analysis and data science.

Requirements for the Minor in Statistics

Students pursuing the minor in Statistics must complete:

• A minimum of 6 courses (19-20 credit hours, depending on course selection) to satisfy minor requirements.
• A minimum of 5 courses (15 credit hours) taken at the 300-level or above.
• A maximum of 2 courses (6 credit hours) from study abroad or transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.
• The requirements for one area of specialization (see below for areas of specialization). The Statistics minor offers two areas of specialization:
  • **Area of Specialization: Track A** designed for mathematically sophisticated students who wish to understand not only how statistical methods are used, but also how they are developed, or
  • **Area of Specialization: (p. ) Track B** designed to help students develop a working knowledge of statistics and the wide range of possibilities for the use and misuse of statistical methods.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the minor’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/)). Students and their academic advisors should identify and clearly document the courses to be taken.

<table>
<thead>
<tr>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>Total Credit Hours Required for the Minor in Statistics</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Minor Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>Area of Specialization</td>
</tr>
<tr>
<td>Select 1 from the following Areas of Specialization (see Areas of Specialization below):</td>
</tr>
<tr>
<td>Track A</td>
</tr>
<tr>
<td>Track B</td>
</tr>
<tr>
<td>Total Credit Hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Area of Specialization: Track A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students must complete the 6 courses (19-20 credit hours total, depending on course selection) as listed below to satisfy the requirements for the Track A area of specialization.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAT 310 / ECON 307</td>
<td>PROBABILITY AND STATISTICS</td>
<td>3-4</td>
</tr>
<tr>
<td>or STAT 315 / DSCI 301</td>
<td>PROBABILITY AND STATISTICS FOR DATA SCIENCE</td>
<td></td>
</tr>
<tr>
<td>STAT 405</td>
<td>R FOR DATA SCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>STAT 410</td>
<td>LINEAR REGRESSION</td>
<td>4</td>
</tr>
<tr>
<td>Elective Requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select 3 electives from departmental (STAT) course offerings at the 300-level or above.</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Total Credit Hours</td>
<td>19-20</td>
<td></td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1. STAT 305 and STAT 385 do not count as electives for Track A.
   The following are recommended electives for Track A: STAT 313, STAT 411, STAT 413, STAT 418, STAT 421, STAT 423, STAT 425, STAT 449, and STAT 453. Other electives may be chosen as well, with advisor approval.

<table>
<thead>
<tr>
<th>Area of Specialization: Track B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students must complete the 6 courses (20 credit hours total) as listed below to satisfy the requirements for the Track B area of specialization.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select 2 courses from the following:</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>STAT 280</td>
<td>ELEMENTARY APPLIED STATISTICS</td>
<td></td>
</tr>
<tr>
<td>or STAT 305</td>
<td>INTRODUCTION TO STATISTICS FOR BIOSCIENCES</td>
<td></td>
</tr>
<tr>
<td>STAT 385</td>
<td>METHODS OF DATA ANALYSIS AND SYSTEM OPTIMIZATION</td>
<td></td>
</tr>
</tbody>
</table>
Elective Requirements

Select 4 electives from departmental (STAT) course offerings at the 300-level or above.  

<table>
<thead>
<tr>
<th>Total Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1 STAT 305 and STAT 385 do not count as electives for Track B. The following are recommended electives for Track B: STAT 313, STAT 405, STAT 482, STAT 484 / CEVE 484, STAT 485, and STAT 486. Other electives may be chosen as well, with advisor approval. Also, with advisor approval, 1 elective may be from departments other than Statistics.

Policies for the Minor in Statistics

Program Restrictions and Exclusions

Students pursuing the minor in Statistics should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 11), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the minor in Statistics should be aware of the following departmental transfer credit guidelines:

- No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the minor.
- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

Additional Information

For additional information, please see the Statistics website: https://statistics.rice.edu/.

Opportunities for the Minor in Statistics

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Additional Information

For additional information, please see the Statistics website: https://statistics.rice.edu/.

Study of Women, Gender and Sexuality

Contact Information

Study of Women, Gender and Sexuality

https://cswgs.rice.edu/
318 Rayzor Hall
713-348-5784

Helena Michie
Program Director
michie@rice.edu

The undergraduate major and the graduate certificate program take an interdisciplinary approach in their exploration of women's lives and histories and the role that ideas about sexual differences and sexual identities have played in human societies.

Areas of inquiry include women's participation in social and cultural production; the construction of heteronormative gender and sexuality as well as lesbian, gay, bisexual, and transgender identities; the relationship between ideas about gender and concepts inherent in other social, political, and legal structures; and the implications of feminist and sexuality studies for philosophical and epistemological traditions.

Students acquire an understanding of how adopting gender as a significant category of analysis challenges existing disciplines. They gain proficiency in the methods used to study and compare cultural constructions of gender and sexuality, and they become familiar with the ongoing fundamental debates in women's, gender, and sexuality studies.

Bachelor's Program

- Bachelor of Arts (BA) Degree with a Major in the Study of Women, Gender, and Sexuality (p. 841)

Certificate

- Certificate in the Study of Women, Gender, and Sexuality (p. 845)

Center Director and Director of Graduate Studies

Helena Michie

Associate Center Director and Director of Undergraduate Studies

Jacqueline Couti

Associate Center Director

Brian Riedel

Professors

Tani E. Barlow
Elias K. Bongmba
Jenifer L. Bratter
Marcia Brennan
Joseph A. Campana, Jr.
Kathleen Canning
Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
- Course offerings/subject code: SWGS

Program Description and Code
- Center for the Study of Women, Gender, and Sexuality: SWGS

Undergraduate Degree Code and Description
- Bachelor of Arts Degree: BA

Undergraduate Major Code and Description
- Major in the Study of Women, Gender, and Sexuality: SWGS

Graduate Certificate Description and Code
- Certificate in the Study of Women, Gender and Sexuality: WGS

CIP Code and Description

1 Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Bachelor of Arts (BA) Degree with a Major in Study Of Women, Gender and Sexuality

Program Learning Outcomes for the BA Degree with a Major in the Study of Women, Gender and Sexuality

Upon completing the BA degree with a major in the Study of Women, Gender and Sexuality, students will be able to:

1. Demonstrate an awareness of the diversity of feminist thought in the past and present.
2. Demonstrate familiarity with key issues in the study of women's lives and histories.
3. Demonstrate knowledge of social, political, and cultural features of gender and sexuality in the US and globally.
4. Understand diverse global feminist perspectives, including critical race studies and feminist contributions to social and critical theory.
5. Demonstrate knowledge of the feminist concept of engaged research based upon cumulative practice as engaged researchers in extra-classroom activities.
6. Develop skills in analytical writing as well as in oral and visual presentation.
Requirements for the BA Degree with a Major in the Study of Women, Gender and Sexuality

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in the Study of Women, Gender and Sexuality must complete:

- A minimum of 12-13 courses (36-37 credit hours), depending on course selection, to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 5 courses (15 credit hours) taken at the 300-level or above.

Students who are pursuing two majors (i.e., are double majors) and have declared the major in the Study of Women, Gender and Sexuality must complete:

- A minimum of 10-11 courses (30-31 credit hours), depending on course selection, to satisfy major requirements.

Double majors who drop the other major are required to meet the requirements listed for single majors.

All students must work out their individual courses of study with their faculty advisors. Each student’s course of study must be approved by the SWGS Undergraduate Advisor. Course requirement tracking forms are available in the Study of Women, Gender and Sexuality office.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Women, Gender and Sexuality (for single majors)</td>
<td>36-37</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Women, Gender and Sexuality (for double majors)</td>
<td>30-31</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Study of Women, Gender and Sexuality</td>
<td>120</td>
</tr>
</tbody>
</table>

Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Core Requirements</td>
<td></td>
</tr>
<tr>
<td>SWGS 101</td>
<td>INTRODUCTION TO WOMEN &amp; GENDER</td>
<td>3</td>
</tr>
<tr>
<td>or SWGS 201</td>
<td>INTRODUCTION TO LESBIAN, GAY, BISEXUAL, AND TRANSGENDER STUDIES</td>
<td>3</td>
</tr>
<tr>
<td>Select 1 course from Non-Western Studies Electives (see course list below)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Select 1 course from Critical Race Studies Electives (see course list below)</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Elective Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Select 6 elective courses from department approved electives or from additional elective courses in Non-Western, Critical Race Studies, or Theory Electives (see course lists below)</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Women, Gender and Sexuality (for single majors)</td>
<td>36-37</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Women, Gender and Sexuality (for double majors)</td>
<td>30-31</td>
</tr>
<tr>
<td></td>
<td>Additional Credit Hours to Complete BA Degree Requirements</td>
<td>23-30</td>
</tr>
<tr>
<td></td>
<td>University Graduation Requirements (p. 26)</td>
<td>60</td>
</tr>
</tbody>
</table>

Total Credit Hours | 120

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 Double majors who drop the other major are required to meet the requirements listed for single majors.

2 Students may pursue an optional specialization in Poverty, Social Justice and Human Capabilities. See an advisor for more information.

3 Double majors may satisfy this requirement by selecting 4 courses (12 credit hours) from the department approved electives, or from additional electives in Non-Western Studies, Critical Race Studies, or Theory.

Course Lists to Satisfy Requirements

Elective Requirements

Students must select a minimum of 1 course (3 credit hours) from Non-Western Studies and a minimum of 1 course (3 credit hours) from Critical Race Studies. If SWGS 345/HIST 340 is not selected as a Core Requirement, students must select a minimum of 1 course (3 credit hours) from Theory Electives. To fulfill the remaining major requirements, students must complete a total of 6 courses (18 credit hours) from the department approved electives, or from additional elective courses in Non-Western Studies, Critical Race Studies, or Theory Electives. Course offerings may vary from year to year, and students are urged to consult with the undergraduate advisor or with the director at the beginning of each semester.

Non-Western Studies Electives

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Select at least 1 course from the following:</td>
<td>3</td>
</tr>
<tr>
<td>FREN 414</td>
<td>SEX AND RACE IN THE FRENCH ATLANTIC</td>
<td>3</td>
</tr>
<tr>
<td>Code</td>
<td>Title</td>
<td>Credit Hours</td>
</tr>
<tr>
<td>--------</td>
<td>----------------------------------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>SWGS 250 / POLI 250 / ASIA 251</td>
<td>SEX, MONEY, AND POWER AROUND THE WORLD</td>
<td></td>
</tr>
<tr>
<td>SWGS 315 / RELI 315 / ASIA 315</td>
<td>GENDER AND ISLAM</td>
<td></td>
</tr>
<tr>
<td>SWGS 384 / HIST 384 / ASIA 328</td>
<td>MODERN GIRL AND ASIA IN THE WORLD</td>
<td></td>
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<tr>
<td>SWGS 399 / ASIA 399 / MDEM 379</td>
<td>WOMEN IN CHINESE LITERATURE</td>
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<tr>
<td>SWGS 449 / ANTH 449</td>
<td>CULTURES OF SEXUALITY</td>
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**Critical Race Studies Electives**

Select at least 1 course from the following:

<table>
<thead>
<tr>
<th>Code</th>
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</thead>
<tbody>
<tr>
<td>FREN 413</td>
<td>BLACK VENUS/VÉNUS NOIRE: REPRESENTATIONS OF BLACK WOMEN IN THE LONG 19TH CENTURY</td>
<td>3</td>
</tr>
<tr>
<td>FREN 414</td>
<td>SEX AND RACE IN THE FRENCH ATLANTIC</td>
<td></td>
</tr>
<tr>
<td>SOCI 389</td>
<td>RACE, GENDER, CLASS ON FILM</td>
<td></td>
</tr>
<tr>
<td>SWGS 234 / HIST 241</td>
<td>U.S. WOMEN'S HISTORY I: COLONIAL BEGINNINGS TO THE CIVIL WAR</td>
<td></td>
</tr>
<tr>
<td>SWGS 235 / HIST 242</td>
<td>U.S. WOMEN'S HISTORY II: CIVIL WAR TO THE PRESENT</td>
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</tr>
<tr>
<td>SWGS 329 / ENGL 369</td>
<td>THE AMERICAN WEST AND ITS OTHERS</td>
<td></td>
</tr>
<tr>
<td>SWGS 338 / HIST 338</td>
<td>19TH CENTURY WOMEN'S NARRATIVES</td>
<td></td>
</tr>
<tr>
<td>SWGS 348 / JWST 348</td>
<td>SEX AND GENDER IN MODERN JEWISH CULTURE</td>
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<tr>
<td>SWGS 354 / ENGL 371 / SPPO 354</td>
<td>CHICANO/A LITERATURE</td>
<td></td>
</tr>
<tr>
<td>SWGS 370 / ENGL 370</td>
<td>AFRICAN AMERICAN LITERATURE</td>
<td></td>
</tr>
<tr>
<td>SWGS 389 / ENGL 389</td>
<td>YOUTH STUDIES</td>
<td></td>
</tr>
<tr>
<td>SWGS 415 / LING 415</td>
<td>SOCIOLINGUISTICS</td>
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<tr>
<td>SWGS 453 / ENGL 470</td>
<td>STUDIES IN AFRICAN AMERICAN LITERATURE</td>
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<tr>
<td>SWGS 466 / SPPO 430</td>
<td>LATIN AMERICAN WOMEN'S CULTURE</td>
<td></td>
</tr>
</tbody>
</table>

**Theory Electives**

Select at least 1 course from the following:

<table>
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<tr>
<th>Code</th>
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<tbody>
<tr>
<td>SWGS 317</td>
<td>TRANSGENDER STUDIES</td>
<td>3</td>
</tr>
<tr>
<td>SWGS 345 / HIST 340</td>
<td>HISTORY OF FEMINISM</td>
<td></td>
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<tr>
<td>SWGS 380 / ENGL 382</td>
<td>FEMINIST THEORY</td>
<td></td>
</tr>
<tr>
<td>SWGS 407 / ENGL 481</td>
<td>FEMINIST STUDIES</td>
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**Department Approved Electives**

Select up to 6 courses from the following (or select additional courses from the course lists above): 3

<table>
<thead>
<tr>
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<td>FEMINIST SCIENCE AND TECHNOLOGY STUDIES</td>
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<tr>
<td>FWIS 127</td>
<td>FEMINIST FABULATIONS: SF BY WOMEN</td>
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<tr>
<td>SWGS 111 / PHIL 11</td>
<td>INTRODUCTION TO FEMINIST PHILOSOPHY</td>
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<td>SWGS 205 / LING 205</td>
<td>LANGUAGE AND SOCIETY</td>
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<td>SWGS 273 / ENGL 273</td>
<td>MEDICINE AND MEDIA</td>
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<td>SWGS 301 / ENGL 317 / MDEM 317</td>
<td>ARTHURIAN LITERATURE</td>
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<tr>
<td>SWGS 303</td>
<td>GENDER AND SCIENCE</td>
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<tr>
<td>SWGS 305 / ENGL 316 / MDEM 316</td>
<td>CHAUCER</td>
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<tr>
<td>SWGS 306 / HEAL 306</td>
<td>HUMAN SEXUALITY</td>
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<td>SWGS 308</td>
<td>THE FUTURE OF FOOD: FEMINIST, QUEER, AND CRITICAL APPROACHES</td>
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<tr>
<td>SWGS 320 / THEA 320</td>
<td>GENDER, SEXUALITY AND THE ADAPTATION OF TRANSNATIONAL LITERATURE TO PERFORMANCE</td>
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<td>SWGS 324 / SOCI 306</td>
<td>SOCIOLOGY OF GENDER</td>
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<td>SWGS 325 / SOCI 334</td>
<td>SOCIOLOGY OF THE FAMILY</td>
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<tr>
<td>SWGS 327 / ENGL 381</td>
<td>TOPICS IN WOMEN WRITERS</td>
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<td>SWGS 331 / PSYC 331</td>
<td>PSYCHOLOGY OF GENDER</td>
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<td>SWGS 332 / ANTH 325</td>
<td>SEX, SELF, AND SOCIETY IN ANCIENT GREECE</td>
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<td>SWGS 333 / ANTH 311</td>
<td>MASCULINITIES</td>
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<td>SWGS 336 / ANTH 308</td>
<td>THE ANTHROPOLOGY OF THE HISTORICAL IMAGINATION</td>
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<tr>
<td>SWGS 343 / ENGL 343</td>
<td>JANE AUSTEN'S WORLDS</td>
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<td>SWGS 346 / HART 346</td>
<td>SEMINAR ON LOVE: MAKING LOVE IN MODERN ART AND THOUGHT</td>
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<td>SWGS 353 / ANTH 354</td>
<td>ILLNESS, DISABILITY, AND THE GENDERED BODY</td>
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<tr>
<td>SWGS 361 / GERM 338 / HUMA 373</td>
<td>NEW GERMAN FILM: HITLER'S CINEMATIC CHILDREN</td>
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</tr>
<tr>
<td>SWGS 364 / ENGL 354</td>
<td>QUEER LITERARY CULTURES</td>
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</table>
Policies for the BA Degree with a Major in the Study of Women, Gender and Sexuality

Transfer Credit
For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: [https://oaa.rice.edu](https://oaa.rice.edu). Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the major in the Study of Women, Gender and Sexuality should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the SWGS Undergraduate Advisor (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

Distribution Credit Information
The determination of distribution eligibility is done as part of the new course creation process ([https://registrar.rice.edu/facstaff/coursecourseprocess/](https://registrar.rice.edu/facstaff/coursecourseprocess/)). As part of an annual roll call ([https://registrar.rice.edu/facstaff/distribution_credit/](https://registrar.rice.edu/facstaff/distribution_credit/)) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean's Offices of each of the academic schools.

Faculty and leadership in the academic schools are responsible for ensuring that the courses identified as distribution-eligible meet the criteria as set in the General Announcements (p. 26). Students are responsible for ensuring that they meet graduation requirements (p. 26) by completing coursework designated as distribution at the time of course registration.

Distribution courses from the Study of Women, Gender and Sexuality (SWG) are broad in theme and scope and prompt students to probe knowledge about how gender and sexuality are crucial components of political life, social life, and general well-being. They involve a broad, interdisciplinary spectrum of such knowledge and provide students with the tools for thinking critically about formations of gender and sexuality in diverse contexts. Current DI courses are 100- and 200-level introductions to the study of women and gender and to LGBT studies.

Additional Information
For additional information, please see the Center for the Study of Women, Gender and Sexuality website: [https://cswgs.rice.edu](https://cswgs.rice.edu).

Opportunities for the BA Degree with a Major in the Study of Women, Gender and Sexuality

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Honors Program
Students wishing to pursue the Study of Women, Gender and Sexuality Honors Program will complete a research-based thesis under the guidance of a faculty mentor. Students wishing to undertake an honors thesis should confirm their eligibility with the SWGS Undergraduate Advisor in the spring of their junior year.

Requirements for admission to the program are:
- a major in SWGS
- a cumulative Rice GPA at the end of the junior year of at least 3.00
- a SWGS major GPA of at least 3.50

The process of preparing the thesis begins in the spring of the junior year, when the student chooses an advisor from the SWGS faculty and with that advisor produces a proposal for a research project. The proposal must be approved by the SWGS Undergraduate Advisor by the last day of the exam period in the spring of the junior year. In the fall of the senior year, students enroll in SWGS 498 for directed research supervised by a CSWGS faculty affiliate and are in regular consultation with their advisors.

In the spring of the senior year, students enroll in SWGS 499 and work closely with their advisors as they complete the thesis. Honors students present their projects in a public event at the end of the semester.

The length and content of the thesis is to be coordinated with the student's faculty advisor, but generally honors theses are between 40-50 double-spaced pages in length. The bibliography and theoretical apparatus of the thesis must demonstrate an informed engagement with feminist, gender, and sexuality studies.

Students wishing to undertake an honors thesis combining SWGS with another discipline in a substantive way, should select one primary discipline (e.g. Anthropology, Biology, English, etc.) for their thesis home department and work with an advisor in each discipline to create a hybrid thesis in terms of content, methods, and theoretical orientations.

Research, Practicum, and Seminar
The Engaged Research Practicum and Seminar courses (SWGS 494, SWGS 496, and SWGS 497) are open to non-majors. Permission of the instructor is required as well as some background in the study of women, gender or sexuality.

Additional Information
For additional information, please see the Center for the Study of Women, Gender and Sexuality website: https://cswgs.rice.edu/.

See https://humanities.rice.edu/student-life/ for tables of fellowships, prizes, and internships/practica that may be relevant to this major.

Certificate in the Study of Women, Gender and Sexuality

Program Learning Outcomes for the Certificate in the Study of Women, Gender and Sexuality

Upon completing the certificate in the Study of Women, Gender and Sexuality, students will be able to:

1. Demonstrate knowledge of historical and contemporary approaches to the study of women, gender and sexuality across diverse disciplines.

2. Engage through their intellectual production feminist concepts and methodologies, and features of women's studies, gender studies, and/or sexuality studies as academic fields.

3. Incorporate critical debates in the study of women, gender and sexuality in their oral presentations and written analyses, including work for publication and/or use in a thesis.

Requirements for the Certificate in the Study of Women, Gender and Sexuality

The certificate in the Study of Women, Gender and Sexuality is a graduate certificate. For general university requirements, please see Graduate Certificates (p. 54). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the certificate in the Study of Women, Gender and Sexuality must complete:

- A minimum of 3 courses (9 credit hours) to satisfy certificate requirements.
- A minimum of 4 semesters of participation in the SWGS Department Annual Colloquium.
- A thesis (for the PhD program in which they have been admitted) that in some way features the study of women, gender and/or sexuality.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the graduate certificate with a minimum grade of B-(2.67 grade points) in each course.

This certificate is not a freestanding degree program; in addition to fulfilling the certificate requirements outlined below, candidates will be required to complete successfully the degree program to which they have been admitted in order to receive this certificate. Upon completion, the certificate is awarded at the same time as the conferral of the student's Rice degree, along with a formal notation on their academic transcript.

The courses listed below satisfy the requirements for this certificate. In certain instances, courses not on this official list may be substituted upon approval of the certificate's academic advisor, or where applicable, the Program Director. Course substitutions must be formally applied and entered into Degree Works by the certificate's Official Certifier (https://registrar.rice.edu/facstaff/degeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
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<td><strong>Total Credit Hours Required for the Certificate in the Study of Women, Gender and Sexuality</strong></td>
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### Certificate Requirements

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<td><strong>Core Requirements</strong></td>
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<tr>
<td>SWGS 501</td>
<td>FEMINIST DEBATES</td>
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</tr>
<tr>
<td>SWGS 502</td>
<td>GENDER, THE DISCIPLINES, AND INTERDISCIPLINARITY</td>
<td>3</td>
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<table>
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</thead>
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<tr>
<td></td>
<td><strong>Elective Requirement</strong></td>
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<td>Select 1 course from the following:</td>
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<tr>
<td>POLI 536</td>
<td>WOMEN AND MINORITY REPRESENTATION</td>
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<tr>
<td>SWGS 503</td>
<td>DIRECTED READING</td>
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</tr>
<tr>
<td>SWGS 534 / HART 534</td>
<td>SEEING SEX IN EUROPEAN ART, 1400-1700</td>
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<tr>
<td>SWGS 542 / ENGL 542</td>
<td>VICTORIAN FICTION</td>
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<td>SWGS 546 / ENGL 546</td>
<td>SPECIAL TOPICS: 20TH CENTURY BRITISH LITERATURE</td>
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<tr>
<td>SWGS 556 / LING 556</td>
<td>SEMINAR IN SOCIOLINGUISTICS</td>
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<tr>
<td>SWGS 581 / ENGL 581</td>
<td>CULTURAL STUDIES: CONTEMPORARY LITERATURE, CULTURE AND POLITICS</td>
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<tr>
<td>SWGS 585 / ENGL 585</td>
<td>POSTCOLONIALISM AND BEYOND</td>
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</tr>
<tr>
<td></td>
<td><strong>Annual Colloquium (minimum of 4 semesters)</strong></td>
<td>9</td>
</tr>
</tbody>
</table>

### Footnotes and Additional Information

1. The Annual Colloquium requirement is met by attending a series of colloquium seminars and associated public lectures offered by the Center for the Study of Women, Gender and Sexuality (CSWGS) over the course of a year, for a total of four (4) semesters. Generally students complete this requirement within two (2) years of study. It is recommended, though not required, that students attend the Annual Colloquium beyond the minimum requirements. For more information about the Annual Colloquium, see the Opportunities tab.
Policies for the Certificate in the Study of Women, Gender and Sexuality

Advising
In most cases, students will be able to complete the certificate requirements within the normal time limits for coursework in their PhD program. All students must work out their individual courses of study with the SWGS graduate advisor and the graduate advisor in their home departments. Each student’s course of study must be pre-approved by the SWGS graduate advisor. Please note that not all courses listed as certificate requirements will be offered every academic year.

Thesis Work
Students pursuing the Certificate in the Study of Women, Gender and Sexuality are strongly encouraged to include a member of the CSWGS faculty on their thesis committee and to consult regularly with the faculty member as they pursue their thesis work.

Program Restrictions and Exclusions
Students pursuing the certificate in the Study of Women, Gender and Sexuality should be aware of the following program restriction:

- Graduate students may declare their intent to pursue a university certificate only after they have first been admitted into a graduate-level Rice degree-granting program.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Additional Information
For additional information, please see the Center for the Study of Women, Gender and Sexuality website: https://cswgs.rice.edu/

Opportunities for the Certificate in the Study of Women, Gender and Sexuality

Colloquium
Students in the Certificate in the Study of Women, Gender and Sexuality program participate in a colloquium consisting of a series of seminars and public lectures over the course of a year, offered annually at Rice and organized by the Center for the Study of Women, Gender and Sexuality (CSWGS). Colloquium topics are determined by the CSWGS steering committee with a view to highlighting emerging knowledge in gender, sexuality, and women’s studies. The colloquium provides graduate students with the opportunity to engage in sustained intellectual exchange with leading scholars and to participate in producing cutting-edge work in the field.

Colloquium attendance constitutes an official requirement for the certificate (for more information, see the Requirements tab). Attendance beyond the required minimum is highly encouraged.

Graduate Stipend
The Center for the Study of Women, Gender and Sexuality (CSWGS) awards graduate stipends, within the limits of available funds, to enrolled certificate students during the prospectus-writing semester. Although timelines vary depending on the student’s home department, this normally occurs during the semester following the completion of all required coursework (within the student’s home department as well as in the Certificate in the Study of Women, Gender and Sexuality), and after achieving candidacy in the PhD program.

To receive the stipend, graduate students will be asked to submit a 500-word thesis proposal that identifies the ways women, gender, and/or sexuality feature in their project. CSWGS will ask for this proposal after the student completes qualifying exams.

Teaching Assistants
Certificate students are eligible to work as teaching assistants for an undergraduate SWGS course. In some cases, certificate students may be eligible to serve as an instructor of record for a SWGS course.

Additional Information
For additional information, please see the Center for the Study of Women, Gender and Sexuality website: https://cswgs.rice.edu/

See https://humanities.rice.edu/student-life/ for tables of fellowships, prizes, and internships/practica that may be relevant to this program.

Subsurface Geoscience

Contact Information

Subsurface Geoscience
https://profms.rice.edu/
203 Keck Hall
713-348-3188

Dagmar Beck
Program Director
dkbeck@rice.edu

Colin A. Zelt
Faculty Director
czelt@rice.edu

The professional master’s degree in Subsurface Geoscience is designed for students who wish to become proficient in applying geological knowledge and geophysical methods to finding and developing reserves of oil and natural gas.

The MSSG degree program offers three areas of specialization:
• Energy Data Management: prepares students to understand exploration and production as a data-driven business, to become data enabled geoscientists to match demands in the energy industry, or
• Geology: prepares students to be explorationists, with strong skills in using seismic and other geophysical methods along with geological principles to find oil and natural gas, or
• Geophysics: prepares students to become technical experts in aspects of exploration seismology.

The MS in Subsurface Geoscience (MSSG) degree is part of the professional science master’s (PSM) program at Rice housed in the Wiess School of Natural Sciences. These master’s degrees are designed for students seeking to gain further scientific core expertise coupled with enhanced management and communication skills. They instill a level of scholastic proficiency that exceeds that of the bachelor’s level, and create the cross-functional aptitudes needed in modern industry. This program will allow students to move more easily into careers related to energy data management, geology, and/or geophysics.

A coordinated MBA/MSSG degrees program is also offered in conjunction with the Jesse H. Jones Graduate School of Business.

Subsurface Geoscience does not currently offer an academic program at the undergraduate level.

Master’s Program
• Master of Science in Subsurface Geoscience (MSSG) Degree (p. 847)

Coordinated Program
• Master of Science in Subsurface Geoscience (MSSG) Degree / Master of Business Administration (MBA) Degree (p. 850)

Director
Colin A. Zelt

Professors
Gerald R. Dickens
André W. Droxler
Alan R. Levander
Julia K. Morgan
Fenglin Niu

Associate Professor
Helge Gonnerman

Assistant Professors
Melodie E. French
Jeffrey Nittrouer

Adjunct Faculty
Kenneth Abdullah
Vitor Abreu
Kevin Biddle
Gary Gray
Malcolm Ross
Kurt Rudolph

Lori Summa

Description and Code Legend
Note: Internally the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject codes: Courses from various subjects may apply toward the graduate degree.

Program Description and Code
• Earth, Environmental, and Planetary Sciences: EEPS

Graduate Degree Description and Code
• Master of Science in Subsurface Geoscience degree: MSSG

Graduate Degree Program Description and Code
• Degree Program in Subsurface Geoscience: SGEO

CIP Code and Description 1
• SGEO Major/Program: CIP Code/Title: 40.0601 - Geology/Earth Science, General

1 Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Master of Science in Subsurface Geoscience (MSSG) Degree

Program Learning Outcomes for the MSSG Degree
Upon completing the MSSG degree, students will be able to:
1. Become proficient in applying geological and geophysical knowledge and data management methods.
2. Develop business and management skills, and obtain practical skills valuable to the energy industry.
3. Develop written, oral, and visual communication skills to bridge the gap between science and business.

Requirements for the MSSG Degree
The MSSG degree is a non-thesis master’s degree. For general university requirements for non-thesis masters degrees, please see Non-Thesis Master’s Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the MSSG degree must complete:
• A minimum of 14 courses (minimum of 39-41 credit hours, depending on course selection) to satisfy degree requirements.
• A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
• A minimum of 24 credit hours must be taken at Rice University.
• A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University.
• A 3-6 month internship. Instead of a thesis, at the conclusion of their internship, students must present their internship project in both oral and written form as part of the Professional Master’s Project.
Master of Science in Subsurface Geoscience (MSSG) Degree

(NSCI 512). Part-time students who already work in their area of study may request approval to fulfill the internship requirement by working on a specific, pre-approved project with their current employer.

- The requirements for one area of specialization (see below for areas of specialization). The MSSG degree program offers three areas of specialization:
  - Energy Data Management (p. 849), or
  - Geology (p. 849), or
  - Geophysics (p. 849).
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master's degree.

Note: Some of the listed courses are not offered every year, and some may also have prerequisites or require instructor permission.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/afacstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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Degree Requirements

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<td>Core Requirements</td>
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<td>Core Science Courses</td>
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<tr>
<td>ESCI 549</td>
<td>DATA MANAGEMENT AND DATA GOVERNANCE</td>
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<td>ESCI 558</td>
<td>3D SEISMIC REFLECTION DATA INTERPRETATION</td>
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<td>ESCI 615</td>
<td>DECISION MAKING AND ECONOMICS IN THE ENERGY INDUSTRY</td>
<td>3 or 4</td>
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<tr>
<td>or ESCI 545</td>
<td>HYDROCARBON SYSTEMS ANALYSIS</td>
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</tr>
<tr>
<td>ESCI 636</td>
<td>WELL LOGGING AND PETROPHYSICS</td>
<td>3</td>
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<tr>
<td></td>
<td>Cohort Courses</td>
<td></td>
</tr>
<tr>
<td>NSCI 501</td>
<td>PROFESSIONAL MASTER'S SEMINAR (2 semesters required, 1st semester)</td>
<td>1</td>
</tr>
<tr>
<td>NSCI 501</td>
<td>PROFESSIONAL MASTER'S SEMINAR (2 semesters required, 2nd semester)</td>
<td>1</td>
</tr>
<tr>
<td>NSCI 511</td>
<td>SCIENCE POLICY, AND ETHICS</td>
<td>3</td>
</tr>
<tr>
<td>NSCI 512</td>
<td>PROFESSIONAL MASTER'S PROJECT</td>
<td>1</td>
</tr>
<tr>
<td>NSCI 610 / ENGI 610</td>
<td>MANAGEMENT FOR SCIENCE AND ENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Three to Six Month Internship</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A three to six month internship is required</td>
<td></td>
</tr>
</tbody>
</table>

Area of Specialization

Select 1 of the following Areas of Specialization (see Areas of Specialization below):

- Energy Data Management
- Geology
- Geophysics

Total Credit Hours

Footnotes and Additional Information

1 ESCI 558 requires a prerequisite of ESCI 442 or ESCI 642 that may be taken concurrently. See a faculty advisor for more information.

2 Practical experience is offered via a three to six month immersion. The internship will be under the guidance of a host company, government agency, or non-profit organization. At the conclusion of the internship, students must present a summary of their internship project in both oral and written form for the cohort course Professional Master's Project (NCSI 512). Part-time students who already work in their area of study may fulfill the internship requirements by working on an approved project with their current employer.

Areas of Specialization

Students must complete a minimum of 6 courses (minimum of 18-19 credit hours, depending on area of specialization) to satisfy the requirements for one area of specialization.

Area of Specialization: Energy Data Management

Students must complete a minimum of 6 courses (minimum of 18 credit hours) to satisfy the requirements for the MSSG degree program’s Energy Data Management area of specialization.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Core Requirements (for the Area of Specialization: Energy Data Management)</td>
<td></td>
</tr>
<tr>
<td>ESCI 530</td>
<td>DATA SCIENCE ENVIRONMENTAL AND GEOSCIENCES</td>
<td>3</td>
</tr>
<tr>
<td>ESCI 570</td>
<td>COMPUTATIONAL AND DATA SCIENCE IN THE ENERGY INDUSTRY</td>
<td>3</td>
</tr>
<tr>
<td>ESCI 571</td>
<td>DATA SCIENCE METHODS AND DATA MANAGEMENT</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Elective Requirements (for the Area of Specialization: Energy Data Management)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select a minimum of 3 courses (minimum of 9 credit hours) from the following:</td>
<td>9</td>
</tr>
<tr>
<td>CEVE 528 / ENGI 528</td>
<td>ENGINEERING ECONOMICS</td>
<td></td>
</tr>
<tr>
<td>COMP 543</td>
<td>GRADUATE TOOLS AND MODELS - DATA SCIENCE</td>
<td></td>
</tr>
<tr>
<td>COMP 556 / ELEC 556</td>
<td>INTRODUCTION TO COMPUTER NETWORKS</td>
<td></td>
</tr>
<tr>
<td>ECON 601</td>
<td>ENERGY ECONOMICS I</td>
<td></td>
</tr>
<tr>
<td>ESCI 652</td>
<td>GIS FOR SCIENTISTS AND ENGINEERS</td>
<td></td>
</tr>
<tr>
<td>GLBL 543</td>
<td>ENERGY POLICY</td>
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<tr>
<td>MGMT 609</td>
<td>MANAGING ENERGY TRANSITIONS</td>
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<td>MGMT 610</td>
<td>FUNDAMENTALS OF THE ENERGY INDUSTRY</td>
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<tr>
<td>MGMT 611</td>
<td>GEOPOLITICS OF ENERGY</td>
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<tr>
<td>MGMT 661</td>
<td>INTERNATIONAL BUSINESS LAW</td>
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2019-2020 General Announcements

PDF Generated 1/29/2020
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<tr>
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<tr>
<td>MGMT 670</td>
<td>OPERATIONS STRATEGY</td>
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<td>MGMT 676</td>
<td>SOCIAL ENTERPRISE</td>
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<tr>
<td>STAT 518</td>
<td>PROBABILITY</td>
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</table>

Total Credit Hours 18

Footnotes and Additional Information

1. COMP 533 is an acceptable substitute for ESCI 570. COMP 543 is an acceptable substitute for ESCI 571. Students should only take the accepted COMP substitute courses if the ESCI courses are not offered.

2. Note: Some of the listed courses are not offered every year, and other coursework may be offered that satisfies the stated requirements upon approval. Depending on the student’s background or interest, course substitutions for any required or elective course may be approved by the program’s academic advisor. Students should consult with their academic advisors before enrolling.

3. Students following the Energy Data Management Area of Specialization may take departmental (ESCI) coursework listed in other Areas of Specialization for the MSSG degree with the approval of the Area of Specialization Advisor.

Area of Specialization: Geology

Students must complete a minimum of 6 courses (minimum of 18-19 credit hours, depending on course selection) to satisfy the requirements for the MSSG degree program’s Geology area of specialization.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>ESCI 626</td>
<td>INTRODUCTION TO SEISMIC INTERPRETATION: STRUCTURAL STYLES AND SEISMIC STRATIGRAPHY</td>
<td>3 or 4</td>
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<tr>
<td>or ESCI 663</td>
<td>STRUCTURE AND EVOLUTION OF TECTONIC SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>ESCI 627</td>
<td>SEQUENCE STRATIGRAPHY</td>
<td>3</td>
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<tr>
<td>or ESCI 504</td>
<td>SILICICLASTIC DEPOSITIONAL SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>or ESCI 516</td>
<td>TOPICS ON CARBONATES</td>
<td></td>
</tr>
</tbody>
</table>

Elective Requirements (for the Area of Specialization: Geology)

Select a minimum of 4 courses (minimum of 12 credit hours) from the following: 1

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESCI 504</td>
<td>SILICICLASTIC DEPOSITIONAL SYSTEMS</td>
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</tr>
<tr>
<td>ESCI 506</td>
<td>CARBONATE DEPOSITIONAL SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>ESCI 507</td>
<td>APPLIED SEDIMENTOLOGY II</td>
<td></td>
</tr>
<tr>
<td>ESCI 516</td>
<td>TOPICS ON CARBONATES</td>
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</tr>
<tr>
<td>ESCI 527</td>
<td>SEMINAR: QUANTITATIVE PETROLEUM SYSTEMS ANALYSIS 2</td>
<td></td>
</tr>
<tr>
<td>ESCI 544</td>
<td>HYDROCARBON EXPLORATION</td>
<td></td>
</tr>
<tr>
<td>ESCI 545</td>
<td>HYDROCARBON SYSTEMS ANALYSIS</td>
<td></td>
</tr>
<tr>
<td>ESCI 564</td>
<td>SEISMIC REFLECTION DATA PROCESS</td>
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</tr>
<tr>
<td>ESCI 627</td>
<td>SEQUENCE STRATIGRAPHY</td>
<td></td>
</tr>
<tr>
<td>ESCI 642</td>
<td>EXPLORATION GEOPHYSICS</td>
<td></td>
</tr>
<tr>
<td>ESCI 652</td>
<td>GIS FOR SCIENTISTS AND ENGINEERS</td>
<td></td>
</tr>
<tr>
<td>ESCI 663</td>
<td>STRUCTURE AND EVOLUTION OF TECTONIC SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>MGMT 609</td>
<td>MANAGING ENERGY TRANSITIONS</td>
<td></td>
</tr>
<tr>
<td>MGMT 610</td>
<td>FUNDAMENTALS OF THE ENERGY INDUSTRY</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours 18

Footnotes and Additional Information

1. Note: Some of the listed courses are not offered every year, and other coursework may be offered that satisfies the stated requirements upon approval. Depending on the student’s background or interest, course substitutions for any required or elective course may be approved by the program’s academic advisor. Students should consult with their academic advisors before enrolling.

Area of Specialization: Geophysics

Students must complete a minimum of 6 courses (minimum of 18 credit hours) to satisfy the requirements for the MSSG degree program’s Geophysics area of specialization.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESCI 640</td>
<td>GEOPHYSICAL DATA ANALYSIS: DIGITAL SIGNAL PROCESSING</td>
<td>3</td>
</tr>
<tr>
<td>ESCI 641</td>
<td>GEOPHYSICAL DATA ANALYSIS: INVERSE METHODS</td>
<td>3</td>
</tr>
</tbody>
</table>

Elective Requirements (for the Area of Specialization: Geophysics)

Select a minimum of 4 courses (minimum of 12 credit hours) from the following: 1

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESCI 504</td>
<td>SILICICLASTIC DEPOSITIONAL SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>ESCI 506</td>
<td>CARBONATE DEPOSITIONAL SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>ESCI 544</td>
<td>HYDROCARBON EXPLORATION</td>
<td></td>
</tr>
<tr>
<td>ESCI 545</td>
<td>HYDROCARBON SYSTEMS ANALYSIS</td>
<td></td>
</tr>
<tr>
<td>ESCI 564</td>
<td>SEISMIC REFLECTION DATA PROCESS</td>
<td></td>
</tr>
<tr>
<td>ESCI 627</td>
<td>SEQUENCE STRATIGRAPHY</td>
<td></td>
</tr>
<tr>
<td>ESCI 642</td>
<td>EXPLORATION GEOPHYSICS</td>
<td></td>
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<tr>
<td>ESCI 652</td>
<td>GIS FOR SCIENTISTS AND ENGINEERS</td>
<td></td>
</tr>
<tr>
<td>ESCI 663</td>
<td>STRUCTURE AND EVOLUTION OF TECTONIC SYSTEMS</td>
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<tr>
<td>MGMT 609</td>
<td>MANAGING ENERGY TRANSITIONS</td>
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<td>MGMT 610</td>
<td>FUNDAMENTALS OF THE ENERGY INDUSTRY</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours 18

Footnotes and Additional Information

1. Note: Some of the listed courses are not offered every year, and other coursework may be offered that satisfies the stated requirements upon approval. Depending on the student's background or interest, course substitutions for any required or elective course may be approved by the program’s academic advisor. Students should consult with their academic advisors before enrolling.
Policies for the MSSG Degree
Professional Science Master’s Graduate Program Handbook
The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Professional Science Master’s Program publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Professional_Science_Masters_Handbook.pdf

Admission
Admission to graduate study in subsurface geoscience is open to qualified students holding a bachelor’s degree (BA or BS degree) in a related science or engineering program that included coursework in general chemistry, general physics, calculus, linear algebra, and differential equations. Completed coursework in geology and/or geophysics is preferred, as well as completed coursework in computer skills and some programming. Scores from the general Graduate Record Examination (GRE) are required. Department faculty evaluate the previous academic record and credentials of each applicant individually.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 64). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

Additional Information
For additional information, please see the Subsurface Geoscience website: https://profms.rice.edu/

Opportunities for the MSSG Degree
Fifth-Year Master’s Degree Option for Rice Undergraduate Students
Rice students have an option to pursue the Master of Science in Subsurface Geoscience (MSSG) degree by adding an additional fifth year to their four undergraduate years of science studies.

Advanced Rice undergraduate students in good academic standing may apply to the MSSG degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master’s degree program. A plan of study will need to be approved by the student’s undergraduate advisor, the Professional Science Master’s (PSM) program director, and the MSSG program director.

As part of this option and opportunity, Rice undergraduate students:

- must complete the requirements for a bachelor’s degree and the master’s degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
- should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
- more information on this Undergraduate - Graduate Concurrent Enrollment opportunity, including specific information on the registration process can be found here (p. 17).

Additional Information
For additional information, please see the Subsurface Geoscience website: https://profms.rice.edu/

Master of Science in Subsurface Geoscience (MSSG) Degree / Master of Business Administration (MBA) Degree
Program Learning Outcomes for the MSSG Degree
Upon completing the MSSG degree, students will be able to:

1. Become proficient in applying geological and geophysical knowledge and data management methods.
2. Develop business and management skills, and obtain practical skills valuable to the energy industry.
3. Develop written, oral, and visual communication skills to bridge the gap between science and business.

Program Learning Outcomes for the MBA Degree
Upon completing the MBA degree, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MSSG/MBA Coordinated Degrees Program
Students may earn a coordinated MBA degree and a Master of Science degree from the Wiess School of Natural Sciences Professional Science Master’s (PSM) program in the following fields:

- Bioscience and Health Policy (MSBHP)
- Environmental Analysis (MSEA)
- Space Studies (MSSpS)
- Subsurface Geoscience (MSSG)

For the coordinated MBA/Master of Science degree from the Professional Science Master’s (PSM) program, students must complete:

- A minimum of 75 credit hours in approved coursework, including:
  - A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the Professional Science Master’s (PSM) degree requirements
  - A minimum of 30 credit hours in the corresponding science discipline
• All PSM degree-specific requirements
• A three to six month internship
• A minimum of 45 credit hours of graduate-level study (coursework at the 500-level or above) to satisfy the MBA degree requirements
• A minimum of 45 credit hours of business coursework
• All MBA core requirements, the global field experience, custom core requirements, and coordinated elective requirements

Students plan their course schedules in consultation with the Wiess School of Natural Sciences PSM program director and with the Jones Graduate School of Business Registrar Department. Coordinated degrees candidates can fulfill requirements for both degrees within 3 academic years.

For general university requirements, see Graduate Degrees (p. 49). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Candidates in the MBA/Master of Science degree from the Professional Science Master’s (PSM) program must complete all requirements as listed for both degrees, and must apply and be accepted in both degree programs.

Coordinated MBA/MSSG Degree Requirements
Students in the coordinated MBA/Master of Engineering degrees program or in the coordinated MBA/Master of Science degree from the Professional Science Master's (PSM) program must complete the Core Requirements, Global Field Experience, and Custom Core Requirements of the full-time MBA degree program (p. 214) and the Coordinated MBA Elective Requirements below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Full-time MBA Core Requirements</td>
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<tr>
<td></td>
<td>Full-time MBA Global Field Experience Requirement</td>
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<tr>
<td></td>
<td>Full-time MBA Custom Core Courses</td>
<td>3-6</td>
</tr>
<tr>
<td></td>
<td>Coordinated MBA Elective Requirements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select an additional 12-15 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 45 total credit hours.</td>
<td>12-15</td>
</tr>
</tbody>
</table>

Total Credit Hours: 45

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tr>
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<td>Total Credit Hours Required for the Coordinated Master of Science Degree</td>
<td>Minimum of 30</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the Coordinated MBA Degree</td>
<td>Minimum of 45</td>
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</tbody>
</table>

Policies for the MSSG/MBA Coordinated Degrees Program

Additional Information
For additional information on these two degrees:
1. Please see the Subsurface Geoscience website: https://profms.rice.edu/
2. Please see the Jones Graduate School of Business website: https://business.rice.edu/

Opportunities for the MSSG/MBA Coordinated Degrees Program

Additional Information
For additional information on these two degrees:
1. Please see the Subsurface Geoscience website: https://profms.rice.edu/
2. Please see the Jones Graduate School of Business website: https://business.rice.edu/

Systems, Synthetic and Physical Biology

Contact Information
Systems, Synthetic and Physical Biology
https://sspb.rice.edu/
170 BioScience Research Collaborative
713-348-5961

Jonathan J. (Joff) Silberg
Program Director
joff@rice.edu

Systems, Synthetic, and Physical Biology (SSPB) is a new discipline that draws upon principles from physics, chemistry, engineering, and mathematics and integrates experimental biochemical, cell biological, and molecular genetics approaches with computational design, simulation, and modeling to anticipate the properties of complex and multiscale biological systems. The Graduate Program in SSPB represents a cooperative effort by faculty in the schools of Natural Sciences and the Engineering to provide training in this highly interdisciplinary field. This program is overseen by the Institute of Biosciences and Bioengineering (IBB) and overseen by an executive committee composed of members from any of the participating departments.

The interdisciplinary nature of the SSPB program allows students to achieve their graduate degree requirements by taking select classes from any of the participating departments and performing their thesis research under supervision of any faculty associated with the program.

Systems, Synthetic, and Physical Biology does not currently offer an academic program at the undergraduate level.

Master's Program
• Master of Science (MS) Degree in the field of Systems, Synthetic, and Physical Biology*

Doctoral Program
• Doctor of Philosophy (PhD) Degree in the field of Systems, Synthetic, and Physical Biology (p. 853)

* Although students are not normally admitted to a Master of Science (MS) degree program, graduate students may earn the MS as they work towards the PhD.

Director
Jonathan J. Silberg, BioSciences

Associate Professors
Matthew Bennett, BioSciences
Michael Diehl, Bioengineering
Ching-Hwa Kiang, Physics and Astronomy
Michael H. Kohn, BioSciences
Robert M. Raphael, Bioengineering
Jacob Robinson, Electrical and Computer Engineering
Laura Segatori, Chemical and Biomolecular Engineering
Junghae Suh, Bioengineering
Jeffrey J. Tabor, Bioengineering
David Zhang, Bioengineering

Assistant Professors
Caleb Bashor, Bioengineering
James Chappell, BioSciences
Xue Gao, Chemical and Biomolecular Engineering
Xaq Pitkow, Electrical and Computer Engineering
Lauren Stadler, Civil and Environmental Engineering
Omid Veiseh, Bioengineering

Adjunct Professors
Susan M. Rosenberg, Biochemistry & Cell Biology
François St-Pierre, Electrical and Computer Engineering

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject codes: Courses from various subjects may apply toward this program

Program Description and Code
• Systems, Synthetic, and Physical Biology: SSPB

Graduate Degree Descriptions and Codes
• Master of Science degree: MS
• Doctor of Philosophy degree: PhD
**Graduate Degree Program Description and Code**

- Degree Program in Systems, Synthetic and Physical Biology: SSPB

**CIP Code and Description**

- SSPB Major/Program: CIP Code/Title: 30.0101 - Biological and Physical Sciences

1 Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: [https://nces.ed.gov/ipeds/cipcode/](https://nces.ed.gov/ipeds/cipcode/)

**Doctor of Philosophy (PhD) Degree in the field of Systems, Synthetic and Physical Biology**

**Program Learning Outcomes for MS and PhD Degrees in the field of Systems, Synthetic and Physical Biology**

Upon completing the MS and PhD degrees in the field of Systems, Synthetic and Physical Biology, students will be able to:

1. Develop knowledge of the breadth of topics within Science, Technology, Engineering and Mathematics (STEM) disciplines that underlie the foundations of Systems, Synthetic and Physical Biology.
2. Demonstrate the critical thinking skills and ability to integrate knowledge from diverse STEM fields to solve biological problems.
3. Demonstrate the written communication skills required for a thesis describing independent research, published research, and external research proposals.
4. Demonstrate the effective oral and visual communication skills necessary for articulating scientific findings and significance to diverse audiences.

**Requirements for the MS and PhD Degrees in the field of Systems, Synthetic and Physical Biology**

**MS Degree Program**

The MS degree is a thesis master's degree. For general university requirements, please see Thesis Master's Degrees (p. 68). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). All students involved in research must complete the Collaborative Institutional Training Initiative (CITI) Responsible Conduct of Research online course. Candidates for the MS degree also must:

- Choose an advisor (PI) by the end of the first semester
- Fulfill a teaching requirement
- Submit an original research thesis
- Complete 30 semester hours of study (including thesis research hours)
- Defend the thesis in a public oral examination.

**PhD Degree Program**

For general university requirements, please see Doctoral Degrees (p. 65). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). The Graduate Program in SSPB offers Master's and Doctoral degrees. Students will be directly admitted only to the Doctoral program. For each degree, the student must fulfill the university requirements set forth in the General Announcements under which he or she entered. The semester credit hour requirements may be fulfilled both by classroom hours and research hours. Students are required to accumulate at least 25 semester hours of graduate approved courses while maintaining a GPA of 3.00 or higher. Students must be enrolled for at least 12 credits each semester.

**Summary**

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<tr>
<th>Code</th>
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<th>Credit Hours</th>
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</thead>
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<td></td>
<td>Total Credit Hours Required for the PhD Degree in the field of Systems, Synthetic and Physical Biology</td>
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**Degree Requirements**

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<th>Title</th>
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</thead>
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<tr>
<td>SSPB 501</td>
<td>PHYSICAL BIOLOGY</td>
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</tr>
<tr>
<td>BIOE 502</td>
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<td></td>
</tr>
<tr>
<td>SSPB 502</td>
<td>INTRO COMPUTATIONAL SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 552</td>
<td>BIOLOGY. MODELING &amp; DESIGN PRINCIPLES OF BIOCHEM NETWORKS</td>
<td></td>
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<td>SSPB 503</td>
<td>SYNTHETIC BIOLOGY</td>
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</tr>
<tr>
<td>BIOE 508</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNIV 594</td>
<td>RESPONSIBLE CONDUCT OF RESEARCH</td>
<td>1</td>
</tr>
<tr>
<td>SSPB 599</td>
<td>GRADUATE TEACHING IN SSPB</td>
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</tbody>
</table>

**Advanced Topics**

Select at least 3 courses from approved Advanced Topics in the SSPB field

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
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**Seminars**

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<tr>
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<tr>
<td>SSPB 550</td>
<td>GRADUATE SEMINAR (4 semesters required, 1st semester)</td>
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<tr>
<td>SSPB 550</td>
<td>GRADUATE SEMINAR (4 semesters required, 2nd semester)</td>
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<tr>
<td>SSPB 550</td>
<td>GRADUATE SEMINAR (4 semesters required, 3rd semester)</td>
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<tr>
<td>SSPB 550</td>
<td>GRADUATE SEMINAR (4 semesters required, 4th semester)</td>
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**Elective Requirements**

Select 2 open elective courses

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**Additional Coursework as Approved by the Department**

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**Total Credit Hours**

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<tbody>
<tr>
<td></td>
<td></td>
<td>90</td>
</tr>
</tbody>
</table>
Footnotes and Additional Information
1. All students are required to complete UNIV 594 during their first semester, and credit earned for UNIV 594 does not apply toward the minimum of 24 credit hours in coursework requirement for the degree.
2. Courses are subject to approval by the Graduate Advising Committee (GAC). It is recommended that at least one of the courses in advanced topics apply quantitative concepts from computer science, physics, and mathematics or statistics to biological problems, and at least one of the courses focus on biology within the sub-area where students pursue their thesis research.
3. All students are required to enroll in SSPB 550 each semester in the first two years.

Other Program Requirements (PhD students)
All students involved in research must complete the Collaborative Institutional Training Initiative (CITI) Responsible Conduct of Research online course. Candidates for the PhD degree also must:

• Choose an advisor (PI) by the end of the first semester or equivalent
• Fulfill a teaching requirement
• Submit a thesis proposal that provides evidence of their ability to carry out original research in a specialized area of Systems, Synthetic and Physical Biology before the beginning of their fifth semester in residence
• Complete 90 semester hours of advanced study (including thesis research hours)
• Pass their qualifying exam which includes thesis proposal defense
• Defend the PhD thesis in a public oral examination.

Qualifying Exam (PhD students)
Students are expected to pass their qualifying exam before the beginning of their fifth semester in residence unless an extension has been granted by the Program Director. Students may retake the exam up to two times if granted permission to do so by the Program Director. Students who do not pass the Qualifying Exam may exit the program with a MS degree if the appropriate requirements have been met.

Thesis Proposal Defense
Students are required to submit their written proposal to their Research Progress Committee no later than two weeks before the scheduled exam. The proposal is expected to be in NIH NRSA-like format - limited to 10 pages (not including References) and include the following sections: Abstract, Background, Problem Statement, Research Plan, Preliminary Results, References, and Proposed Timeline. Students whose research area may not be suitable for this format may seek approval of an alternative format by their Research Progress Committee. On the day of the defense, students are expected to give an oral presentation of their proposal and answer technical questions. The student should expect to give a presentation, which if uninterrupted would last about 45 minutes, and be prepared for substantial questioning by the Research Progress Committee.

Policies for the PhD Degree in the field of Systems, Synthetic and Physical Biology

Systems, Synthetic and Physical Biology Graduate Program Handbook
The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, Systems, Synthetic and Physical Biology publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2019_20/Systems_Synthetic_Physical_Biology_Graduate_Handbook.pdf

Admission
Applicants for graduate study in Systems, Synthetic and Physical Biology must have:

• BA or BS degree in natural sciences, engineering, or related field (or some equivalent)
• Strong ability and motivation for research as indicated by academic record, Graduate Record Examination (GRE) scores, and recommendations

Although the program offers an MS degree, only students who intend to pursue the PhD degree are admitted into the program. In rare instances, students who fulfilled the MS degree requirements and who do not wish to continue their studies toward their PhD degree may choose to graduate with MS degree. Information on admission to the program is available on the SSPB website (http://sspb.rice.edu/admissions/).

Prerequisite Requirements
Students are required to have training in the following 5 foundation areas:

1. Molecular Biology (Introductory Biology class, and at least 1 upper-level biology class such as Cell Biology, Genetics, or Biophysics)
2. Biochemical Reaction Kinetics (Biochemistry, Bioreaction Engineering, or equivalent)
3. Physical Chemistry or Thermodynamics or Statistical Mechanics
4. Ordinary Differential Equations
5. Statistics

If students are missing formal training in these subjects, they are required to take the equivalent background courses during their first year at Rice (no more than 1 of these classes can be taken as Pass/Fail). The corresponding courses at Rice include the following:

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<thead>
<tr>
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<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td>BIOC 341</td>
<td>CELL BIOLOGY</td>
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<tr>
<td>BIOC 301</td>
<td>BIOCHEMISTRY I</td>
<td></td>
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<tr>
<td>BIOE 330</td>
<td>BIOREACTION ENGINEERING</td>
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<tr>
<td>Select 1 from the following:</td>
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<tr>
<td>BIOC 352</td>
<td>PHYSICAL CHEMISTRY FOR THE BIOSCIENCES</td>
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<tr>
<td>BIOE 332</td>
<td>BIOENGINEERING THERMODYNAMICS</td>
<td></td>
</tr>
<tr>
<td>CHEM 301</td>
<td>PHYSICAL CHEMISTRY I</td>
<td></td>
</tr>
<tr>
<td>PHYS 425</td>
<td>STATISTICAL &amp; THERMAL PHYSICS</td>
<td></td>
</tr>
<tr>
<td>Select 1 from the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 211</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA</td>
<td></td>
</tr>
<tr>
<td>CAAM 336</td>
<td>DIFFERENTIAL EQUATIONS IN SCIENCE AND ENGINEERING</td>
<td></td>
</tr>
<tr>
<td>Select 1 from the following:</td>
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<tr>
<td>BIOE 439</td>
<td>APPLIED STATISTICS FOR BIOENGINEERING AND BIOTECHNOLOGY</td>
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</tbody>
</table>
Certificate in Teaching and Learning

Program Learning Outcomes for the Certificate in Teaching and Learning

Upon completing the certificate in Teaching and Learning, students will be able to:

1. Develop an understanding of and explain best practices in teaching and learning.
2. Communicate individual pedagogical values and approaches to teaching and learning.
3. Assess key approaches, methodologies, and trends in the scholarship of teaching and learning.
4. Identify and evaluate pedagogical methods that apply to students' disciplines and teaching interests.
5. Demonstrate effectiveness as instructors through formal presentations.
6. Situate the role of teaching in higher education and the job market.

Requirements for the Certificate in Teaching and Learning

The certificate in Teaching and Learning is a graduate certificate. For general university requirements, please see Graduate Certificates (p. 54). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (p. 55). Students pursuing the certificate in Teaching and Learning must complete:

- A minimum of 4 courses (11 credit hours) to satisfy certificate requirements.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the graduate certificate with a minimum grade of B- (2.67 grade points) in each course.

This certificate is not a freestanding degree program; in addition to fulfilling the certificate requirements outlined below, candidates will be required to complete successfully the degree program to which they have been admitted in order to receive this certificate. Upon completion, the certificate is awarded at the same time as the conferral of the student's Rice degree, along with a formal notation on their academic transcript.

The courses listed below satisfy the requirements for this certificate. In certain instances, courses not on this official list may be substituted upon approval of the certificate's academic advisor, or where applicable, the Program Director. Course substitutions must be formally applied and entered into Degree Works by the certificate's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.
University Courses is not a degree-granting academic program at the undergraduate level.

University Courses is not a degree-granting academic program at the graduate level.

**Dean of Undergraduates**
Bridget K. Gorman

**Dean of Graduate and Postdoctoral Studies**
Seiichi P.T. Matsuda

**Description and Code Legend**
*Note: Internally, the university uses the following descriptions, codes and abbreviations for this academic program. The following is a quick reference:

- Course Catalog/Schedule
  - Course offerings/subject: UNIV

**Visual and Dramatic Arts**

**Contact Information**
Visual and Dramatic Arts
[https://vada.rice.edu/](https://vada.rice.edu/)
202 Rice Media Center
713-348-4882

John Sparagana
Department Chair
sparaga@rice.edu

The Department of Visual and Dramatic Arts welcomes the full spectrum of Rice University undergraduate students. Scientists, architects, historians, engineers and economists, among many others, augment our core of arts majors to create a diverse, lively forum of artists and thinkers. We believe this composite community is a vital asset to majors and non-majors alike: art thrives in contact with new and varied perspectives, and the risk-taking and critical thinking necessary to making art are crucial in many other fields. Beyond a dynamic artistic practice, we aim to cultivate an artistic frame of mind.

Students may focus their education in one of three major concentrations: film and photography, studio art, or theatre. Courses draw on the resources of Rice’s active and accomplished faculty, extensive on-campus facilities, and Houston’s vibrant artistic community. The department boasts a state-of-the-art cinema, as well as a 500-seat proscenium-style theater. Immediately next door, the Moody Center for the Arts hosts interdisciplinary arts courses and mounts exhibitions by internationally acclaimed artists. Rice campus is within walking distance of the Museum of Fine Arts Houston and the Contemporary Arts Museum Houston, and a short drive from the renowned Menil Collection. Distinguished speakers, visiting artists, film series, field trips, student exhibitions and performance opportunities all contribute to an immersive arts education that extends well beyond the classroom.

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**Summary**

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<th>Credit Hours</th>
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<td>PRINCIPLES OF EFFECTIVE COLLEGE TEACHING</td>
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<tr>
<td>UNIV 501</td>
<td>RESEARCH ON TEACHING AND LEARNING</td>
<td>3</td>
</tr>
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<td>UNIV 502</td>
<td>PRACTICUM IN COLLEGE TEACHING</td>
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<tr>
<td>UNIV 599</td>
<td>TEACHING PORTFOLIO ¹</td>
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Total Credit Hours: 11

**Certificate Requirements**

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<td>UNIV 501</td>
<td>RESEARCH ON TEACHING AND LEARNING</td>
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<tr>
<td>UNIV 599</td>
<td>TEACHING PORTFOLIO ¹</td>
<td>2</td>
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</tbody>
</table>

Total Credit Hours: 11

**Footnotes and Additional Information**

¹ The Teaching Portfolio Course (UNIV 599) comprises the experiential learning opportunity requirement for the TAL certificate.

**Policies for the Certificate in Teaching and Learning**

**Program Restrictions and Exclusions**
Students pursuing the certificate in Teaching and Learning should be aware of the following program restriction:

- Graduate students may declare their intent to pursue a university certificate only after they have first been admitted into a graduate-level Rice degree-granting program.

**Transfer Credit**
For Rice University’s policy regarding transfer credit, see [Transfer Credit](#). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [https://oaa.rice.edu/](https://oaa.rice.edu/). Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

**Additional Information**
For additional information, please see the Teaching and Learning website: [https://cte.rice.edu/](https://cte.rice.edu/)

**Opportunities for the Certificate in Teaching and Learning**

**Additional Information**
For additional information, please see the Teaching and Learning website: [https://cte.rice.edu/](https://cte.rice.edu/)

**University Courses**
University courses provide opportunities for dialogue across disciplinary and departmental boundaries. They are an experiment in curriculum development, directed toward students interested in interdisciplinary subjects beyond their elected major.
Bachelor's Program
• Bachelor of Arts (BA) Degree with a Major in Visual and Dramatic Arts
  • and a Major Concentration in Film and Photography (p. 857)
  • and a Major Concentration in Studio Art (p. 861)
  • and a Major Concentration in Theatre (p. 864)

Visual and Dramatic Arts does not currently offer an academic program at the graduate level.

Chair
John Sparagana

Program Advisor - Film and Photography
Charles Dove

Program Advisor - Studio Art
Natasha Bowdoin

Program Advisor - Theatre
Christina Keefe

Professors
Karin L. Broker
Brian Michael Huberman
John Sparagana
Geoffrey L. Winningham

Associate Professor
Christopher Sperandio

Assistant Professors
Natasha Bowdoin
Lisa Lapinski

Professor in the Practice of Film and Media Studies
Charles Dove

Professor in the Practice of Theatre
Christina Keefe

Artist in Residence
Allison Hunter

Lecturer in Film and Media Studies
Tish Stringer

Lecturer in Photography
Justin Roykovitch

Lecturers in Studio Art
Josh Bernstein
Will Fowler

Lecturers in Theatre
Heather Breikjern
Mark Krouskop

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code for Visual and Dramatic Arts: ARTS
• Course offerings/subject code for Film: FILM
• Course offerings/subject code for Photography: FOTO
• Course offerings/subject code for Theatre: THEA

Department Description and Code
• Visual and Dramatic Arts: VADA

Undergraduate Degree Description and Code
• Bachelor of Arts degree: BA

Undergraduate Major Description and Code
• Major in Visual and Dramatic Arts: VADA

Undergraduate Major Concentration Descriptions and Codes
• Major Concentration in Film and Photography: VFIL
• Major Concentration in Studio Art: VSTU
• Major Concentration in Theatre: VTHE

CIP Code and Description
1. VADA Major/Program: CIP Code/Title: 50.0101 - Visual and Performing Arts, General
   VFIL Major Concentration: CIP Code/Title: 50.0605 - Photography
   VSTU Major Concentration: CIP Code/Title: 50.0701 - Art/Art Studies, General
   VTHE Major Concentration: CIP Code/Title: 50.0507 - Directing and Theatrical Production

1 Classification of Instructional Programs (CIP) 2010 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/

Bachelor of Arts (BA) Degree with a Major in Visual And Dramatic Arts and a Major Concentration in Film and Photography
Program Learning Outcomes for the BA Degree with a Major in Visual and Dramatic Arts and a Major Concentration in Film and Photography

Upon completing the BA degree with a major in Visual and Dramatic Arts and a major concentration in Film and Photography, students will be able to:

1. Understand the social, aesthetic, and technological history of film and photography.
2. Become fluent in both older forms of filmmaking and photography and newer ones.
3. Grasp the relationship between the tools and the art.
4. Utilize the understanding and the fluency to create works of art.

Requirements for the BA Degree with a Major in Visual and Dramatic Arts and a Major Concentration in Film and Photography

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Visual and Dramatic Arts and a major concentration in Film and Photography must complete:

- A minimum of 12 courses (36-39 credit hours, depending on course selection) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 7 courses (21 credit hours) taken at the 300-level or above.
- A maximum of 2 courses (6 credit hours) from study abroad or transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.
- The requirements of a major concentration. When students declare the major in Visual and Dramatic Arts, students must additionally identify and declare one of three major concentrations, either in:
  - Film and Photography (p. 858), or
  - Studio Art (p. 861), or
  - Theatre (p. 864).

It is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (registrar@rice.edu).

Students pursuing the major concentration in Film and Photography are strongly encouraged to explore film-related courses offered in other departments that may enrich their selected major concentration, such as philosophy, anthropology, science, history, cultural studies, language, writing, comparative studies, etc. Students should speak with their faculty advisor prior to enrolling.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier: https://registrar.rice.edu/facstaff/degeworks/officialcertifier/.) Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

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<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Visual and Dramatic Arts and a Major Concentration in Film and Photography</td>
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<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Visual and Dramatic Arts</td>
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### Degree Requirements

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<td>Core Requirements</td>
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<td>Select 5 courses from the following:</td>
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<td></td>
<td>FILM 280 / ARTS 280 / HART 280</td>
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<tr>
<td></td>
<td>DOCUMENTARY PRODUCTION</td>
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<td>FILM 327 / ANTH 324 / ARTS 327</td>
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<td>FILMMAKING I</td>
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<td>FILM 444 / ARTS 444</td>
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<td>SENIOR FILM AND PHOTOGRAPHY STUDIO</td>
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<td>INTRODUCTION TO PHOTOGRAPHY</td>
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<td>BEGINNING DIGITAL PHOTOGRAPHY</td>
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<td>INTERMEDIATE DIGITAL PHOTOGRAPHY</td>
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<tr>
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<td>PHOTOGRAPHY BOOKMAKING</td>
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<td></td>
<td>SELECT 1 course from the following:</td>
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<tr>
<td></td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
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<tr>
<td></td>
<td>PHOTOGRAPHY SEMINAR</td>
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<td></td>
<td>VISUALIZING NATURE</td>
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<td></td>
<td>ADVANCED DIGITAL PHOTOGRAPHY</td>
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<td></td>
<td>SELECT 2 courses from the following:</td>
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<td>CRITICAL STUDIES FOR STUDIO PRACTICE</td>
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<td>NONFICTION FILM</td>
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<td>GLOBAL CINEMA</td>
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<td>FILM GENRE: THE WESTERN</td>
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<td>FILM GENRE: SCIENCE FICTION CINEMA</td>
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<td>SEMINAR ON FILM AUTHORSHIP THE</td>
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<td>NEW HOLLYWOOD</td>
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<td></td>
<td>JUNIOR PROFESSIONAL PRACTICES SEMINAR AND FIELD TRIP 1</td>
<td>3</td>
</tr>
</tbody>
</table>
Electives in Visual Arts, Film, Photography, or Theatre

Select 2 elective courses from Studio Arts (ARTS), Film (FILM), Photography (FOTO) or Theatre (THEA) course offerings at the 100-level or above

Advisor Directed Electives in Visual Arts, Film, Photography, or Theatre

Select 1 elective course in the Theory/Criticism of Studio Arts (ARTS), Theatre (THEA), or Film/Media Studies (offered in the departments of Anthropology, English, French Studies, History, etc.)

Total Credit Hours Required for the Major in Visual and Dramatic Arts and a Major Concentration in Film and Photography

Additional Credit Hours to Complete BA Degree Requirements

University Graduation Requirements (p. 26)

Total Credit Hours

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 For additional information regarding ARTS 387, see the Opportunities tab.

2 The Theory/Criticism elective course should be selected in consultation with a Visual and Dramatic Arts faculty advisor. Students must complete 1 course (3 credit hours) in Theory/Criticism of Studio Arts (ARTS), Theatre (THEA), or Film/Media Studies (offered in the departments of Anthropology, English, French Studies, History, etc.). Open selections may be qualified by course prerequisites.

Policies for the BA Degree with a Major in Visual and Dramatic Arts and a Major Concentration in Film and Photography

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in Visual and Dramatic Arts should be aware of the following departmental transfer credit guidelines:

- No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the major. The 2 transfer credit courses should be studio, film, photography, or theatre practice courses required for all majors.
- Transfer students who are transferring coursework from another accredited college or university should be allowed to transfer their undergraduate art courses. However, students must speak with the department chair or program advisor immediately upon transferring to Rice.
- Transfer credit received via the articulation of advanced placement (AP) credit, international baccalaureate (IB) credit, or A-level credit will not be considered towards major requirements.
- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

Distribution Credit Information

The determination of distribution eligibility is done as part of the new course creation process (https://registrar.rice.edu/facstaff/courseprocess/). As part of an annual roll call (https://registrar.rice.edu/facstaff/distribution_credit/) coordinated each Spring by the Office of the Registrar, course distribution eligibility is reviewed and reaffirmed by the Dean's Offices of each of the academic schools.

Faculty and leadership in the academic schools are responsible for ensuring that the courses identified as distribution-eligible meet the criteria as set in the General Announcements (p. 26). Students are responsible for ensuring that they meet graduation requirements (p. 26) by completing coursework designated as distribution at the time of course registration.

Distribution courses from Visual and Dramatic Arts (VADA) are accessible to any student, regardless of their previous experience. These courses are devised for the development of students’ artistic skills, creativity, and engagement with art on both a personal and societal level. DI courses are 100-level and 200-level introductions to the study of art, theatre, film and photography.

Additional Information

For additional information, please see the Visual and Dramatic Arts website: https://vada.rice.edu/

Opportunities for the BA Degree with a Major in Visual and Dramatic Arts and a Major Concentration in Film and Photography

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 48) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 48). Some departments have department-specific Honors awards or designations.

Distinction in Research and Creative Work

Distinction in Research and Creative Work is a university award for select undergraduates, granted at commencement, which appears on the transcript and diploma. Students must apply within their department or program to be considered for the award, and a letter from a faculty member must support the application.

Eligibility for the award extends widely to include a variety of research, design, and other creative projects, as well as persistent dedication to research. Projects completed in part or entirely at other institutions or with community partners will be eligible for consideration.

Applicants must be in good academic standing and have an overall GPA of at least 3.30 in courses completed at Rice.
Also, of further note: The award will be granted only to projects that produce a concrete outcome – e.g. an essay, invention, design, art exhibition, project or performance, or musical composition – and demonstrate commitment and/or achievement above and beyond the norm. Students who complete senior theses, senior design projects, or other required senior capstone projects shall not qualify automatically for consideration for this university distinction.

For the Department of Visual and Dramatic Arts, the application for Distinction in Research and Creative Work must include:

1. application form, including portfolio;
2. overall GPA of 3.30;
3. a written artist statement;
4. letter of support from a Visual and Dramatic Arts faculty member;
5. public exhibition, screening, publication, or performance that includes a lecture or artist talk component by applicant;
6. two-page description of how the project meets the requirements of Distinction.

The department requires exceptional evidence of success, as defined by completion of a project (body of artwork, film, theatrical design work, etc.). Support through the application process is available through the department – e.g. workshops, seminars and individual meetings with faculty mentors.

Contact the department or look online for deadline dates. No electronic submissions accepted. Please note that your project does not have to be already completed to apply for Distinction (all final materials will be due in the Spring semester). The department selects a very limited number of students for this university academic honor.

**Exhibitions, Lectures, and Arts Programs at Rice**

The Department of Visual and Dramatic Arts mounts several art and photography exhibitions and stage productions each year. In addition, exhibitions and related activities organized by the Rice University Art Gallery enrich the teaching program of the Visual and Dramatic Arts department, as well as the larger university and Houston communities.

The department enjoys an ongoing close relationship with local theatres, museums, and galleries. The department offers opportunities for students to work and study with local art venues and alternative art spaces by way collaborative events and programs. The collections and exhibitions of local museums are often the subject of course lectures.

Lectures, symposia, and talks are sponsored by the department and are designed to bring local, national, and international scholars, actors, directors, critics, and studio artists to campus to speak on a broad range of topics and current interests.

**Junior Professional Practices Seminar and Field Trip (ARTS 387)**

ARTS 387 is required for students pursuing the Visual and Dramatic Arts major (all major concentrations). The junior year field trip is designed to help VADA majors focus on the upcoming senior year of intensive studio work, and to get to know the Visual and Dramatic Arts faculty and staff. These are trips to cultural centers nationally and internationally, including visits to museums, galleries, artist studios, theaters, and meetings with creative professionals in the fields of film and photography, studio art, and theatre.

**National Theater Institute**

The National Theater Institute is the educational arm of the renowned Eugene O’Neill Theater Center. The program is designed to complement a liberal arts education with three distinct study-away programs, all offering rigorous, risk-taking theater exploration. The semester long program at the O’Neill Center in Connecticut, the NTI Moscow Art Theater semester, and the seven-week Theateormakers summer program confront the serious theater student with opportunities to discover new creative possibilities.

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**Rice Film Program**

Rice’s film program works in concert with the Visual and Dramatic Arts department’s academic mission to enrich students’ undergraduate experience. Film and media studies students are provided state-of-the-art screening facilities to examine and study the historical and methodological aspects of movies from around the world in celluloid and 4K Digital Cinema Projection with Dolby Digital Sound. Film production students can showcase their work during the academic year on our silver screen in recently renovated projection facilities.

During the academic year, Rice Cinema screens films from around the world—foreign features, shorts, documentaries, and animation—as part of our ongoing partnership with the diverse cultural communities of the City of Houston. Film at Rice reaches beyond the university's hedges to create, engage, and encourage scholarly thought and dialog on the many issues that impact our world. Internationally known filmmakers who have appeared on our campus over the years include Werner Herzog, Rakshak Banietemad, Atom Egoyan, Shirin Neshat, Martin Scorses, Andy Warhol and Dennis Hopper.

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The Rice Theatre Program curriculum offers a solid foundation in all aspects of theatrical production from acting and directing to technology and design for students who wish to pursue a professional career in theatre or continue on to a graduate program. Theatre courses also are open to non-majors who want to gain a greater appreciation for the art of theatre.

There are two main-stage productions (one fall and one spring) and the possibility of two student showcases offered each year in Hamman Hall, a 450-seat proscenium theatre facility. The department invites distinguished guest artists each semester to direct and produce the two main-stage productions. Participation in productions is open to all students.

Theatre Program faculty are actively involved in professional theatre and film locally, nationally, and internationally and actively pursue opportunities to involve advanced students in that work. In addition, advanced students are encouraged to apply for internship positions whenever possible. Rice students have been accepted in competitive internships at theatres such as The Alley Theatre, Houston Shakespeare Festival, Berkeley Repertory Theatre, and Williamstown Theatre Festival. In addition, students are encouraged to study theatre abroad and transfer course credit back to Rice. Approval for transfer credit must be sought.
prior to enrollment in a study-abroad program by contacting the director of the Theatre Program.

In even numbered years, the Theatre Program, sponsored by the Alan and Shirley Grob Endowment for Shakespeare in Performance, hosts the Actors From the London Stage, one of the oldest established touring Shakespeare theatre companies in the world, for a week-long residency of workshops, performances, and lectures. Each tour presents a full-length play by Shakespeare performed by five classically trained actors who come from such prestigious companies as the Royal Shakespeare Company, the Royal National Theatre of Great Britain, and Shakespeare’s Globe Theatre.

Additional Information
For additional information, please see the Visual and Dramatic Arts website: https://vada.rice.edu/

See https://humanities.rice.edu/student-life/ for tables of fellowships, prizes, and internships/practica that may be relevant to this major.

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Bachelor of Arts (BA) Degree with a Major in Visual And Dramatic Arts and a Major Concentration in Studio Art

Program Learning Outcomes for the BA Degree with a Major in Visual and Dramatic Arts and a Major Concentration in Studio Art

Upon completing the BA degree with a major in Visual and Dramatic Arts and a major concentration in Studio Art, students will be able to:

1. Demonstrate a knowledge and understanding of a variety of processes in a range of two and three-dimensional media as well as the ability to apply these acquired skills to other materials and ways of working. This includes students developing their own artistic vocabularies and independent visions.
2. Demonstrate an understanding of how to make work from observation and invention, developing the ability to articulate content and meaning visually through form.
3. Develop critical and analytical thinking skills including the skill to problem solve uniquely. Students gain proficiency navigating the group critique context, with exposure to different critical discussion formats. They will exit with the capability to critique their own work in addition to the work of their peers and other artists.
4. Demonstrate an understanding of the meaning and potential purpose of the arts, a knowledge of art history, art’s role and varied guises in contemporary society, and art’s relationship and engagement with other disciplines including literature, music, philosophy, and the sciences.
5. Develop an understanding of self in the larger context of the practice of the arts.

Requirements for the BA Degree with a Major in Visual and Dramatic Arts and a Major Concentration in Studio Art

For general university requirements, see Graduation Requirements (p. 26). Students pursuing the BA degree with a major in Visual and Dramatic Arts and a major concentration in Studio Art must complete:

- A minimum of 12 courses (39 credit hours) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 7 courses (21 credit hours) taken at the 300-level or above.
- A maximum of 2 courses (6 credit hours) from study abroad or transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.

- The requirements of a major concentration. When students declare the major (p. 11) in Visual and Dramatic Arts, students must additionally identify and declare one of three major concentrations, either in:
  - Film and Photography (p. 858), or
  - Studio Art (p. 861), or
  - Theatre (p. 864).

It is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (registrar@rice.edu).

Students pursuing the major concentration in Studio Art are strongly encouraged to explore art-related courses offered in other departments that may enrich their selected major concentration, such as: philosophy, anthropology, science, history, cultural studies, language, writing, comparative studies, etc. Students should speak with their faculty advisor prior to enrolling.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

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Degree Requirements

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Select 1 course from the following:
Policies for the BA Degree with a Major in Visual and Dramatic Arts and a Major Concentration in Studio Art

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 33). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

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- Transfer students who are transferring coursework from another accredited college or university should be allowed to transfer their undergraduate art courses. However, students must speak with the department chair or program advisor immediately upon transferring to Rice.

- Transfer credit received via the articulation of advanced placement (AP) credit, international baccalaureate (IB) credit, or A-level credit will not be considered towards major requirements.

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

Distribution Credit Information

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**Additional Information**

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**Bachelor of Arts (BA) Degree with a Major in Visual And Dramatic Arts and a Major Concentration in Theatre**

**Program Learning Outcomes for the BA Degree with a Major in Visual and Dramatic Arts and a Major Concentration in Theatre**

Upon completing the BA degree with a major in Visual and Dramatic Arts and a major concentration in Theatre, students will be able to:

1. Demonstrate the ability to adapt and apply their foundational skills and knowledge in theatre design, direction, performance, sound, etc. to perform professionally and effectively a range of roles in an actual, hands-on, theatrical production.
2. Demonstrate the ability to use critical thinking and analytical skills to analyze and evaluate a theatrical text, including being able to identify its structure and form, and to understand characters and specific scenes with the depth necessary for effective performance, scene study, and design.
3. Demonstrate the ability to communicate effectively both verbally and in writing in situations of performance, play analysis, and performance direction, which necessitates collaboration and communication amongst many contributing individuals.
4. Understand theatre and performance broadly, and specific theatrical works or performances, within their historical, social, cultural, and political contexts.

**Requirements for the BA Degree with a Major in Visual and Dramatic Arts and a Major Concentration in Theatre**

For general university requirements, see *Graduation Requirements* (p. 26). Students pursuing the BA degree with a major in Visual and Dramatic Arts and a major concentration in Theatre must complete:

- A minimum of 12 courses (36 credit hours) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 7 courses (21 credit hours) taken at the 300-level or above.
- A maximum of 2 courses (6 credit hours) from study abroad or transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.
- The requirements of a major concentration. When students declare the major (p. 11) in Visual and Dramatic Arts, students must additionally identify and declare one of three major concentrations, either in:
  - Film and Photography (p. 858), or
  - Studio Art (p. 861), or
  - Theatre (p. 864).

It is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar ([registrar@rice.edu](mailto:registrar@rice.edu)).

Students pursuing the major concentration in Theatre are strongly encouraged to explore theatre-related courses offered in other departments that may enrich their selected major concentration, such as: philosophy, anthropology, science, history, cultural studies, language,
writing, comparative studies, etc. Students should speak with their faculty advisor prior to enrolling.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier [https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/].) Students and their academic advisors should identify and clearly document the courses to be taken.

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<td>Total Credit Hours Required for the BA Degree with a Major in Visual and Dramatic Arts</td>
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### Core Requirements

Select 1 course from the following:

- THEA 100 STAGE CRAFT
- THEA 101 THEATRE TECHNOLOGY: COSTUME CONSTRUCTION
- THEA 103 THEATRE TECHNOLOGY
- THEA 300 INTRODUCTION TO THEATRE DESIGN
- THEA 301 ACTING I
- THEA 303 INTRODUCTION TO THEATRE
- THEA 315 THEATRE IN WESTERN CULTURE: A HISTORICAL INTRODUCTION
- THEA 331 THEATRE PRODUCTION

### Professional Practices Seminar and Field Trip

- ARTS 387 JUNIOR PROFESSIONAL PRACTICES SEMINAR AND FIELD TRIP

### Elective Requirements

Electives in Visual Arts, Film, Photography, or Theatre

Select 4 elective courses from Theatre (THEA), Studio Arts (ARTS), Photography (FOTO), or Film (FILM) course offerings

- ADVISOR DIRECTED ELECTIVES IN DRAMATIC OR FILM THEORY/CRITICISM, DRAMATIC LITERATURE, OR ART HISTORY

Select 3 elective courses in dramatic or film theory or criticism, dramatic literature, or art history

### Total Credit Hours Required for the Major in Visual and Dramatic Arts and a Major Concentration in Theatre

- 36

### Additional Credit Hours to Complete BA Degree Requirements

- 24

### University Graduation Requirements (p. 26)

- 60

### Total Credit Hours

- 120

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### Footnotes and Additional Information

1. Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

2. THEA 331 Theatre Production - Crew. Each student must perform crew duties for at least one theatre production as part of the technical or design team.

3. For additional information regarding ARTS 387, see the Opportunities tab.

4. Students may not include more than 3 courses (9 credit hours) from ARTS or FILM course offerings to satisfy this requirement.

5. Elective courses that fulfill dramatic or film theory or criticism, dramatic literature, or art history should be selected in consultation with the theatre faculty advisor.

### Suggested LPAP (Dance) Courses

Students pursuing the major concentration in Theatre are encouraged to take Lifetime Physical Activity Program (LPAP) courses to supplement and enhance their studies in theatre. Courses include (but not limited to):

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<td>LPAP 157</td>
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### Please Note

Students should receive departmental approval and have already satisfied the LPAP graduation requirement before enrolling. Per university policy, students may not take more than four LPAP courses for credit.

### Policies for the BA Degree with a Major in Visual and Dramatic Arts and a Major Concentration in Theatre

#### Transfer Credit

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**Additional Information**

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Contact the department or look online for deadline dates. No electronic submissions accepted. Please note that your project does not have to be already completed to apply for Distinction (all final materials will be due in the Spring semester). The department selects a very limited number of students for this university academic honor.

**Exhibitions, Lectures, and Arts Programs at Rice**

The Department of Visual and Dramatic Arts mounts several art and photography exhibitions and stage productions each year. In addition, exhibitions and related activities organized by the Rice University Art Gallery enrich the teaching program of the Visual and Dramatic Arts department, as well as the larger university and Houston communities.

The department enjoys an ongoing close relationship with local theatres, museums, and galleries. The department offers opportunities for students to work and study with local art venues and alternative art spaces by way collaborative events and programs. The collections and exhibitions of local museums are often the subject of course lectures.

Lectures, symposia, and talks are sponsored by the department and are designed to bring local, national, and international scholars, actors, directors, critics, and studio artists to campus to speak on a broad range of topics and current interests.

**Junior Professional Practices Seminar and Field Trip (ARTS 387)**

ARTS 387 is required for students pursuing the Visual and Dramatic Arts major (all major concentrations). The junior year field trip is designed to help VADA majors focus on the upcoming senior year of intensive studio work, and to get to know the Visual and Dramatic Arts faculty and staff. These are trips to cultural centers nationally and internationally, including visits to museums, galleries, artist studios, theaters, and meetings with creative professionals in the fields of film and photography, studio art, and theatre.
National Theater Institute
The National Theater Institute is the educational arm of the renowned Eugene O’Neill Theater Center. The program is designed to complement a liberal arts education with three distinct study-away programs, all offering rigorous, risk-taking theater exploration. The semester long program at the O’Neill Center in Connecticut, the NTI Moscow Art Theater semester, and the seven-week Theatremakers summer program confront the serious theater student with opportunities to discover new creative possibilities.

The National Theater Institute offers an extensive conservatory-based training program for the dedicated student. Distinguished master teaching artists guide the classes in courses in acting, directing, design, playwriting, stage combat, voice, and movement. The Department of Visual and Dramatic Arts will accept academic work completed at the National Theater Institute as transfer credit to fulfill major requirements (following university transfer credit guidelines).

Rice Film Program
Rice’s film program works in concert with the Visual and Dramatic Arts department’s academic mission to enrich students’ undergraduate experience. Film and media studies students are provided state-of-the-art screening facilities to examine and study the historical and methodological aspects of movies from around the world in celluloid and 4K Digital Cinema Projection with Dolby Digital Sound. Film production students can showcase their work during the academic year on our silver screen in recently renovated projection facilities.

During the academic year, Rice Cinema screens films from around the world—foreign features, shorts, documentaries, and animation—as part of our ongoing partnership with the diverse cultural communities of the City of Houston. Film at Rice reaches beyond the university’s hedges to create, engage, and encourage scholarly thought and dialog on the many issues that impact our world. Internationally known filmmakers who have appeared on our campus over the years include Werner Herzog, Rakhshan Banietemad, Atom Egoyan, Shirin Neshat, Martin Scorsese, Andy Warhol and Dennis Hopper.

Rice Theatre Program
The Rice Theatre Program curriculum offers a solid foundation in all aspects of theatrical production from acting and directing to technology and design for students who wish to pursue a professional career in theatre or continue on to a graduate program. Theatre courses also are open to non-majors who want to gain a greater appreciation for the art of theatre.

There are two main-stage productions (one fall and one spring) and the possibility of two student showcases offered each year in Hamman Hall, a 450-seat prosenium theatre facility. The department invites distinguished guest artists each semester to direct and produce the two main-stage productions. Participation in productions is open to all students.

Theatre Program faculty are actively involved in professional theatre and film locally, nationally, and internationally and actively pursue opportunities to involve advanced students in that work. In addition, advanced students are encouraged to apply for internship positions whenever possible. Rice students have been accepted in competitive internships at theatres such as The Alley Theatre, Houston Shakespeare Festival, Berkeley Repertory Theatre, and Williamstown Theatre Festival. In addition, students are encouraged to study theatre abroad and transfer course credit back to Rice. Approval for transfer credit must be sought prior to enrollment in a study-abroad program by contacting the director of the Theatre Program.

In even numbered years, the Theatre Program, sponsored by the Alan and Shirley Grob Endowment for Shakespeare in Performance, hosts the Actors From the London Stage, one of the oldest established touring Shakespeare theatre companies in the world, for a week-long residency of workshops, performances, and lectures. Each tour presents a full-length play by Shakespeare performed by five classically trained actors who come from such prestigious companies as the Royal Shakespeare Company, the Royal National Theatre of Great Britain, and Shakespeare’s Globe Theatre.

Additional Information
For additional information, please see the Visual and Dramatic Arts website: https://vada.rice.edu/.

See https://humanities.rice.edu/student-life (https://humanities.rice.edu/student-life/) for tables of fellowships, prizes, and internships/practica that may be relevant to this major.

The Rice Arts portal can be accessed at https://arts.rice.edu (https://arts.rice.edu/)

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Air Force Science (AFSC)

AFSC 101 - FOUNDATION OF THE USAF I
Short Title: FOUNDATION OF THE USAF I
Department: Air Force Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Description: Overall roles and missions of the USAF; career fields available. Emphasis on military customs and courtesies, appearance standards, core values, written and personal communications. Introduction to American military history. Course taught on the University of Houston campus in Garrison Gymnasium, Room 116. This course includes a lab taught on Wednesday from 4-6pm. Instructors: Lecture - Kiebach; Lab - Bentley.

AFSC 102 - FOUNDATION OF THE USAF II
Short Title: FOUNDATION OF THE USAF II
Department: Air Force Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Description: Continuation of AFSC 101. Course taught at the University of Houston.

AFSC 201 - EVOLUTION OF AIR POWER I
Short Title: EVOLUTION OF AIR POWER I
Department: Air Force Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Description: Key historical events and milestones in the development of air power as a primary instrument of United States national security. Core values and competencies of leaders in the United States Air Force. Tenets of leadership and ethics. Course taught on the University of Houston campus in Garrison Gymnasium in Room 116. This course also includes a lab taught on Wednesday from 4-6 pm. Instructors: Lecture - Kiebach; Lab - Bentley.

AFSC 202 - EVOLUTION OF AIR POWER II
Short Title: EVOLUTION OF AIR POWER II
Department: Air Force Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Description: Continuation of AFSC 201. Course taught at the University of Houston.

AFSC 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Air Force Science
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Laboratory, Seminar
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

AFSC 301 - AIR FORCE LEADERSHIP STUDY I
Short Title: AIR FORCE LEADERSHIP STUDY I
Department: Air Force Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Description: Leadership, management fundamentals, professional knowledge, Air Force personnel and evaluation systems, and leadership ethics. Case studies of Air Force leadership and management situations. Course taught on the University of Houston campus in Garrison Gymnasium, Room 116. This course includes a lab, taught on Wednesday from 4-6pm. Instructors: Lecture - Bentley; Lab - Bentley.

AFSC 302 - AIR FORCE LEADERSHIP STUDY II
Short Title: AIR FORCE LEADERSHIP STUDY II
Department: Air Force Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Description: Continuation of AFSC 301.
AFSC 381 - FIELD TRAINING
Short Title: FIELD TRAINING
Department: Air Force Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 8
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: No military obligation is associated with this course. Four-week off-campus field training practicum. Introduces students to Air Force leadership. Places students in demanding and stressful leadership positions. Course taught at military base. Instructors: Lecture - Bentley, Lab - Bentley. Department Permission Required.

AFSC 401 - NATIONAL SECURITY AFFAIRS I
Short Title: NATIONAL SECURITY AFFAIRS I
Department: Air Force Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Evolution of the role of national security in a democratic society with emphasis on policy formation, competing values, and organization. Civilian control of the military, roles of the services; functions of the Air Force Commands. Course taught on the University of Houston campus in Garrison Gymnasium, Room 116. This course includes a lab, taught on Wednesday from 4-6pm. Instructors: Lecture - Bentley, Lab - Bentley.

AFSC 402 - NATIONAL SECURITY AFFAIRS II
Short Title: NATIONAL SECURITY AFFAIRS II
Department: Air Force Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Continuation of AFSC 401. Course taught at the University of Houston.

AFSC 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Air Force Science
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

ARCR 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Americas Research Center
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

ARCR 451 - CONTEMPORARY SOCIAL MOVEMENTS
Short Title: CONTEMPORARY SOCIAL MOVEMENTS
Department: Americas Research Center
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: 2011 saw an eruption of worldwide protest. These protests created new forms of mass democracy and popular resistance. This course seeks to engage this contemporary wave of global resistance from a multiplicity of vantage points. Graduate students who enroll are each expected to teach at least one class period. Graduate/Undergraduate Equivalency: ARCR 551. Mutually Exclusive: Cannot register for ARCR 451 if student has credit for ARCR 551. Repeatable for Credit.

ARCR 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Americas Research Center
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.
ARCR 478 - THE CARIBBEAN IN FRENCH
Short Title: THE CARIBBEAN IN FRENCH
Department: Americas Research Center
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This is the undergraduate senior version of the graduate level seminar FREN/ARCR 578. Both the course’s reading list and the length of the research are adjusted to accommodate undergraduate needs. The seminar examines the history, political writings, literature and the arts of the French Caribbean from the beginning of colonization to the present. It will include figures such as Saint-John Perse, Roumain, Cesaire, Fanon, Depestre, Schwarz-Bart, Warner-Vieyra, Glissant, Conde, Chamoiseau, Laferriere, as well as the Caribbean arts and film. Taught in English. Cross-list: FREN 478. Mutually Exclusive: Cannot register for ARCR 478 if student has credit for ARCR 578.

ARCR 515 - MAPPING LATINO ART
Short Title: MAPPING LATINO ART
Department: Americas Research Center
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines the history of Latino art in the United States since 1945 with emphasis on the artistic cultures of Chicanos, Cuban-Americans and Puerto Ricans. We will also study the problematic of representation via gender, sexuality, race and other identities. Readings include exhibition catalogues, art history, and cultural history.

ARCR 551 - CONTEMPORARY SOCIAL MOVEMENTS
Short Title: CONTEMPORARY SOCIAL MOVEMENTS
Department: Americas Research Center
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: 2011 saw an eruption of worldwide protest. These protests created new forms of mass democracy and popular resistance. This course seeks to engage this contemporary wave of global resistance from a multiplicity of vantage points. Graduate students who enroll are each expected to teach at least one class period. Graduate/Undergraduate Equivalency: ARCR 451. Mutually Exclusive: Cannot register for ARCR 551 if student has credit for ARCR 451. Repeatable for Credit.

ARCR 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Americas Research Center
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

Ancient Mediterranean Civil (AMCI)

AMCI 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Ancient Mediterranean Civil
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

AMCI 400 - DIRECTED HONORS RESEARCH
Short Title: AMC HONORS THESIS
Department: Ancient Mediterranean Civil
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: In this two semester course an AMC student will write an honors thesis under the direction of an AMC faculty member. Instructor Permission Required. Repeatable for Credit.

AMCI 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Ancient Mediterranean Civil
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Laboratory, Seminar
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

Anthropology (ANTH)

ANTH 200 - INTRODUCTION TO THE SCIENTIFIC STUDY OF LANGUAGE
Short Title: INTRO TO STUDY OF LANGUAGE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Overview of the scientific study of the structure and function of language. Introduces the main fields of linguistics: phonetics, phonology, morphology, syntax, semantics, discourse, historical linguistics, sociolinguistics, and psycholinguistics. Highlights the interdisciplinary relationship of linguistics with anthropology, sociology, psychology, and cognitive sciences. Fall 2019 Section 002 is open only to Fall 2019 New Matrics. Cross-list: LING 200.
ANTH 201 - INTRODUCTION TO SOCIAL/CULTURAL ANTHROPOLOGY
Short Title: INTRO TO SOCIAL/CULTURAL ANTH
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction to the history, methods, and concepts of social/cultural anthropology, which is devoted to the systematic description and understanding of cultural diversity in human societies.

ANTH 203 - INTRODUCTION TO BIOLOGICAL ANTHROPOLOGY
Short Title: INTRO BIOLOGICAL ANTHROPOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course offers a broad introduction to the human past as revealed by evolutionary studies of both biochemical and fossil evidence, and by archaeological studies of human cultural behavior.

ANTH 205 - INTRODUCTION TO ARCHAEOLOGY
Short Title: INTRO TO ARCHAEOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An introduction to the elementary concepts of the discipline through a series of case studies.

ANTH 212 - PERSPECTIVES ON MODERN ASIA
Short Title: PERSPECTIVES ON MODERN ASIA
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A team taught interdisciplinary course focusing on the political, social and economic forces that are shaping the lives of the nearly one-half of the world’s population that lives in Asia. Provides a selective, in-depth look at certain important areas of East, Southeast and South Asia that reflect larger themes and problems. Cross-list: ASIA 212.

ANTH 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Laboratory, Lecture, Seminar, Lecture/Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

ANTH 290 - HISTORY AND ETHNOGRAPHY
Short Title: HISTORY & ETHNOGRAPHY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course focuses intensively on the history and ethnography of a single people, the selection of which changes from year to year. Using all available materials, this course provides an introduction to the approaches of the discipline and how they have changed, registered by the different ways anthropologists and others have represented the same subjects over time.

ANTH 299 - EXPERIENTIAL EDUCATION IN ANTHROPOLOGY
Short Title: EXPERIENTIAL EDUCATION IN ANTH
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Enrollment is limited to students with a major in Anthropology. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course provides one hour of university credit for faculty-directed and approved internship. Students must obtain approval from a member of the department’s undergraduate committee and must submit a letter from the internship provider indicating completion and satisfactory performance. Department Permission Required. Repeatable for Credit.
ANTH 300 - LINGUISTIC ANALYSIS
Short Title: LINGUISTIC ANALYSIS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ANTH 200 or LING 200
Description: A hands-on, data-oriented approach to how different languages construct words and sentences. Students will develop skills in linguistic problem solving and the foundations for pursuing grammatical description. Topics: word classes, morphology, tense-aspect-modality, clause structure, word order, grammatical relations, existentials/possessives/locatives, voice/valence, questions, negation, relative clauses, complements, causatives. Cross-list: LING 300. Graduate/Undergraduate Equivalency: ANTH 500. Mutually Exclusive: Cannot register for ANTH 300 if student has credit for ANTH 500.

ANTH 301 - PHONETICS
Short Title: PHONETICS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 200 or ANTH 200
Description: Introductory study of sound as it relates to speech and sound systems in the world’s languages. Speech sounds are examined in terms of production mechanisms (articulatory phonetics), propagation mechanisms (acoustic phonetics), and perception mechanisms (auditory phonetics). Includes a basic introduction to Digital Signal Processing. Cross-list: LING 301. Graduate/Undergraduate Equivalency: ANTH 501. Mutually Exclusive: Cannot register for ANTH 301 if student has credit for ANTH 501.

ANTH 302 - ANTHROPOLOGICAL THEORY: A SURVEY
Short Title: ANTHROPOLOGICAL THEORY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A survey of the major theorists and theoretical schools of social-cultural anthropology. Strongly recommended for majors.

ANTH 303 - INTRODUCTION TO ARCHAEOLOGICAL SCIENCE
Short Title: INTRO ARCHAEOLOGY SCIENCE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course focuses on methods of scientific analysis applied to archaeological materials, including bone, stone, pottery, glass, and metal. Methods conclude absolute dating, mineral petrography, experimental archaeology, elemental and isotopic analysis, and ancient DNA. Labs offer hands-on experience with various archaeological materials and analytical methods. Recommended Prerequisite(s): ANTH 205

ANTH 305 - HISTORICAL LINGUISTICS
Short Title: HISTORICAL LINGUISTICS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ANTH 200 or LING 200) and (ANTH 301 or LING 301)
Description: Exploration of the nature of language change. Topics covered include sound change syntactic and semantic change, modeling language splits, the sociolinguistics of language change, and the history of European languages. Cross-list: LING 305. Graduate/Undergraduate Equivalency: ANTH 505. Mutually Exclusive: Cannot register for ANTH 305 if student has credit for ANTH 505.

ANTH 308 - THE ANTHROPOLOGY OF THE HISTORICAL IMAGINATION
Short Title: THE HISTORICAL IMAGINATION
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Explores ideas of history and attitudes toward the past as culturally conditioned phenomena. Emphasizes history as a statement of cultural values as well as conceptualizations of cause, change, time, and reality. Cross-list: SWGS 336. Graduate/Undergraduate Equivalency: ANTH 508. Mutually Exclusive: Cannot register for ANTH 308 if student has credit for ANTH 508.
ANTH 309 - GLOBAL CULTURES
Short Title: GLOBAL CULTURES
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will examine specific cultural debates and issues that have 'overflowed' national boundaries. Topics will include student movements, democracy and citizenship, and the internationalization of professional and popular culture. Graduate/Undergraduate Equivalency: ANTH 509. Mutually Exclusive: Cannot register for ANTH 309 if student has credit for ANTH 509.

ANTH 310 - CONTEMPORARY CHINESE CULTURE
Short Title: CONTEMPORARY CHINESE CULTURE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This introductory course is designed to encourage ways of thinking about: Cultural China—a broad-ranging concept that includes the People's Republic of China, the newly established Special Administrative Region (SAR) of Hong Kong, the Republic of China on Taiwan, and overseas Chinese communities throughout the world.

ANTH 311 - MASCULINITIES
Short Title: MASCULINITIES
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course deals with masculinities in the West, concentrating on concepts of masculine protagonism and personhood. Readings explore identities constructed in realms such as law, politics, finances, art, the home, and war. Cross-list: SWGS 333. Graduate/Undergraduate Equivalency: ANTH 511. Mutually Exclusive: Cannot register for ANTH 311 if student has credit for ANTH 511.

ANTH 312 - AFRICAN PREHISTORY
Short Title: AFRICAN PREHISTORY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Thematic coverage of developments throughout the continent from the Lower Paleolithic to medieval times, with emphasis on food production, metallurgy and the rise of cities and complex societies. Cross-list: MDEM 311. Graduate/Undergraduate Equivalency: ANTH 512. Mutually Exclusive: Cannot register for ANTH 312 if student has credit for ANTH 512.

ANTH 313 - LANGUAGE AND CULTURE
Short Title: LANGUAGE AND CULTURE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Investigates the relation between language and thought, language and worldview, language and logic. Cross-list: LING 313. Graduate/Undergraduate Equivalency: ANTH 513. Mutually Exclusive: Cannot register for ANTH 313 if student has credit for ANTH 513.

ANTH 317 - REVOLUTIONS AND UTOPIAS
Short Title: REVOLUTIONS AND UTOPIAS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: In order to gain a more precise grasp of our contemporary political challenges and possibilities, this course in political anthropology investigates a wide range of historical and contemporary cases of rapid political and social transformation and carefully examines the ideas, desires and utopias that inspired them. Graduate/Undergraduate Equivalency: ANTH 517. Mutually Exclusive: Cannot register for ANTH 317 if student has credit for ANTH 517.

ANTH 319 - SYMBOLISM AND POWER
Short Title: SYMBOLISM AND POWER
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course considers anthropological theories of the state and examines ethnographic accounts of states in some unexpected places - that is, outside the official realm of government bureaucracies and institutionalized politics. Topics include so-called 'stateless societies,' planning and bureaucratic rationality, violence and power, and ethnographic methods for studying the state. Graduate/Undergraduate Equivalency: ANTH 519. Mutually Exclusive: Cannot register for ANTH 319 if student has credit for ANTH 519.
ANTH 322 - GLOBAL IM/MOBILITIES: BORDERS, MIGRATION, AND CITIZENSHIP
Short Title: GLOBAL IM/MOBILITIES
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: How do cultural conceptions of race, ethnicity, and nationalism shape who we think we are? How are these ideas related to Western views of the relations between nature and society, and how do these differ from those in other cultures? Graduate/Undergraduate Equivalency: ANTH 522. Mutually Exclusive: Cannot register for ANTH 322 if student has credit for ANTH 522.

ANTH 323 - INTRODUCTION TO PHONOLOGY
Short Title: INTRODUCTION TO PHONOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ANTH 200 or LING 200
Description: Introduction to analysis techniques and theory concerning patterning of sounds in the world’s languages. The course will involve extensive work with non-English data sets, and development of analytical techniques such as identification of sound alternations or restrictions, and formalization of abstract representations and rules to account for them. Cross-list: LING 311. Graduate/Undergraduate Equivalency: ANTH 523. Mutually Exclusive: Cannot register for ANTH 323 if student has credit for ANTH 523.

ANTH 324 - DOCUMENTARY PRODUCTION
Short Title: DOCUMENTARY PRODUCTION
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Studio
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of the expressive possibilities of documentary production using digital systems. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Cross-list: ARTS 327, FILM 327.

ANTH 325 - SEX, SELF, AND SOCIETY IN ANCIENT GREECE
Short Title: SOCIETY IN ANCIENT GREECE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An introductory venture into conducting fieldwork in the past. The course treats a wide range of artifacts, from philosophical essays to vase paintings. It derives its focus from a rich corpus of recent research into the ancient problemization of desire and self-control. Cross-list: SWGS 332. Mutually Exclusive: Cannot register for ANTH 325 if student has credit for ANTH 525.

ANTH 326 - LAW, POWER AND CULTURE
Short Title: LAW, POWER AND CULTURE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An exploration of normativity and its different social forms across the world. It combines theoretical and ethnographic analyses of legal institutions and practices as cultural phenomena undergirded by power relations, knowledge forms and historical forces. Graduate/Undergraduate Equivalency: ANTH 526. Mutually Exclusive: Cannot register for ANTH 326 if student has credit for ANTH 526.

ANTH 329 - BODIES, SENSUALITIES, AND ART
Short Title: BODIES, SENSUALITIES, & ART
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Cross-cultural approaches to art and the senses. Students may engage any medium. Emphasis to be placed on issues generated from performance in the arts rather than from academia. Contrasts art and academic knowledge to explore alternative epistemologies and aesthetics. Graduate/Undergraduate Equivalency: ANTH 529. Mutually Exclusive: Cannot register for ANTH 329 if student has credit for ANTH 529.
ANTH 330 - GEOARCHAEOLOGY
Short Title: GEOARCHAEOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Anthropology or Earth Science. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Overview of the basics of the analysis of soils and sediments as related to archaeological deposits, and introducing the key concepts of surficial geology, site formation, landscape evolution, and the scope of depositional environments. Includes practical methods for describing stratigraphy, sediments and soil profiles in the field. Cross-list: ESCI 330.

ANTH 331 - ART AND ARCHAEOLOGY OF THE ANCIENT NEAR EAST
Short Title: ANCIENT NEAR EAST
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An in-depth examination of the art and archaeology of ancient Mesopotamia, Syria, Anatolia and Persia. Beginning in the Neolithic period, we will examine the development of Near Eastern art and architecture through the study of ancient sites and their associated material culture. Cross-list: HART 311.

ANTH 332 - THE SOCIAL LIFE OF CLEAN ENERGY
Short Title: SOCIAL LIFE OF CLEAN ENERGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course considers the phenomenon of renewable energy, using a social scientific approach to analyze the various forces and interests involved in the development of renewable energy projects (such as hydropower, solar and wind) in both the global North and South. No prerequisites required. Cross-list: ENST 332. Graduate/Undergraduate Equivalency: ANTH 532. Mutually Exclusive: Cannot register for ANTH 332 if student has credit for ANTH 532.

ANTH 333 - THE MATERIAL WORLD
Short Title: THE MATERIAL WORLD
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The critical assessment and interpretation of Euroamerican social institutions and cultural forms have always been an integral part of anthropology's intellectual project. This course will explain the techniques, history, and achievements of such critique. It will also view the purpose in the context of a more generational tradition of critical social thought in the West, especially the U.S. Graduate/Undergraduate Equivalency: ANTH 533. Mutually Exclusive: Cannot register for ANTH 333 if student has credit for ANTH 533.

ANTH 334 - ANTHROPOLOGY AS CULTURAL CRITIQUE
Short Title: ANTHROPOLOGY/CULTURAL CRITIQUE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores the mutually constructive relationship between humans and objects; it asks how objects are made meaningful and active by humans, and how, in turn, people acquire meaning, relations, and agency through material culture. Topics include: commoditization, consumption, gift exchange, subjects and objects, identity, fashion, collecting, art, and authenticity. Graduate/Undergraduate Equivalency: ANTH 534. Mutually Exclusive: Cannot register for ANTH 334 if student has credit for ANTH 534.

ANTH 335 - BECOMING A DOCTOR
Short Title: BECOMING A DOCTOR
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The course introduces such classic anthropological concepts as the rite of passage and the cultural system as frames for the investigation of the professionalization of medicine as a discipline, medical training and the changing epistemologies of medical knowledge and the changing scope and content of the medical cosmos. Graduate/Undergraduate Equivalency: ANTH 536. Mutually Exclusive: Cannot register for ANTH 336 if student has credit for ANTH 536.
ANTH 337 - JAPANESE POPULAR CULTURE
Short Title: JAPANESE POPULAR CULTURE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Japan and the U.S. are connected by a mutual fascination with each other’s mass culture, with each country frequently employing the other as inspiration or cautionary tale. We will examine selections from anthropological work, juxtaposing it with theoretical readings on the nature of publics, crowds, and image circulation in general.

ANTH 338 - READING POPULAR CULTURE
Short Title: READING POPULAR CULTURE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The course examines a number of cases from popular genres-romance, novels, television sit-coms, tourist sites, movies, rock music and submits them to a variety of theoretical approaches from disciplines such as anthropology, sociology, literary studies, and philosophy. Graduate/Undergraduate Equivalency: ANTH 538. Mutually Exclusive: Cannot register for ANTH 338 if student has credit for ANTH 538.

ANTH 339 - IMAGE, MEDIA, ANTHROPOLOGY
Short Title: IMAGE, MEDIA, ANTHROPOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The intersection of anthropology and aesthetics is making a significant contribution to the discipline. From the modern to the post-modern to the contemporary work of visual anthropology we will examine what it means to take up a philosophy of aesthetics, and consider how we can integrate this genealogy of thought into contemporary anthropological projects.

ANTH 340 - NEOLIBERALISM AND GLOBALIZATION
Short Title: NEOLIBERALISM & GLOBALIZATION
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores the relationship between two of the most powerful forces shaping the world today: economic globalization and political neoliberalism. Using ethnographic, policy and theoretical documentation drawn from a variety of case studies, we will reconstruct the interrelated origins of globalization and neoliberalism and map their social and cultural impacts across the world. Graduate/Undergraduate Equivalency: ANTH 540. Mutually Exclusive: Cannot register for ANTH 340 if student has credit for ANTH 540.

ANTH 341 - MUSEUMS AND HERITAGE: EXHIBITING ART, EXHIBITING CULTURE
Short Title: MUSEUMS AND HERITAGE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A wide-ranging introduction to museum studies with a particular focus on the collection and exhibition of cultural heritage materials. We will examine how heritage objects are displayed and represented in museums of art, natural historical history, and heritage. Topics include looking and ethics of collecting, policies of display, changing roles for museums; exhibition design and curatorial practice. Cross-list: HURC 341. Graduate/Undergraduate Equivalency: ANTH 541. Mutually Exclusive: Cannot register for ANTH 341 if student has credit for ANTH 541.

ANTH 342 - ETHNOGRAPHIES OF CARE
Short Title: ETHNOGRAPHIES OF CARE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An ethnographically grounded exploration of the political, social, and intimate relations that constitute care in various situations of life and death. We ask how particular populations come to be understood as requiring, receiving, or being entitle to care? Who becomes obliged to provide care? And what are care’s collateral effects? Graduate/Undergraduate Equivalency: ANTH 542. Mutually Exclusive: Cannot register for ANTH 342 if student has credit for ANTH 542.
ANTH 343 - NEW RELIGIOUS MOVEMENTS IN AFRICA  
Short Title: NEW RELIG MOVEMENTS IN AFRICA  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Discusses new religious movements and the religious, sociological, and political factors leading to their rise, also missionary and colonial reactions to them. Examines their relationship to indigenous religions, political praxis, and their focus on this-worldly salvation in the wake of political and economic marginality. Cross-list: RELI 342.

ANTH 344 - CITY/CULTURE  
Short Title: CITY/CULTURE  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group II  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: An examination of the way that archaeological evidence of the past has been used and viewed by particular groups at different times. Using case studies, the course considers issues of gender, race, Eurocentrism, political domination and legitimacy that emerge from critical analysis of representations of the past by archaeologists, museums, and collectors. Graduate/Undergraduate Equivalency: ANTH 545. Mutually Exclusive: Cannot register for ANTH 345 if student has credit for ANTH 545.

ANTH 345 - THE POLITICS OF THE PAST: ARCHAEOLOGY IN SOCIAL CONTEXT  
Short Title: ARCHAEOLOGY IN SOCIAL CONTEXT  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group II  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: The course treats both the theorization and the ethnographic exploration of the urban imaginary; urban spaces and practices; urban, suburban, and post-urban planning; city-states, colonial cities, and capital cities; and the late 20th century metropolis. Graduate/Undergraduate Equivalency: ANTH 544. Mutually Exclusive: Cannot register for ANTH 344 if student has credit for ANTH 544.

ANTH 346 - VIRTUAL RECONSTRUCTION OF HISTORICAL CITIES  
Short Title: VIRTUAL RECONSTR HISTORCL CITIES  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Research  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This course, part of the HRC's Digital Humanities Initiative, is devoted to the virtual reconstruction of ancient urban landscapes with focus on individual buildings in their urban settings. All course activities will be based around interdisciplinary student teams who will work together through the semesters to complete a virtual reconstruction project. Instructor Permission Required. Cross-list: ARCH 310, COMP 316, HART 316.

ANTH 347 - THE U.S. AS A FOREIGN COUNTRY  
Short Title: THE U.S. AS A FOREIGN COUNTRY  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group II  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This course examines the uses and makings of nature in accounts of the human and post-human. It introduces students to nature as an object of study, as an analytic and as a heuristic. Some of the topics the course explores include the nature-culture dyad, nature as resource, science and technology and the remaking of nature, economies of nature, materiality, nature and kinship, and natural ontologies. Graduate/Undergraduate Equivalency: ANTH 547. Mutually Exclusive: Cannot register for ANTH 347 if student has credit for ANTH 547.

ANTH 348 - ANTHROPOLOGIES OF NATURE  
Short Title: ANTHROPOLOGIES OF NATURE  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This class examines the uses and makings of nature in accounts of the human and post-human. It introduces students to nature as an object of study, as an analytic and as a heuristic. Some of the topics the course explores include the nature-culture dyad, nature as resource, science and technology and the remaking of nature, economies of nature, materiality, nature and kinship, and natural ontologies. Graduate/Undergraduate Equivalency: ANTH 548. Mutually Exclusive: Cannot register for ANTH 348 if student has credit for ANTH 548.
ANTH 349 - THE ANTHROPOLOGY OF ETHICS
Short Title: THE ANTHROPOLOGY OF ETHICS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Philosophical ethics argues over the proper criteria of the definition and the assessment of ethical action. This course focuses on an emerging and increasingly salient anthropological project: empirical inquiry into the themes and variations of ethical systems and the sociocultural rationale for their existence and reproduction. Graduate/Undergraduate Equivalency: ANTH 549. Mutually Exclusive: Cannot register for ANTH 349 if student has credit for ANTH 549.

ANTH 351 - CULTURES OF NATIONALISM
Short Title: CULTURES OF NATIONALISM
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will examine the cultural dimensions of nationalism, particularly around the creation of forms of 'peoplehood' that seem to be presupposed by almost all nation-building projects. Texts to be analyzed will include the Declaration of Independence, the United States Constitution, and the Declaration of the Rights of Man. Graduate/Undergraduate Equivalency: ANTH 551. Mutually Exclusive: Cannot register for ANTH 351 if student has credit for ANTH 551.

ANTH 353 - CULTURES OF INDIA
Short Title: CULTURES OF INDIA
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Summary of the prehistory, ethnography, and ethnology of the Indian subcontinent. Special emphasis on Hinduism, Buddhism, and Indian philosophy. Graduate/Undergraduate Equivalency: ANTH 553. Mutually Exclusive: Cannot register for ANTH 353 if student has credit for ANTH 553.

ANTH 354 - ILLNESS, DISABILITY, AND THE GENDERED BODY
Short Title: DISABILITY AND GENDERED BODIES
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course draws on critical disability studies and medical anthropology to explore how gender and sexuality matter in contexts of illness and disability across a range of institutional, social, and national contexts. We pay particular attention to the ways illness and disability expose, disturb, or retrench normative arrangements of gender. Cross-list: SWGS 353. Graduate/Undergraduate Equivalency: ANTH 554. Mutually Exclusive: Cannot register for ANTH 354 if student has credit for ANTH 554.

ANTH 355 - SPACE, PLACE, AND LANDSCAPE
Short Title: SPACE, PLACE, LANDSCAPE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course provides an overview of the way archaeologists study space, place and landscape, including studies that emphasize ecological, symbolic, political economic and religious aspects. Recent theoretical work on space, place and landscape will be emphasized, as well as archaeological methods of investigation and interpretation, including remote sensing, surveying, and GIS. Graduate/Undergraduate Equivalency: ANTH 555. Mutually Exclusive: Cannot register for ANTH 355 if student has credit for ANTH 555.

ANTH 358 - THE FOURTH WORLD: ISSUES OF INDIGENOUS PEOPLE
Short Title: FOURTH WORLD: INDIGENOUS PEOPLE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: In contrast with people self-identified within political structures of the First, Second and Third Worlds, Fourth World peoples are, generally speaking, 'stateless peoples.' In this course we will examine both how this 'unofficial' status affects their struggle for self-determination and how native peoples engage traditional beliefs and practices for self-empowerment. Through readings, films and speakers we will examine current conflicts facing indigenous people in North and South America, the Soviet Union, Europe, Asia, and Australia. Graduate/Undergraduate Equivalency: ANTH 558. Mutually Exclusive: Cannot register for ANTH 358 if student has credit for ANTH 558.
ANTH 359 - ASIAN TOPICS
Short Title: ASIAN TOPICS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This introductory course covers various topics relating to the ethnography and anthropology of Asian cultures. These may include some or all of the following: popular culture and cultural production, religion, cultural aspects of development and globalization.

ANTH 360 - TOPICS IN AFRICAN CULTURE AND ETHNOGRAPHY
Short Title: AFRICAN TOPICS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This introductory course covers various topics relating to the ethnography and anthropology of African cultures. These may include some or all of the following: popular culture and cultural production, cultural aspects of development and globalization.

ANTH 361 - LATIN AMERICAN TOPICS
Short Title: LATIN AMERICAN TOPICS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines contemporary cultural and political dynamics in Latin America. Topics include: race, ethnicity and indigenousness; borders, migrations and diaspora; genocide and state violence; neo-colonialisms and neo-liberalisms; sexuality, gender and class dynamics; social movements and activism; the politics and practices of medicine and religion; popular culture, media and technology. Graduate/Undergraduate Equivalency: ANTH 561. Mutually Exclusive: Cannot register for ANTH 361 if student has credit for ANTH 561.

ANTH 362 - ARCHAEOLOGICAL FIELD TECHNIQUES
Short Title: ARCHAEOLOGICAL FLD TECHNIQUES
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ANTH 205
Description: Methods used in fieldwork, laboratory analysis, and interpretation of archaeological data from a local site excavated by the class. Graduate/Undergraduate Equivalency: ANTH 562. Mutually Exclusive: Cannot register for ANTH 362 if student has credit for ANTH 562. Repeatable for Credit.

ANTH 363 - THE ARCHAEOLOGY OF CITIES AND STATES
Short Title: ARCHAEOLOGY CITIES AND STATE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A comparative study of the archaic cities and states of Mesopotamia, Egypt, the Indus, China, and South America, emphasizing the causes and conditions of their origins. Graduate/Undergraduate Equivalency: ANTH 563. Mutually Exclusive: Cannot register for ANTH 363 if student has credit for ANTH 563.

ANTH 364 - AFRICAN ARCHAEOLOGY FIELD TECHNIQUES
Short Title: AFRICAN ARCHAEOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: In this course, basic field archaeology techniques are taught on-site in an archaeological context in Africa with emphasis on excavation methods, artifact recovery, and recording techniques. Students will excavate stone structures and a variety of historical deposits. Fieldwork takes place in Africa, June-July. Graduate/Undergraduate Equivalency: ANTH 564. Mutually Exclusive: Cannot register for ANTH 364 if student has credit for ANTH 564. Repeatable for Credit.
Course URL: www.songomnara.rice.edu/fieldschool.htm (http://www.songomnara.rice.edu/fieldschool.htm)

ANTH 365 - POLITICS OF REPRESENTATION: HOW WE UNDERSTAND 'WAR' AND 'THE RACIAL OTHER'
Short Title: POLITICS OF REPRESENTATION
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Does media show how things really are? This class explores the politics of representation, particularly in times of social mayhem, revolution, and war. Although we will focus primarily on cultural and political representations of the Israeli-Palestinian conflict, this class will also put this dispute in comparison with other global events. Cross-list: SOCI 365.
ANTH 366 - SCIENCE, LOCAL AND GLOBAL  
Short Title: SCIENCE, LOCAL AND GLOBAL  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group II  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This course explores science as a transnational phenomenon, focusing on the pathways along which it flows around the world. Topics include differences in local styles of reasoning, dynamics of international scientific collaborations, transnational migration of knowledge workers, the role of science in nationalist projects, and the commodification of science. Graduate/Undergraduate Equivalency: ANTH 566. Mutually Exclusive: Cannot register for ANTH 366 if student has credit for ANTH 566.

ANTH 370 - ARCHAEOLOGICAL LABORATORY TECHNIQUES AND ANALYSIS  
Short Title: ARCHAEOLOGICAL LAB ANALYSIS  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Laboratory  
Credit Hours: 3-6  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Techniques of processing, conserving, and recording archaeological materials are emphasized. Students will become familiar with procedures for pottery, glass, metals, and building materials in addition to plant and animal remains. Course work includes lectures, hands-on lab work, and informal discussion. Graduate/Undergraduate Equivalency: ANTH 570. Mutually Exclusive: Cannot register for ANTH 370 if student has credit for ANTH 570. Repeatable for Credit.

ANTH 371 - MONEY AND EVERYDAY LIFE  
Short Title: MONEY AND EVERYDAY LIFE  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group II  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Money is such a part of everyday modern life that it is hard for us to imagine living without it. Yet in many pre-modern societies, gift-exchange was as important as money is in our own. This course will look at the cultural dimensions of systems of exchange, ranging from gift giving among Northwest Coast Indians to foreign currency exchanges between financial institutions. Along with the classic work of Marx and Simmel on money and capital, we will also cover some of the anthropological work on gifts and exchange, such as that of Mauss, Levi-Strauss, and Bourdieu, as well as some of the contemporary debates initiated by Bataille and Derrida. Graduate/Undergraduate Equivalency: ANTH 571. Mutually Exclusive: Cannot register for ANTH 371 if student has credit for ANTH 571.

ANTH 372 - CULTURES OF CAPITALISM  
Short Title: CULTURES OF CAPITALISM  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Distribution Group: Distribution Group II  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Most of us think of capitalism as primarily an economic phenomenon. Yet, it also has a profoundly cultural dimension. This class will examine how capitalism and related phenomena, such as commodification, markets and marketing, corporate finance and the calculation of risk, both affect and are affected by culture. We will consider the impact of capitalist markets on social relations and gender identities; on ideals of patriotism, responsibility and success; and on popular culture and leisure practices. We will also ask how people resist, appropriate and modify in culturally specific ways the logic and institutions of a global capitalist order. Graduate/Undergraduate Equivalency: ANTH 572. Mutually Exclusive: Cannot register for ANTH 372 if student has credit for ANTH 572.

ANTH 374 - ASIAN PREHISTORY  
Short Title: ASIAN PREHISTORY  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: The course covers select topics in the archaeology and paleoanthropology of Asia from the arrival of Homo erectus to the development of the earliest civilizations. Class discussions will focus on the history of exploration in Asia and the main debates that have shaped the study of prehistory in the largest continent on Earth. Graduate/Undergraduate Equivalency: ANTH 574. Mutually Exclusive: Cannot register for ANTH 374 if student has credit for ANTH 574.

ANTH 376 - ART AND ACTIVISM  
Short Title: ART AND ACTIVISM  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This course explores art and social change in times of mass displacement, racial oppression, and war. It surveys the efforts involved in achieving justice and the possible implications of remaining historically mute and hopeless. The class will host contemporary activists and artists concerned with radical visions of hope in Houston. Cross-list: SOCI 376.
ANTH 378 - PLACE AND MEMORY IN MIDDLE EASTERN AND EUROPEAN CINEMA
Short Title: MEMORY AND PLACE IN CINEMA
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Focuses on cinematic explorations of and preoccupations with the notion of place. Screenings include iconic and lesser - known films from Europe and the Middle East that offer diverse lenses and contexts (love, family, landscapes, borders, trauma, exile) through which we will examine questions of real and imagined place and the politics of memory. Cross-list: FILM 378, HART 391. Graduate/Undergraduate Equivalency: ANTH 578. Mutually Exclusive: Cannot register for ANTH 378 if student has credit for ANTH 578.

ANTH 380 - GLOBAL HEALTH JUSTICE: HEALTHCARE INEQUALITIES IN CONFLICTS
Short Title: GLOBAL HEALTH JUSTICE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will explore in-depth case studies of transnational health justice movement in order to address critical themes of health inequalities in the context of conflict. We will attend to topical themes including gender inequality, class struggle, healthcare systems and their variations, childhood and chronic illness, the intersection between environment and health, and the role of scientific knowledge in claims for health justice. Graduate/Undergraduate Equivalency: ANTH 580. Mutually Exclusive: Cannot register for ANTH 380 if student has credit for ANTH 580.

ANTH 381 - MEDICAL ANTHROPOLOGY
Short Title: MEDICAL ANTHROPOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Cultural, ecological, and biological perspectives on human health and disease throughout the world. Graduate/Undergraduate Equivalency: ANTH 581. Mutually Exclusive: Cannot register for ANTH 381 if student has credit for ANTH 581.

ANTH 382 - BODY, TECHNOLOGY, AND ENHANCEMENT
Short Title: BODY, TECHNOLOGY, ENHANCEMENT
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Seminar on the body and the various technologies that are used to optimize it. Includes topics such as cosmetic surgery, diet supplementation, pharmaceutical enhancement and body art. Graduate/Undergraduate Equivalency: ANTH 582. Mutually Exclusive: Cannot register for ANTH 382 if student has credit for ANTH 582.

ANTH 384 - PALEO-TECHNOLOGY
Short Title: PALEO-TECHNOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This Stone Age semester will immerse students in hunter-gatherer lifeways and the innovations that allowed our ancestors to survive. Student 'bands' will complete cooperative learning tasks to ensure group survival (assessment). Most class meetings will be held in outdoor space on campus. Graduate/Undergraduate Equivalency: ANTH 584. Mutually Exclusive: Cannot register for ANTH 384 if student has credit for ANTH 584.

ANTH 385 - MEDIA, CULTURE, AND SOCIETY
Short Title: MEDIA, CULTURE, AND SOCIETY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course offers a theoretical and ethnographic overview of past, current, and future anthropological research on media. Topics rotate but can include: cultural conservation among indigenous peoples, spectacle and sexuality, nationalism, advertising, journalism, and news-making, political communication and activism, technology and social change. Graduate/Undergraduate Equivalency: ANTH 585. Mutually Exclusive: Cannot register for ANTH 385 if student has credit for ANTH 585.
ANTH 386 - MEDICAL ANTHROPOLOGY OF FOOD AND HEALTH  
Short Title: MEDICINE, FOOD, AND HEALTH  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Distribution Group: Distribution Group II  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Food is increasingly understood and manipulated at the molecular level and used in therapy or disease prevention. This course focuses on the fluid intersection of biomedicine and nutrition as changes in agriculture, food safety, and research into the physiological and genetic effects of food alter how Western cultures eat. Graduate/Undergraduate Equivalency: ANTH 586. Mutually Exclusive: Cannot register for ANTH 386 if student has credit for ANTH 586.

ANTH 387 - ASIAN AMERICAN CONTEMPORARY COMMUNITIES  
Short Title: ASIAN AMERICAN COMMUNITIES  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This interdisciplinary course will investigate the diverse cultural traditions and shared experiences of Asian Americans in the United States. By analyzing historical works, literary texts, and films, we will explore a range of topics including Asian immigration, gender roles, identity formation, and ethnic media. Cross-list: ASIA 387.

ANTH 389 - THE ARCHAEOLOGY OF FOOD  
Short Title: ARCHAEOLOGY OF FOOD  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This course offers a broad anthropological perspective on food and culture, as well as the way that archaeologists attempt to reconstruct the subsistence technologies and diets of ancient peoples. Topics include forager and agricultural subsistence technologies, the origins of food production, feasting, food and identity, and gender and food. Graduate/Undergraduate Equivalency: ANTH 589. Mutually Exclusive: Cannot register for ANTH 389 if student has credit for ANTH 589.

ANTH 390 - CULTURE, NARRATION, AND SUBJECTIVITY  
Short Title: CULTURE, NARRATION, SUBJECTIVITY  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This course examines how linguistic and narrative structures interact to produce specific cultures of interpretation. The focus will be on linguistic and literary representations of subjectivity. This course will use novels by Western authors, such as Virginia Woolf and Dostoevsky, and some Chinese materials as comparison. Graduate/Undergraduate Equivalency: ANTH 590. Mutually Exclusive: Cannot register for ANTH 390 if student has credit for ANTH 590.

ANTH 391 - SPECULATIVE FUTURES  
Short Title: SPECULATIVE FUTURES  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Drawing from "CliFi," "Speculative Fiction," and global anthropological case studies, this course analyzes a series of potential futures as earthly conditions continue to be altered by human activity. Students will develop speculative future models through assessing climate conditions, population displacement, ethics, ecological transformations and human practices and values. Cross-list: ENST 391. Graduate/Undergraduate Equivalency: ANTH 591. Mutually Exclusive: Cannot register for ANTH 391 if student has credit for ANTH 591.

ANTH 392 - KINGS, QUEENS, AND COMMONERS: THE ARCHAEOLOGY OF ANCIENT MESOAMERICA  
Short Title: ANCIENT MESOAMERIICA  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: With an approach in archaeological methods and theories, Ancient Mesoamerica investigates the lives of ancient kings, queens, and commoners of pre-Columbian Central America. The course includes an overview of the culture history of indigenous cultures in this study area, with emphasis on topics of social archaeology that hold relevance to today's world.
ANTH 393 - THE ANTHROPOLOGY OF TOXICITY: RETHINKING HEALTH AND SOVEREIGNTY

Short Title: THE ANTHROPOLOGY OF TOXICITY

Department: Anthropology

Grade Mode: Standard Letter

Course Type: Seminar

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: Through ethnographic, scientific, and personal accounts of toxicity in a range of sites—from warzones to office buildings—this course explores toxicity as an analytic that helps us think critically about health and sovereignty. We explore the way that colonial geographies imprint geographies of toxicity and the ways that capitalism and consumption produce and distribute toxicity. In relation to health, we explore the ways that the materiality and biology of toxic exposure are embodied in specific ways that undermine singular or universalizable concepts and measures of human and environmental health and require us to think about the health in relation to the specificities of race, class, gender, disability, and intimacy in particular places and times. In relation to sovereignty, we explore the ways that the promiscuous movement of toxicants provokes but also eludes regulations that hew to the ridged boundaries of law and territory and raise new questions of accountability and evidence. Graduate/Undergraduate Equivalency: ANTH 593. Mutually Exclusive: Cannot register for ANTH 393 if student has credit for ANTH 593.

ANTH 395 - CULTURES AND COMMUNICATION

Short Title: CULTURES AND COMMUNICATION

Department: Anthropology

Grade Mode: Standard Letter

Course Type: Lecture

Distribution Group: Distribution Group II

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: Investigates the relations between different forms of communication - speech, print, film, and cultural constructions such as audiences, publics, and communities. Graduate/Undergraduate Equivalency: ANTH 595. Mutually Exclusive: Cannot register for ANTH 395 if student has credit for ANTH 595.

ANTH 396 - LAW AND RESISTANCE IN THE EVERYDAY

Short Title: LAW AND RESISTANCE

Department: Anthropology

Grade Mode: Standard Letter

Course Type: Seminar

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: This course will explore how people interact with the law in their everyday lives – in the U.S. and elsewhere. Examples will include how individuals experience and respond to policing, examining the effects of immigration and border security policies, and tracing how people and groups mobilize to challenges laws perceived as unjust. Cross-list: SOCI 396. Graduate/Undergraduate Equivalency: ANTH 596. Mutually Exclusive: Cannot register for ANTH 396 if student has credit for ANTH 596.

ANTH 397 - ANTHROPOLOGY JOURNAL CLUB

Short Title: ANTHROPOLOGY JOURNAL CLUB

Department: Anthropology

Grade Mode: Satisfactory/Unsatisfactory

Course Type: Independent Study

Credit Hour: 1

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: Students select, read, and discuss current articles from leading journals in sociocultural anthropology and related fields.

Department Permission Required. Graduate/Undergraduate Equivalency: ANTH 597. Mutually Exclusive: Cannot register for ANTH 397 if student has credit for ANTH 597. Repeatable for Credit.

ANTH 398 - ETHNOGRAPHIC RESEARCH METHODS

Short Title: ETHNOGRAPHIC RESEARCH

Department: Anthropology

Grade Mode: Standard Letter

Course Type: Seminar

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: Course considers the practice of ethnographic research (design, data collection and analysis). Topics include the contentious canonization of fieldwork & the ethnographic method, ethics & human subjects, rethinking the field & collaboration. Projects include participant observation, field notes, interviewing, and analysis of archival, ephemeral & audio/visual materials. Graduate/Undergraduate Equivalency: ANTH 598. Mutually Exclusive: Cannot register for ANTH 398 if student has credit for ANTH 598.

ANTH 400 - GLOBAL URBAN LAB

Short Title: GLOBAL URBAN LAB

Department: Anthropology

Grade Mode: Standard Letter

Course Type: Research

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: Guided independent research with lab component to study questions under the topics of sports, healthcare, transportation, immigration, and urban development in Houston and other global cities covered in the Global Urban Lab program. Instructor Permission Required. Mutually Exclusive: Cannot register for ANTH 400 if student has credit for POST 400/SOSC 400.

2019-2020 General Announcements
PDF Generated 1/29/2020
ANTH 403 - ANALYZING PRACTICE
Short Title: ANALYZING PRACTICE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A critical review of work informed by what has sometimes been deemed the 'key concept' of anthropological theory and research since the 1960s. Special attention will be devoted to the analytics of practice developed by Foucault, by Bourdieu, and by de Certeau.
Graduate/Undergraduate Equivalency: ANTH 603. Mutually Exclusive: Cannot register for ANTH 403 if student has credit for ANTH 603.

ANTH 404 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-9
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Directed reading and preparation of written papers on anthropological subjects not offered in the curriculum and advanced study of subjects on which courses are offered. Instructor Permission Required. Repeatable for Credit.

ANTH 405 - MUSEUM INTERNSHIP AND DIRECTED READING
Short Title: MUSEUM INTERNSHIP
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course combines a research-oriented internship at a local museum with directed readings in preparation for the specific focus of the internship. Instructor Permission Required. Recommended Prerequisite(s): ANTH 341.

ANTH 406 - LINGUISTIC FIELD METHODS
Short Title: LINGUISTIC FIELD METHODS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 5
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (LING 300 or ANTH 300) and (LING 301 or ANTH 301) and (LING 304 or ANTH 304) and (LING 311 or ANTH 323) or (LING 500 or ANTH 500) and (LING 501 or ANTH 501) and (LING 504 or ANTH 504) and (LING 511 or ANTH 523)
Description: Techniques and practice in the observation, analysis, and recording of a human language. Cross-list: LING 407. Repeatable for Credit.

ANTH 407 - LINGUISTIC FIELD METHODS
Short Title: LINGUISTIC FIELD METHODS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 5
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ANTH 407 or LING 407
Description: Continuation of ANTH 407 or LING 407. Cross-list: LING 408. Repeatable for Credit.

ANTH 410 - THE ETHNOGRAPHY OF DEVELOPMENT
Short Title: THE ETHNOGRAPHY OF DEVELOPMENT
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course suggests the necessity of a solid ethnoographic grounding for both practical development work and for further intellectual growth of the discipline. Graduate/Undergraduate Equivalency: ANTH 610. Mutually Exclusive: Cannot register for ANTH 410 if student has credit for ANTH 610.

ANTH 411 - NEUROLINGUISTICS
Short Title: NEUROLINGUISTICS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-9
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of languages and the brain. Includes localization of speech, language, and memory functions, hemispheric dominance, pathologies of speech and language associated with brain damage, and hypotheses of the representation and operation of linguistic information in the cortex. Cross-list: LING 411, NEUR 411.

ANTH 412 - RHETORIC
Short Title: RHETORIC
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
ANTH 413 - CULTURE AFTER COMMUNISM
Short Title: CULTURE AFTER COMMUNISM
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Examines cultural transformations in the late- and post-socialist societies of East-Central Europe, the former Soviet Union, and Asia. Explores everyday discourses and practices through which new forms of property, selfhood, nationalism, and the state are emerging, and the legacy of cold war politics for ethnographic representation of these societies. Graduate/Undergraduate Equivalency: ANTH 613. Mutually Exclusive: Cannot register for ANTH 413 if student has credit for ANTH 613.

ANTH 414 - HERMENEUTICS AND LINGUISTIC ANTHROPOLOGY
Short Title: HERMENEUTICS &LINGUISTIC ANTH
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level

ANTH 417 - ONTOLOGIES, VITALITIES, THINGS
Short Title: ONTOLOGIES, VITALITIES, THINGS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Course focuses on emerging and established thematics in cultural anthropology that have been drawn from philosophical (and other) interventions concerning being, matter, vibrancy, vitality and objects and considers how these conceptual domains can be productively engaged in the empirical work of anthropology. Graduate/Undergraduate Equivalency: ANTH 617. Mutually Exclusive: Cannot register for ANTH 417 if student has credit for ANTH 617.

ANTH 420 - ETHNOGRAPHY STUDIO
Short Title: ETHNOGRAPHY STUDIO
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Students will read a selection of contemporary ethnographies deemed 'exemplary' by diverse audiences paired with theoretical works that the authors claim in their arguments. The course will focus on how ethnographies are structured, the central issues they investigate, and how they go about doing this. The central task of the class is to analyze, critically but also productively, what rigor and creativity mean in the ethnographic investigation of contemporary and recurring questions and problems, relations between questions, theory and ethnography will also be explored through students' own ethnographic writing. Graduate/Undergraduate Equivalency: ANTH 620. Mutually Exclusive: Cannot register for ANTH 420 if student has credit for ANTH 620.

ANTH 422 - INFRASTRUCTURES AND POWER
Short Title: INFRASTRUCTURES AND POWER
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar course asks why "infrastructure" -- that which enables other things to happen -- has recently become such an important concept in the human sciences. After reviewing recent and classic theoretical approaches we explore recent anthropological studies of infrastructures-in-action ranging from information and media infrastructures to environmental and biotic infrastructures to infrastructures of governance and power. Graduate/Undergraduate Equivalency: ANTH 622. Mutually Exclusive: Cannot register for ANTH 422 if student has credit for ANTH 622.

ANTH 423 - AFRICAN MYTHS AND RITUALS
Short Title: AFRICAN MYTHS AND RITUALS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Explore and analyze specific myths and rituals which provide legitimation for community ceremonies and that serve as a basis for the negotiation of power and ideology for members within that community. Readings from classic theorists: Durkheim, Levi-Strauss, Edmond Leach, Gennap and Turner, and contemporary theorists: Werbner, Heusch, Comaroff, and Ray. Cross-list: RELI 423.
ANTH 424 - MAJOR FIGURES IN CULTURAL AND SOCIAL THOUGHT

Short Title: CULTURAL AND SOCIAL THOUGHT

Department: Anthropology

Grade Mode: Standard Letter

Course Type: Seminar

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: The course comprises an in-depth examination of the career and major works of a scholar of significant influence within and beyond anthropology. In Fall 2018, the course will focus on anthropologist Mary Douglas. Graduate/Undergraduate Equivalency: ANTH 624. Mutually Exclusive: Cannot register for ANTH 424 if student has credit for ANTH 624. Repeatable for Credit.

ANTH 425 - ADVANCED TOPICS IN ARCHAEOLOGY

Short Title: ADVANCED TOPICS IN ARCHAEOLOGY

Department: Anthropology

Grade Mode: Standard Letter

Course Type: Seminar

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Prerequisite(s): ANTH 205 and ANTH 362

Description: Seminar on selected topics in archaeological analysis and theory. The course will variously focus on ceramic analysis and classification, archaeological sampling in regional survey and excavation, and statistical approaches to data analysis and presentation. Please consult with the department for additional information. Graduate/Undergraduate Equivalency: ANTH 625. Mutually Exclusive: Cannot register for ANTH 425 if student has credit for ANTH 625. Repeatable for Credit.

ANTH 426 - UNDERGROUND SPATIALITIES STUDIO

Short Title: UNDERGROUND SPATIALITIES STUDI

Department: Anthropology

Grade Mode: Standard Letter

Course Type: Seminar

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: This class introduces students to thinking about space volumetrically and kinesthetically. It builds on scholarship that calls our attention to the geopolitics of volumetric space using underground water movement as a case study. It is a hands on studio that combines anthropology, arts, and architecture. Graduate/Undergraduate Equivalency: ANTH 626. Mutually Exclusive: Cannot register for ANTH 426 if student has credit for ANTH 626.

ANTH 428 - FEMINIST SCIENCE AND TECHNOLOGY STUDIES

Short Title: FEMINIST STS

Department: Anthropology

Grade Mode: Standard Letter

Course Type: Seminar

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: This course will survey the field of Social Studies of Science and Technology (STS) emphasizing the contributions made by feminist and queer scholarship. It will combine foundational theoretical works with contemporary ethnographies. Graduate/Undergraduate Equivalency: ANTH 628. Mutually Exclusive: Cannot register for ANTH 428 if student has credit for ANTH 628.

ANTH 429 - ACTIVISM AND SOCIAL MOVEMENTS

Short Title: ACTIVISM AND SOCIAL MOVEMENTS

Department: Anthropology

Grade Mode: Standard Letter

Course Type: Seminar

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: Movements to alleviate inequalities constitute important cultural and political interventions globally. This course examines advocacy practices to create and sustain social movements and political struggles. Cases included grassroots advocacy, NGOs, transnational and technological activism; environmental justice; human rights; gender, ethnic and sexual rights; consumption and globalization; democratization and neoliberalism. Graduate/Undergraduate Equivalency: ANTH 629. Mutually Exclusive: Cannot register for ANTH 429 if student has credit for ANTH 629.

ANTH 440 - REGULATORY TRANSLATIONS LAB

Short Title: REGULATORY TRANSLATIONS LAB

Department: Anthropology

Grade Mode: Standard Letter

Course Type: Laboratory

Credit Hours: 2

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: This class examines how the concept of 'translation' can be used to understand the movement of regulations around our globalized world. It is designed as a research experience that will give students the opportunity to conduct archival research, produce annotated bibliographies, and conduct a literature review with an interdisciplinary approach that combines the social sciences and humanities. This is a hands on lab that will benefit students who are interested in the law from a social perspective and interdisciplinary thinking and research methods. Instructor Permission Required.
ANTH 441 - EXPLORING THE UNDERGROUND THROUGH ETHNOGRAPHY
Short Title: EXPLORING THE UNDERGROUND
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This class will be a hands-on research experience to explore the meaning and uses of ‘the underground and the subterranean’ across diverse communities. Students will review existing academic literature and artistic forms of expression that explore the meaning of the underground of r scientists, activists, artists, and everyday citizens. Students will also conduct fieldwork (interviews and participant observation) with Houston communities to understand what practices bring people close to that which is not immediately visible. Instructor Permission Required.

ANTH 442 - MUSEUMS: THEORY AND PRACTICE
Short Title: MUSEUMS: THEORY & PRACTICE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course combines readings and lectures exploring the representation of anthropological and archaeological materials in Museum exhibits with an internship at the Houston Museum of Natural Science. Graduate/Undergraduate Equivalency: ANTH 642.

ANTH 443 - ANTHROPOLOGY OF RACE, ETHNICITY AND HEALTH
Short Title: RACE ETHNICITY AND HEALTH
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores how human bodies and biomedical 'facts' are culturally constructed with respect to race and ethnicity, and examines how these constructs impact experiences of health, well-being and illness. Graduate/Undergraduate Equivalency: ANTH 643.

ANTH 444 - CULTURE, PSYCHIATRY, AND MENTAL ILLNESS
Short Title: CULTURE AND MENTAL ILLNESS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines the ways in which emotional suffering and therapeutic systems are constituted within various social, cultural, and historical contexts. Topics include affect, anxiety, psychosis, and somatization in cross-cultural perspective; diagnostic standardization; the cultural history of psychiatry; institutionalization and deinstitutionalization; psychiatric professionalization; the globalization of Western psychiatric practice; and critical anti-psychiatry movements. Graduate/Undergraduate Equivalency: ANTH 644. Mutually Exclusive: Cannot register for ANTH 444 if student has credit for ANTH 644.

ANTH 445 - EXPERTS AND CULTURES OF EXPERTISE
Short Title: EXPERTS/EXPERTISE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar takes psychiatric practice as an object of anthropological investigation. It explores the ways in which emotional suffering and therapeutic systems are constituted within various social, cultural, and historical contexts. Topics include affect, anxiety, psychosis, and somatization in cross-cultural perspective; diagnostic standardization; the cultural history of psychiatry; institutionalization and deinstitutionalization; psychiatric professionalization; the globalization of Western psychiatric practice; and critical anti-psychiatry movements. Graduate/Undergraduate Equivalency: ANTH 644. Mutually Exclusive: Cannot register for ANTH 444 if student has credit for ANTH 644.

ANTH 446 - ADVANCED TOPICS IN BIOMEDICAL ANTHROPOLOGY
Short Title: ADV BIOMEDICAL ANTHROPOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Studies of experts and expert knowledge have recently become one of the most vibrant and promising areas of research in social-cultural anthropology today. This seminar reviews recent anthropological research on experts and their cultures of expertise and situates it in comparison to theoretical, sociological and historical engagements of expert cultures. Graduate/Undergraduate Equivalency: ANTH 645. Mutually Exclusive: Cannot register for ANTH 445 if student has credit for ANTH 644.
ANTH 447 - MODERN ETHNOGRAPHY AND THE ETHNOGRAPHY OF MODERNITY
Short Title: MODERN ETHNOGRAPHY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The course explores the strategies of representation, the methodologies, and the diagnostic categories to which anthropologists have resorted in coming to terms with such phenomena as rationalization, economic and informational globalization, and the commodification of culture. Graduate/Undergraduate Equivalency: ANTH 647. Mutually Exclusive: Cannot register for ANTH 447 if student has credit for ANTH 647.

ANTH 448 - PHENOMENOLOGICAL ANTHROPOLOGY
Short Title: PHENOMENOLOGICAL ANTHROPOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This advanced seminar explores phenomenological theory in the human sciences beginning with Hegel and Marx and examines its uptake in recent works of anthropological ethnography and theory. The course will focus especially upon questions of selfhood and alterity, affect and emotion, and the senses and knowledge. Graduate/Undergraduate Equivalency: ANTH 648. Mutually Exclusive: Cannot register for ANTH 448 if student has credit for ANTH 648.

ANTH 449 - CULTURES OF SEXUALITY
Short Title: CULTURES OF SEXUALITY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: What is 'sexuality' across cultural milieux? This course analyzes understandings and practices of sexuality from a global, comparative perspective, including different social configurations of gender and intimacy, reproduction, sensuality and the erotic. Case studies explore the complex relationships between sexuality and gender, ethnicity, nationalism, globalization, commodification, politics, media, health and medicine. Cross-list: SWGS 449. Graduate/Undergraduate Equivalency: ANTH 649. Mutually Exclusive: Cannot register for ANTH 449 if student has credit for ANTH 649.

ANTH 451 - THE ANTHROPOLOGY OF WATER
Short Title: THE ANTHROPOLOGY OF WATER
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This class will offer students concepts and methodological resources to conduct their own research projects on water related issues from an anthropological perspective. It will include reading materials and fieldwork according to each student's project specificities. Graduate/Undergraduate Equivalency: ANTH 651. Mutually Exclusive: Cannot register for ANTH 451 if student has credit for ANTH 651.

ANTH 453 - COLLATERAL AFTERWORLDS
Short Title: COLLATERAL AFTERWORLDS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Drawing on ethnography and social theory, this course develops analytics attuned to the socialities, intimacies, temporalities, and forms of ethic that emerge in the precarious spaces of liberal and democratic violence and failure. In refugee camps or climate catastrophes, in a queer present or under enduring legacies, what happens if we think the social with hope and futurity in abeyance? Graduate/Undergraduate Equivalency: ANTH 653. Mutually Exclusive: Cannot register for ANTH 453 if student has credit for ANTH 653. Repeatable for Credit.

ANTH 456 - HERITAGE MANAGEMENT
Short Title: HERITAGE MANAGEMENT
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines the policies and politics of heritage management from a global perspective. We examine how different nations define, protect, and manage heritage resources. Case studies will present debates over the meaning and interpretation of cultural heritage and illustrate connections between heritage and such issues as nationalism and identity. The graduate level course will engage students at a more advanced theoretical level through additional reading assignments and an additional paper. Graduate/Undergraduate Equivalency: ANTH 656. Mutually Exclusive: Cannot register for ANTH 456 if student has credit for ANTH 656.
ANTH 458 - HUMAN OSTEOLOGY
Short Title: HUMAN OSTEOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Introduction to the analysis of human skeletal material from archaeological sites. Graduate/Undergraduate Equivalency: ANTH 658. Mutually Exclusive: Cannot register for ANTH 458 if student has credit for ANTH 658.

ANTH 460 - ADVANCED ARCHAEOLOGICAL THEORY
Short Title: ADVANCED ARCHAEOLOGICAL THEORY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ANTH 205
Description: History and analysis of the major currents of archaeological theory from the Encyclopaedist origins of positivism, through cultural evolutionism and historical particularism, to the New Archaeology and current trends. Graduate/Undergraduate Equivalency: ANTH 660. Mutually Exclusive: Cannot register for ANTH 460 if student has credit for ANTH 660.

ANTH 463 - WEST AFRICAN PREHISTORY
Short Title: WEST AFRICAN PREHISTORY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Seminar providing in-depth consideration of the later prehistoric archaeology (late Stone Age and Iron Age) of the West African subcontinent. Graduate/Undergraduate Equivalency: ANTH 663. Mutually Exclusive: Cannot register for ANTH 463 if student has credit for ANTH 663.

ANTH 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture, Seminar, Lecture/Laboratory, Independent Study, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

ANTH 483 - SEMINAR ON DOCUMENTARY AND ETHNOGRAPHIC FILM
Short Title: DOCUM & ETHNOGRAPH FILM
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Overview of the history of documentary and ethnographic cinema from a worldwide perspective. Includes both canonical and alternative films and film movements, with emphasis on the shifting and overlapping of boundaries of fiction and nonfiction genres. Graduate/Undergraduate Equivalency: ANTH 683. Mutually Exclusive: Cannot register for ANTH 483 if student has credit for ANTH 683.

ANTH 490 - DIRECTED HONORS RESEARCH
Short Title: DIRECTED HONORS RESEARCH
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A two-semester sequence of independent research culminating in the preparation and defense of an honors thesis. Open only to candidates formally accepted into the honors program. Instructor Permission Required.

ANTH 491 - DIRECTED HONORS RESEARCH
Short Title: DIRECTED HONORS RESEARCH
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A two-semester sequence of independent research culminating in the preparation and defense of an honors thesis. Open only to candidates formally accepted in the honors program. Instructor Permission Required.

ANTH 493 - SENIOR RESEARCH PREPARATION
Short Title: SENIOR RESEARCH PREPARATION
Department: Anthropology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Through this required course for Anthropology majors in their final year of the program, students will cultivate skills in research design and preparation, complete training in research ethics, prepare research ethics protocols, connect with faculty advisors for their senior research project, and connect with other students in their cohort.
ANTH 495 - ANTHROPOLOGY CAPSTONE
Short Title: ANTHROPOLOGY CAPSTONE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Required of all anthropology majors who do not enroll in ANTH 490 and ANTH 491. Each student formulates and completes an advanced research project guided by a faculty supervisor and evaluated by a faculty panel.

ANTH 500 - LINGUISTIC ANALYSIS
Short Title: LINGUISTIC ANALYSIS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A hands-on, data-oriented approach to how different languages construct words and sentences. Students will develop skills in linguistic problem solving and the foundations for pursuing grammatical description. Topics: word classes, morphology, tense-aspect-modality, clause structure, word order, grammatical relations, existentials/possessives/locatives, voice/valence, questions, negation, relative clauses, complements causatives. Cross-list: LING 500. Graduate/Undergraduate Equivalency: ANTH 300. Mutually Exclusive: Cannot register for ANTH 500 if student has credit for ANTH 300.

ANTH 505 - HISTORICAL LINGUISTICS
Short Title: HISTORICAL LINGUISTICS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ANTH 200 or LING 200
Description: Exploration of the nature of language change. Topics covered include sound change, syntactic and semantic change, modeling language splits, the socio-linguistics of language change, and the history of European languages. Without Permission of Instructor, must have Graduate Standing. Cross-list: LING 505. Graduate/Undergraduate Equivalency: ANTH 305. Mutually Exclusive: Cannot register for ANTH 505 if student has credit for ANTH 305.

ANTH 506 - HISTORY OF ANTHROPOLOGICAL IDEAS
Short Title: HIST OF ANTHROPOLOGICAL IDEAS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An introduction to the history of anthropology and its theories and methods. The emphasis is upon social and cultural anthropology.

ANTH 507 - ANTHROPOLOGICAL DIRECTIONS FROM SECOND WORLD WAR TO PRESENT
Short Title: ANTHRO FROM 2ND WW-PRESENT
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A sequel to ANTH 306/506, the course explores turns and trends in sociocultural research and critique during the past half-century. Special attention is paid to the rise and fall of structuralism, the problematization of 'the primitive' and the proliferation of theories of 'practice.'

ANTH 508 - THE ANTHROPOLOGY OF THE HISTORICAL IMAGINATION
Short Title: THE HISTORICAL IMAGINATION
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Explores ideas of history and attitudes toward the past as culturally conditioned phenomena. Emphasizes history as a statement of cultural values as well as conceptualizations of cause, change, time, and reality. Graduate/Undergraduate Equivalency: ANTH 308. Mutually Exclusive: Cannot register for ANTH 508 if student has credit for ANTH 308.
ANTH 509 - GLOBAL CULTURES  
Short Title: GLOBAL CULTURES  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  

Course Level: Graduate  
Description: This course will examine specific cultural debates and issues that have 'overflowed' national boundaries. Topics will include student movements, democracy and citizenship, and the internationalization of professional and popular culture. Graduate/Undergraduate Equivalency: ANTH 309. Mutually Exclusive: Cannot register for ANTH 509 if student has credit for ANTH 309.

ANTH 511 - MASCULINITIES  
Short Title: MASCULINITIES  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  

Course Level: Graduate  
Description: This course deals with masculinities in the West, concentrating on concepts of masculine protagonism and personhood. Readings explore identities constructed in realms such as law, politics, finances, art, the home and war. Graduate/Undergraduate Equivalency: ANTH 311. Mutually Exclusive: Cannot register for ANTH 511 if student has credit for ANTH 311.

ANTH 512 - AFRICAN PREHISTORY  
Short Title: AFRICAN PREHISTORY  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  

Course Level: Graduate  
Description: Thematic coverage of developments throughout the continent from the Lower Paleolithic to medieval times, with emphasis on food production, metallurgy and the rise of cities and complex societies. Graduate/Undergraduate Equivalency: ANTH 312. Mutually Exclusive: Cannot register for ANTH 512 if student has credit for ANTH 312. Repeatable for Credit.

ANTH 513 - LANGUAGE AND CULTURE  
Short Title: LANGUAGE AND CULTURE  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  

Course Level: Graduate  
Description: Investigates the relation between language and thought, language and world view, language and logic. Without Permission of Instructor, must have Graduate Standing. Cross-list: LING 513. Graduate/Undergraduate Equivalency: ANTH 313. Mutually Exclusive: Cannot register for ANTH 513 if student has credit for ANTH 313.

ANTH 517 - REVOLUTIONS AND UTOPIAS  
Short Title: REVOLUTIONS AND UTOPIAS  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  

Course Level: Graduate  
Description: In order to gain a more precise grasp of our contemporary political challenges and possibilities, this course in political anthropology investigates a wide range of historical and contemporary cases of rapid political and social transformation and carefully examines the ideas, desires and utopias that inspired them. Graduate/Undergraduate Equivalency: ANTH 317. Mutually Exclusive: Cannot register for ANTH 517 if student has credit for ANTH 317.

ANTH 519 - SYMBOLISM AND POWER  
Short Title: SYMBOLISM AND POWER  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  

Course Level: Graduate  
Description: How do cultural conceptions of race, ethnicity, and nationalism shape who we think we are? How are these ideas related to Western views of the relations between nature and society, and how do these differ from those in other cultures? Graduate/Undergraduate Equivalency: ANTH 319. Mutually Exclusive: Cannot register for ANTH 519 if student has credit for ANTH 319.

ANTH 522 - GLOBAL IM/MOBILITIES: BORDERS, MIGRATION, AND CITIZENSHIP  
Short Title: GLOBAL IM/MOBILITIES  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  

Course Level: Graduate  
Description: How do cultural conceptions of race, ethnicity, and nationalism shape who we think we are? How are these ideas related to Western views of the relations between nature and society, and how do these differ from those in other cultures? Graduate/Undergraduate Equivalency: ANTH 322. Mutually Exclusive: Cannot register for ANTH 522 if student has credit for ANTH 322.
ANTH 523 - INTRODUCTION TO PHONOLOGY  
Short Title: INTRODUCTION TO PHONOLOGY  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Introduction to analysis techniques and theory concerning patternings of sounds in the world's languages. The course will involve extensive work with non-English data sets, and development of analytical techniques such as identification of sound alternations or restrictions, and formalization of abstract representations and rules to account for them. Without Permission of Instructor, must have Graduate Standing. Cross-list: LING 511. Graduate/Undergraduate Equivalency: ANTH 323. Mutually Exclusive: Cannot register for ANTH 523 if student has credit for ANTH 323.

ANTH 526 - LAW, POWER AND CULTURE  
Short Title: LAW, POWER AND CULTURE  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: An exploration of normativity and its different social forms across the world. It combines theoretical and ethnographic analyses of legal institutions and practices as cultural phenomena undergirded by power relations, knowledge forms and historical forces. Graduate/Undergraduate Equivalency: ANTH 326. Mutually Exclusive: Cannot register for ANTH 526 if student has credit for ANTH 326.

ANTH 527 - GENDER AND SYMBOLISM  
Short Title: GENDER AND SYMBOLISM  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Examinations of beliefs concerning men, women, and gender in different cultures, including the West, relating to issues of symbolism, power, and the distribution of cultural models. Mutually Exclusive: Cannot register for ANTH 527 if student has credit for ANTH 327.

ANTH 529 - BODIES, SENSUALITIES, AND ART  
Short Title: BODIES, SENSUALITIES, & ART  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Cross-cultural approaches to art and the senses. Students may engage any medium. Emphasis to be placed on issues generated from performance in the arts rather than from academia. Contrasts art and academic knowledge to explore alternative epistemologies and aesthetics. Graduate/Undergraduate Equivalency: ANTH 329. Mutually Exclusive: Cannot register for ANTH 529 if student has credit for ANTH 329.

ANTH 532 - THE SOCIAL LIFE OF CLEAN ENERGY  
Short Title: SOCIAL LIFE OF CLEAN ENERGY  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course considers the phenomenon of renewable energy using a social scientific approach to analyze the various forces and interests involved in the development of renewable energy projects (such as hydropower, solar and wind) in both the global North and South. No prerequisites required. GR/UG Equivalent: ANTH 332. Graduate/Undergraduate Equivalency: ANTH 332. Mutually Exclusive: Cannot register for ANTH 532 if student has credit for ANTH 332.

ANTH 533 - THE MATERIAL WORLD  
Short Title: THE MATERIAL WORLD  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course explores the mutually constructive relationship between humans and objects; it asks how objects are made meaningful and active by humans, and how, in turn, people acquire meaning, relations, and agency through material culture. Topics include: commoditization, consumption, gift exchange, subjects and objects, identity, fashion, collecting, art, and authenticity. Graduate/Undergraduate Equivalency: ANTH 333. Mutually Exclusive: Cannot register for ANTH 533 if student has credit for ANTH 333.

ANTH 535 - ANTHROPOLOGY AS CULTURAL CRITIQUE  
Short Title: ANTHROPOLOGY/CULTURAL CRITIQUE  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: The critical assessment and interpretation of Euro American social institutions and cultural forms have always been an integral part of anthropology's intellectual project. This course will explain the techniques, history, and achievements of such critique. It will also view the purpose in the context of a more generational tradition of critical social thought in the West, especially the U.S. Graduate/Undergraduate Equivalency: ANTH 335. Mutually Exclusive: Cannot register for ANTH 535 if student has credit for ANTH 335.
ANTH 536 - BECOMING A DOCTOR
Short Title: BECOMING A DOCTOR
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course introduces such classic anthropological concepts as the rite of passage and the cultural system as frames for the investigation of the professionalization of medicine as a discipline, medical training and the changing epistemologies of medical knowledge and the changing scope and content of the medical cosmos. Graduate/Undergraduate Equivalency: ANTH 336. Mutually Exclusive: Cannot register for ANTH 536 if student has credit for ANTH 336.

ANTH 538 - READING POPULAR CULTURE
Short Title: READING POPULAR CULTURE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course examines a number of cases from popular genres-romance novels, television sit-coms, tourist sites, movies, rock music and submits them to a variety of theoretical approaches from disciplines such as anthropology, sociology, literary studies, and philosophy. Graduate/Undergraduate Equivalency: ANTH 338. Mutually Exclusive: Cannot register for ANTH 538 if student has credit for ANTH 338.

ANTH 540 - NEOLIBERALISM AND GLOBALIZATION
Short Title: NEOLIBERALISM & GLOBALIZATION
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course explores the relationship between two of the most powerful forces shaping the world today: economic globalization and political neoliberalism. Using ethnographic, policy and theoretical documentation drawn from a variety of case studies, we will reconstruct the interrelated origins of globalization and neoliberalism and map their social and cultural impacts across the world. Graduate/Undergraduate Equivalency: ANTH 340. Mutually Exclusive: Cannot register for ANTH 540 if student has credit for ANTH 340.

ANTH 541 - ETHNOGRAPHIES OF CARE
Short Title: ETHNOGRAPHIES OF CARE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An ethnographically grounded exploration of the political, social, and intimate relations that constitute care in various situations of life and death. We ask how particular populations come to be understood as requiring, receiving, or being entitled to care? Who becomes obliged to provide care? And what are care's collateral effects? Graduate/Undergraduate Equivalency: ANTH 341. Mutually Exclusive: Cannot register for ANTH 541 if student has credit for ANTH 341.

ANTH 544 - CITY/CULTURE
Short Title: CITY/CULTURE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course treats both the theorization and the ethnographic exploration of the urban imaginary; urban spaces and practices; urban, suburban, and post-urban planning; city-states, colonial cities, and capital cities; and the late 20th century metropolis. Graduate/Undergraduate Equivalency: ANTH 344. Mutually Exclusive: Cannot register for ANTH 544 if student has credit for ANTH 344.
ANTH 545 - THE POLITICS OF THE PAST: ARCHAEOLOGY IN SOCIAL CONTEXT
Short Title: ARCHAEOLOGY IN SOCIAL CONTEXT
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An examination of the way that archaeological evidence of the past has been used and viewed by particular groups at different times. Using case studies, the course considers issues of gender, race, Eurocentrism, political domination and legitimacy that emerge from critical analysis of representations of the past by archaeologists, museums, and collectors. Graduate/Undergraduate Equivalency: ANTH 345. Mutually Exclusive: Cannot register for ANTH 545 if student has credit for ANTH 345.

ANTH 547 - THE U.S. AS A FOREIGN COUNTRY
Short Title: THE U.S. AS A FOREIGN COUNTRY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course looks at selected aspects of American culture and society from an anthropological point of view. Readings derive from the works of both foreign and native observers, past and present. Graduate/Undergraduate Equivalency: ANTH 347. Mutually Exclusive: Cannot register for ANTH 547 if student has credit for ANTH 347.

ANTH 548 - ANTHROPOLOGIES OF NATURE
Short Title: ANTHROPOLOGIES OF NATURE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This class examines the uses and makings of nature in accounts of the human and post-human. It introduces students to nature as an object of study, as an analytic and as a heuristic. Some of the topics the course explores include the nature-culture dyad, nature as resource, science and technology and the remaking of nature, economies of nature, materiality, nature and kinship, and natural ontologies. Graduate/Undergraduate Equivalency: ANTH 348. Mutually Exclusive: Cannot register for ANTH 548 if student has credit for ANTH 348.

ANTH 549 - THE ANTHROPOLOGY OF ETHICS
Short Title: THE ANTHROPOLOGY OF ETHICS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Philosophical ethics argues over the proper criteria of the definition and the assessment of ethical action. This course focuses on an emerging and increasingly salient anthropological project: empirical inquiry into the themes and variations of ethical systems and the sociocultural rationale for their existence and reproduction. Graduate/Undergraduate Equivalency: ANTH 349. Mutually Exclusive: Cannot register for ANTH 549 if student has credit for ANTH 349.

ANTH 550 - HISTORICAL ANTHROPOLOGIES OF RELIGION
Short Title: HISTORICAL ANTHROPOLOGIES
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will address the study of the religious past through conjunctions of anthropology and history. Readings will include books and selections by Max Weber, Marshall Sahlins, Victor Turner, Jacques Le Goff, Aron Gurevich, and others. Cross-list: RELI 555.

ANTH 551 - CULTURES OF NATIONALISM
Short Title: CULTURES OF NATIONALISM
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will examine the cultural dimensions of nationalism, particularly around the creation of forms of ‘peoplehood’ that seem to be presupposed by almost all nation-building projects. Texts to be analyzed will include the Declaration of Independence, the United States Constitution, and the Declaration of the Rights of Man. Graduate/Undergraduate Equivalency: ANTH 351. Mutually Exclusive: Cannot register for ANTH 551 if student has credit for ANTH 351.

ANTH 553 - CULTURES OF INDIA
Short Title: CULTURES OF INDIA
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will examine the cultural dimensions of nationalism, particularly around the creation of forms of ‘peoplehood’ that seem to be presupposed by almost all nation-building projects. Texts to be analyzed will include the Declaration of Independence, the United States Constitution, and the Declaration of the Rights of Man. Graduate/Undergraduate Equivalency: ANTH 353. Mutually Exclusive: Cannot register for ANTH 553 if student has credit for ANTH 353. Repeatable for Credit.
ANTH 554 - ILLNESS, DISABILITY, AND THE GENDERED BODY
Short Title: DISABILITY AND GENDERED BODIES
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course draws on critical disability studies and medical anthropology to explore how gender and sexuality matter in contexts of illness and disability across a range of institutional, social, and national contexts. We pay particular attention to the ways illness and disability expose, disturb, or retrench normative arrangements of gender. Cross-list: SWGS 554. Graduate/Undergraduate Equivalency: ANTH 354. Mutually Exclusive: Cannot register for ANTH 554 if student has credit for ANTH 354.

ANTH 555 - SPACE, PLACE, AND LANDSCAPE
Short Title: SPACE, PLACE, AND LANDSCAPE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course provides an overview of the way archaeologists study space, place and landscape, including studies that emphasize ecological, symbolic, political economic and religious aspects. Recent theoretical work on space, place, and landscape will be emphasized, as well as archaeological methods of investigation and interpretation, including remote sensing, surveying, and GIS. Graduate/Undergraduate Equivalency: ANTH 355. Mutually Exclusive: Cannot register for ANTH 555 if student has credit for ANTH 355.

ANTH 558 - THE FOURTH WORLD: ISSUES OF INDIGENOUS PEOPLES
Short Title: FOURTH WORLD: INDIGENOUS PEOPLE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In contrast with people self-identified within political structures of the First, Second and Third Worlds, Fourth World peoples are, generally speaking, 'stateless peoples.' In this course we will examine both how this 'unofficial' status affects their struggle for self-determination and how native peoples engage traditional beliefs and practices for self-empowerment. Through readings, films and speakers we will examine current conflicts facing indigenous people in North and South America, the Soviet Union, Europe, Asia, and Australia. Graduate/Undergraduate Equivalency: ANTH 358. Mutually Exclusive: Cannot register for ANTH 558 if student has credit for ANTH 358.

ANTH 561 - LATIN AMERICAN TOPICS
Short Title: LATIN AMERICAN TOPICS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines contemporary cultural and political dynamics in Latin America. Topics include: race, ethnicity and indigenousness; borders, migrations and diaspora; genocide and state violence; neo-colonialisms and neo-liberalisms; sexuality, gender and class dynamics; social movements and activism; the politics and practices of medicine and religion; popular culture, media and technology. Graduate/Undergraduate Equivalency: ANTH 361. Mutually Exclusive: Cannot register for ANTH 561 if student has credit for ANTH 361.

ANTH 562 - ARCHAEOLOGICAL FIELD TECHNIQUES
Short Title: ARCHAEOLOGICAL FLD TECHNIQUES
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ANTH 205
Description: Methods used in fieldwork, laboratory analysis, and interpretation of archaeological data from a local site excavated by the class. Graduate/Undergraduate Equivalency: ANTH 362. Mutually Exclusive: Cannot register for ANTH 562 if student has credit for ANTH 362. Repeatable for Credit.

ANTH 563 - EARLY CIVILIZATIONS
Short Title: EARLY CIVILIZATIONS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A comparative study of the civilizations of Mesopotamia, Egypt, the Indus, China, and the Maya, emphasizing the causes and conditions of their origins. Graduate/Undergraduate Equivalency: ANTH 363. Mutually Exclusive: Cannot register for ANTH 563 if student has credit for ANTH 363.
ANTH 564 - AFRICAN ARCHAEOLOGY FIELD TECHNIQUES
Short Title: AFRICAN ARCHAEOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this course, basic field archaeology techniques are taught on-site in an archaeological context in Africa with emphasis on excavation methods, artifact recovery, and recording techniques. Students will excavate stone structures and a variety of historical deposits. Fieldwork takes place in Africa, June-July. Graduate/Undergraduate Equivalency: ANTH 364. Mutually Exclusive: Cannot register for ANTH 564 if student has credit for ANTH 364. Repeatable for Credit.
Course URL: www.songomnara.rice.edu/fieldschool.htm

ANTH 566 - SCIENCE, LOCAL AND GLOBAL
Short Title: SCIENCE, LOCAL AND GLOBAL
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course explores science as a transnational phenomenon, focusing on the pathways along which it flows around the world. Topics include differences in local styles of reasoning, dynamics of international scientific collaborations, transnational migration of knowledge workers, the role of science in nationalist projects, and the commodification of science. Graduate/Undergraduate Equivalency: ANTH 366. Mutually Exclusive: Cannot register for ANTH 566 if student has credit for ANTH 366.

ANTH 570 - ARCHAEOLOGICAL LABORATORY TECHNIQUES AND ANALYSIS
Short Title: ARCHAEOLOGICAL LAB ANALYSIS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3-6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Techniques of processing, conserving, and recording archaeological materials are emphasized. Students will become familiar with procedures for pottery, glass, metals, and building materials, in addition to plant and animal remains. Course work includes lectures, hands-on lab work, and informal discussion. Graduate/Undergraduate Equivalency: ANTH 370. Mutually Exclusive: Cannot register for ANTH 570 if student has credit for ANTH 370. Repeatable for Credit.

ANTH 571 - MONEY AND EVERYDAY LIFE
Short Title: MONEY AND EVERYDAY LIFE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Money is such a part of everyday modern life that it is hard for us to imagine living without it. Yet in many pre-modern societies, gift-exchange was as important as money is in our own. This course will look at the cultural dimensions of systems of exchange, ranging from gift giving among Northwest Coast Indians to foreign currency exchanges between financial institutions. Along with the classic work of Marx and Simmel on money and capital, we will also cover some of the anthropological work on gifts and exchange, such as that of Mauss, Levi-Strauss, and Bourdieu, as well as some of the contemporary debates initiated by Bataille and Derrida. Graduate/Undergraduate Equivalency: ANTH 371. Mutually Exclusive: Cannot register for ANTH 571 if student has credit for ANTH 371.

ANTH 572 - CULTURES OF CAPITALISM
Short Title: CULTURES OF CAPITALISM
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Most of us think of capitalism as primarily an economic phenomenon. Yet, it also has a profoundly cultural dimension. This class will examine how capitalism and related phenomena, such as commodification, markets and marketing, corporate finance and the calculation of risk, both affect and are affected by culture. We will consider the impact of capitalist markets on social relations and gender identities; on ideals of patriotism, responsibility and success; and on popular culture and leisure practices. We will also ask how people resist, appropriate and modify in culturally specific ways the logic and institutions of a global capitalist order. Graduate/Undergraduate Equivalency: ANTH 372. Mutually Exclusive: Cannot register for ANTH 572 if student has credit for ANTH 372.

ANTH 574 - ASIAN PREHISTORY
Short Title: ASIAN PREHISTORY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course covers select topics in the archaeology and paleoanthropology of Asia from the arrival of Homo erectus to the development of the earliest civilizations. Class discussions will focus on the history of exploration in Asia and the main debates that have shaped the study of prehistory in the largest continent on Earth. Graduate/Undergraduate Equivalency: ANTH 374. Mutually Exclusive: Cannot register for ANTH 574 if student has credit for ANTH 374.
ANTH 578 - PLACE AND MEMORY IN MIDDLE EASTERN AND EUROPEAN CINEMA
Short Title: MEMORY AND PLACE IN CINEMA
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Focuses on cinematic explorations of and preoccupations with the notion of place. Screenings include iconic and lesser-known films from Europe and the Middle East that offer diverse lenses and contexts (love, family, landscapes, borders, trauma, exile) through which we will examine questions of real and imagined place and the politics of memory. Cross-list: HART 691. Graduate/Undergraduate Equivalency: ANTH 378. Mutually Exclusive: Cannot register for ANTH 578 if student has credit for ANTH 378.

ANTH 580 - GLOBAL HEALTH JUSTICE: HEALTHCARE INEQUALITIES IN CONFLICTS
Short Title: GLOBAL HEALTH JUSTICE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will explore in-depth case studies of transnational health justice movement in order to address critical themes of health inequalities in the context of conflict. We will attend to topical themes including gender inequality, class struggle, healthcare systems and their variations, childhood and chronic illness, the intersection between environment and health, and the role of scientific knowledge in claims for health justice. Graduate/Undergraduate Equivalency: ANTH 380. Mutually Exclusive: Cannot register for ANTH 580 if student has credit for ANTH 380.

ANTH 581 - MEDICAL ANTHROPOLOGY
Short Title: MEDICAL ANTHROPOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Cultural, ecological, and biological perspectives on human health and disease throughout the world. Graduate/Undergraduate Equivalency: ANTH 381. Mutually Exclusive: Cannot register for ANTH 581 if student has credit for ANTH 381.

ANTH 582 - BODY, TECHNOLOGY, ENHANCEMENT
Short Title: BODY, TECHNOLOGY, ENHANCEMENT
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar on the body and the various technologies that are used to optimize it. Includes topics such as cosmetic surgery, diet supplementation, pharmaceutical enhancement and body art. Graduate/Undergraduate Equivalency: ANTH 382. Mutually Exclusive: Cannot register for ANTH 582 if student has credit for ANTH 382. Repeatable for Credit.

ANTH 584 - PALEO-TECHNOLOGY
Short Title: PALEO-TECHNOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This Stone Age semester will immerse students in hunter-gatherer lifeways and the innovations that allowed our ancestors to survive. Student 'bands' will complete cooperative learning tasks to ensure group survival (assessment). Most class meetings will be held in outdoor space on campus. Graduate/Undergraduate Equivalency: ANTH 384. Mutually Exclusive: Cannot register for ANTH 584 if student has credit for ANTH 384.

ANTH 585 - MEDIA, CULTURE, AND SOCIETY
Short Title: MEDIA, CULTURE, AND SOCIETY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course offers a theoretical and ethnographic overview of past, current, and future anthropological research on media. Topics rotate but can include: cultural conservation among indigenous peoples, spectacle and sexuality, nationalism, advertising, journalism, and news-making, political communication and activism, technology and social change. Graduate/Undergraduate Equivalency: ANTH 385. Mutually Exclusive: Cannot register for ANTH 585 if student has credit for ANTH 385.

ANTH 586 - MEDICAL ANTHROPOLOGY OF FOOD AND HEALTH
Short Title: MEDICINE, FOOD, AND HEALTH
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course explores the fluid intersection of biomedicine and nutrition as changes in agriculture, food safety, and research into the physiological and genetic effects of food alter how Western cultures eat. Graduate/Undergraduate Equivalency: ANTH 386. Mutually Exclusive: Cannot register for ANTH 586 if student has credit for ANTH 386.
ANTH 589 - THE ARCHAEOLOGY OF FOOD
Short Title: ARCHAEOLOGY OF FOOD
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course offers a broad anthropological perspective on food and culture, as well as the way that archaeologists attempt to reconstruct the subsistence technologies and diets of ancient peoples. Topics include forager and agricultural subsistence technologies, the origins of food production, feasting, food and identity, and gender and food. Graduate/Undergraduate Equivalency: ANTH 389. Mutually Exclusive: Cannot register for ANTH 589 if student has credit for ANTH 389.

ANTH 590 - CULTURE, NARRATION, AND SUBJECTIVITY
Short Title: CULTURE,NARRATION,SUBJECTIVITY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines how linguistic and narrative structures interact to produce specific cultures of interpretation. The focus will be on linguistic and literary representations of subjectivity. This course will use novels by Western authors, such as Virginia Woolf and Dostoevsky, and some Chinese materials as comparison. Graduate/Undergraduate Equivalency: ANTH 390. Mutually Exclusive: Cannot register for ANTH 590 if student has credit for ANTH 390.

ANTH 591 - SPECULATIVE FUTURES
Short Title: SPECULATIVE FUTURES
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Drawing from “CliFi,” “Speculative Fiction,” and global anthropological case studies, this course analyzes a series of potential futures as earthly conditions continue to be altered by human activity. Students will develop speculative future models through assessing climate conditions, population displacement, ethics, ecological transformations and human practices and values. Graduate/Undergraduate Equivalency: ANTH 391. Mutually Exclusive: Cannot register for ANTH 591 if student has credit for ANTH 391.

ANTH 593 - THE ANTHROPOLOGY OF TOXICITY: RETHINKING HEALTH AND SOVEREIGNTY
Short Title: ANTHROPOLOGY OF TOXICITY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Through ethnographic, scientific, and personal accounts of toxicity in a range of sites—from warzones to office buildings—this course explores toxicity as an analytic that helps us think critically about health and sovereignty. We explore the way that colonial geographies imprint geographies of toxicity and the ways that capitalism and consumption produce and distribute toxicity. In relation to health, we explore the ways that the materiality and biology of toxic exposure are embodied in specific ways that undermine singular or universalizable concepts and measures of human and environmental health and require us to think about the health in relation to the specificities of race, class, gender, disability, and intimacy in particular places and times. In relation to sovereignty, we explore the ways that the promiscuous movement of toxicants provokes but also eludes regulations that hew to the ridged boundaries of law and territory and raise new questions of accountability and evidence. Graduate/Undergraduate Equivalency: ANTH 393. Mutually Exclusive: Cannot register for ANTH 593 if student has credit for ANTH 393.

ANTH 595 - CULTURES AND COMMUNICATION
Short Title: CULTURES AND COMMUNICATION
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Investigates the relations between different forms of communication - speech, print, film, and cultural constructions such as audiences, publics, and communities. Graduate/Undergraduate Equivalency: ANTH 395. Mutually Exclusive: Cannot register for ANTH 595 if student has credit for ANTH 395.

ANTH 596 - LAW AND RESISTANCE IN THE EVERYDAY
Short Title: LAW AND RESISTANCE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will explore how people interact with the law in their everyday lives — in the U.S. and elsewhere. Examples will include how individuals experience and respond to policing, examining the effects of immigration and border security policies, and tracing how people and groups mobilize to challenges laws perceived as unjust. Graduate/Undergraduate Equivalency: ANTH 396. Mutually Exclusive: Cannot register for ANTH 596 if student has credit for ANTH 396.
ANTH 597 - ANTHROPOLOGY JOURNAL CLUB
Short Title: ANTHROPOLOGY JOURNAL CLUB
Department: Anthropology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Independent Study
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students select, read, and discuss current articles from leading journals in sociocultural anthropology and related fields. Department Permission Required. Graduate/Undergraduate Equivalency: ANTH 397. Mutually Exclusive: Cannot register for ANTH 597 if student has credit for ANTH 397. Repeatable for Credit.

ANTH 598 - ETHNOGRAPHIC RESEARCH METHODS
Short Title: ETHNOGRAPHIC RESEARCH
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Course considers the practice of ethnographic research (design, data collection and analysis). Topics include the contentious canonization of fieldwork & the ethnographic method, ethics & human subjects, rethinking the field & collaboration. Projects include participant observation, field notes, interviewing, and analysis of archival, ephemeral & audio/visual materials. Graduate/Undergraduate Equivalency: ANTH 398. Mutually Exclusive: Cannot register for ANTH 598 if student has credit for ANTH 398.

ANTH 602 - ANTHROPOLOGY PROPOSAL WRITING SEMINAR
Short Title: PROPOSAL WRITING SEMINAR
Department: Anthropology
Grade Mode: Standard Writing
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar prepares anthropology graduate students to write a successful grant proposal. Basic elements of proposal writing, including problem conceptualization, literature reviews, and methods will be covered.

ANTH 606 - COGNITIVE STUDIES
Short Title: COGNITIVE STUDIES
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Relations between thought, language, and culture. Special emphasis given to natural systems of classification and the logical principles underlying them. Mutually Exclusive: Cannot register for ANTH 606 if student has credit for ANTH 406. Repeatable for Credit.

ANTH 610 - THE ETHNOGRAPHY OF DEVELOPMENT
Short Title: THE ETHNOGRAPHY OF DEVELOPMENT
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course suggests the necessity of a solid ethnographic grounding for both practical development work and for further intellectual growth of the discipline. Graduate/Undergraduate Equivalency: ANTH 410. Mutually Exclusive: Cannot register for ANTH 610 if student has credit for ANTH 410.
ANTH 612 - RHETORIC
Short Title: RHETORIC
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Overview of classical theories. Intensive discussion of contemporary theories and applications in a wide variety of disciplines. Graduate/Undergraduate Equivalency: ANTH 412. Mutually Exclusive: Cannot register for ANTH 612 if student has credit for ANTH 412. Repeatable for Credit.

ANTH 613 - CULTURE AFTER COMMUNISM
Short Title: CULTURE AFTER COMMUNISM
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Examines cultural transformations in the late- and post-socialist societies of East-Central Europe, the former Soviet Union, and Asia. Explores everyday discourses and practices through which new forms of property, selfhood, nationalism, and the state are emerging, and the legacy of cold war politics for ethnographic representation of these societies. Graduate/Undergraduate Equivalency: ANTH 413. Mutually Exclusive: Cannot register for ANTH 613 if student has credit for ANTH 413.

ANTH 614 - HERMENEUTICS AND LINGUISTIC ANTHROPOLOGY
Short Title: HERMENEUTICS &LINGUISTIC ANTH
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Application of linguistic theory and method in the analysis of cultural materials. Includes discourse analysis and the structure and interpretation of texts and conversation. Graduate/Undergraduate Equivalency: ANTH 414. Mutually Exclusive: Cannot register for ANTH 614 if student has credit for ANTH 414. Repeatable for Credit.

ANTH 615 - THEORIES OF MODERNITY/POSTMODERNITY
Short Title: THEORIES OF MODERNITY/POSTMOD
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An advanced course for graduate students and undergraduate majors with interests in the interdisciplinary field of cultural studies. Readings in the work of Marx, Weber, Durkheim, Saussure, Gadamer, Derrida, Bakhtin, Foucault, and others. Mutually Exclusive: Cannot register for ANTH 615 if student has credit for ANTH 415.

ANTH 616 - CLASSICAL SOCIAL THEORY
Short Title: CLASSICAL SOCIAL THEORY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar explores the foundations of social and cultural analysis. It will address precursors, but will focus primarily on works that introduced and developed the concepts and epistemic apparatuses that inaugurated such disciplines as sociology, anthropology, religious studies, and political theory as we know them today.

ANTH 617 - ONTOLOGIES, VITALITIES, THINGS
Short Title: ONTOLOGIES, VITALITIES, THINGS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Course focuses on emerging and established thematics in cultural anthropology that have been drawn from philosophical (and other) interventions concerning being, matter, vibrancy, vitality and objects and considers how these conceptual domains can be productively engaged in the empirical work of anthropology. Graduate/Undergraduate Equivalency: ANTH 417. Mutually Exclusive: Cannot register for ANTH 617 if student has credit for ANTH 417.

ANTH 620 - ETHNOGRAPHY STUDIO
Short Title: ETHNOGRAPHY STUDIO
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students will read a selection of contemporary ethnographies deemed 'exemplary' by diverse audiences paired with theoretical works that the authors claim in their arguments. The course will focus on how ethnographies are structured, the central issues they investigate, and how they go about doing this. The central task of the class is to analyze, critically but also productively, what rigor and creativity mean in the ethnographic investigation of contemporary and recurring questions and problems, relations between questions, theory and ethnography will also be explored through students’ own ethnographic writing. Graduate/Undergraduate Equivalency: ANTH 420. Mutually Exclusive: Cannot register for ANTH 620 if student has credit for ANTH 420.
ANTH 622 - INFRASTRUCTURES AND POWER  
Short Title: INFRASTRUCTURES AND POWER  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This seminar course asks why “infrastructure” – that which enables other things to happen – has recently become such an important concept in the human sciences. After reviewing recent and classic theoretical approaches we explore recent anthropological studies of infrastructures-in-action ranging from information and media infrastructures to environmental and biotic infrastructures to infrastructures of governance and power. Graduate/Undergraduate Equivalency: ANTH 422. Mutually Exclusive: Cannot register for ANTH 622 if student has credit for ANTH 422.

ANTH 623 - VALUES AND VALUABLES  
Short Title: VALUES AND VALUABLES  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Conceptually and ethnographically explores different value regimes and the objects and subjects that help define them. Reviews theories of value and explores the creative configurations that people around the world make of them. Some of the topics include: capitalism and financial capitalism, the materialization of value, affective attachments to valuables, and the social life of valuables.

ANTH 624 - MAJOR FIGURES IN CULTURAL AND SOCIAL THOUGHT  
Short Title: CULTURAL AND SOCIAL THOUGHT  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: The course comprises an in–depth examination of the career and major works of a scholar of significant influence within and beyond anthropology. In Fall 2018, the course will focus on anthropologist Mary Douglas. Graduate/Undergraduate Equivalency: ANTH 424. Mutually Exclusive: Cannot register for ANTH 624 if student has credit for ANTH 424. Repeatable for Credit.

ANTH 625 - ADVANCED TOPICS IN ARCHAEOLOGY  
Short Title: ADVANCED TOPICS IN ARCHAEOLOGY  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Seminar on selected topics in archaeological analysis and theory. The course will variously focus on ceramic analysis and classification, archaeological sampling in regional survey and excavation, and statistical approaches to data analysis and presentation. Please consult with the department for additional information. Graduate/Undergraduate Equivalency: ANTH 425. Mutually Exclusive: Cannot register for ANTH 625 if student has credit for ANTH 425. Repeatable for Credit.

ANTH 626 - UNDERGROUND SPATIALITIES STUDIO  
Short Title: UNDERGROUND SPATIALITIES  
Department: Anthropology  
Grade Mode: Studio  
Course Type: Studio  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This class introduces students to thinking about space volumetrically and kinesthetically. It builds on scholarship that calls our attention to the geopolitics of volumetric space using underground water movement as a case study. It is a hands on studio that combines anthropology, arts, and architecture. Graduate/Undergraduate Equivalency: ANTH 426. Mutually Exclusive: Cannot register for ANTH 626 if student has credit for ANTH 426.

ANTH 628 - FEMINIST SCIENCE AND TECHNOLOGY STUDIES  
Short Title: FEMINIST STS  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course will survey the field of Social Studies of Science and Technology (STS) emphasizing the contributions made by feminist and queer scholarship. It will combine foundational theoretical works with contemporary ethnographies. Graduate/Undergraduate Equivalency: ANTH 428. Mutually Exclusive: Cannot register for ANTH 628 if student has credit for ANTH 428.
ANTH 629 - ACTIVISM AND SOCIAL MOVEMENTS  
**Short Title:** ACTIVISM AND SOCIAL MOVEMENTS  
**Department:** Anthropology  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Movements to alleviate inequalities constitute important cultural and political interventions globally. This course examines advocacy practices to create and sustain social movements and political struggles. Cases include grassroots advocacy, NGOs, transnational and technological activism; environmental justice; human rights; gender, ethnic and sexual rights; consumption and globalization; democratization and neoliberalism. Graduate/Undergraduate Equivalency: ANTH 429. Mutually Exclusive: Cannot register for ANTH 629 if student has credit for ANTH 429.

ANTH 644 - CULTURE, PSYCHIATRY, AND MENTAL ILLNESS  
**Short Title:** CULTURE AND MENTAL ILLNESS  
**Department:** Anthropology  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This seminar takes psychiatric practice as an object of anthropological investigation. It explores the ways in which emotional suffering and therapeutic systems are constituted within various social, cultural, and historical contexts. Topics include affect, anxiety, psychosis, and somatization in cross-cultural perspective; diagnostic standardization; the cultural history of psychiatry; institutionalization and deinstitutionalization; psychiatric professionalization; the globalization of Western psychiatric practice; and critical anti-psychiatry movements. Graduate/Undergraduate Equivalency: ANTH 444. Mutually Exclusive: Cannot register for ANTH 644 if student has credit for ANTH 444.

ANTH 642 - MUSEUMS: THEORY AND PRACTICE  
**Short Title:** MUSEUMS: THEORY & PRACTICE  
**Department:** Anthropology  
**Grade Mode:** Standard Letter  
**Course Type:** Internship/Practicum  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This course combines readings and lectures exploring the representation of anthropological and archaeological materials in museum exhibits with an internship at the Houston Museum of Natural Science. The Graduate-Level course will engage students at a more advanced theoretical level through additional reading assignments and an additional paper. Graduate/Undergraduate Equivalency: ANTH 442. Mutually Exclusive: Cannot register for ANTH 642 if student has credit for ANTH 442.

ANTH 645 - EXPERTS AND CULTURES OF EXPERTISE  
**Short Title:** EXPERTS/EXPERTISE  
**Department:** Anthropology  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Studies of experts and expert knowledge have recently become one of the most vibrant and promising areas of research in social-cultural anthropology today. This seminar reviews recent anthropological research on experts and their cultures of expertise and situates it in comparison to theoretical, sociological an historical engagements of expert cultures. Graduate/Undergraduate Equivalency: ANTH 445. Mutually Exclusive: Cannot register for ANTH 645 if student has credit for ANTH 445.

ANTH 643 - ANTHROPOLOGY OF RACE, ETHNICITY AND HEALTH  
**Short Title:** RACE ETHNICITY AND HEALTH  
**Department:** Anthropology  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This course explores how human bodies and biomedical ‘facts’ are culturally constructed with respect to race and ethnicity, and examines how these constructs variably impact experiences of health, well-being and illness. Instructor Permission Required. Graduate/Undergraduate Equivalency: ANTH 443. Mutually Exclusive: Cannot register for ANTH 643 if student has credit for ANTH 443.

ANTH 646 - ADVANCED TOPICS IN BIOMEDICAL ANTHROPOLOGY  
**Short Title:** ADV BIOMEDICAL ANTHROPOLOGY  
**Department:** Anthropology  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Seminar on contemporary research on the biomedical aspects of human health and disease. Includes topics from medical ecology and epidemiology. Cross-list: ENST 646. Graduate/Undergraduate Equivalency: ANTH 446. Recommended Prerequisite(s): ANTH 381 or ANTH 581. Mutually Exclusive: Cannot register for ANTH 646 if student has credit for ANTH 446.
ANTH 647 - MODERN ETHNOGRAPHY AND THE ETHNOGRAPHY OF MODERNITY
Short Title: MODERN ETHNOGRAPHY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

Description: The course explores the strategies of representation, methodologies, and the diagnostic categories to which anthropologists have resorted in coming to terms with such phenomena as rationalization, economic and informational globalization, and the commodification of culture. Graduate/Undergraduate Equivalency: ANTH 447. Mutually Exclusive: Cannot register for ANTH 647 if student has credit for ANTH 447.

ANTH 648 - PHENOMENOLOGICAL ANTHROPOLOGY
Short Title: PHENOMENOLOGICAL ANTHROPOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

Description: This advanced seminar explores phenomenological theory in the human sciences beginning with Hegel and Marx and examines its uptake in recent works of anthropological ethnography and theory. The course will focus especially upon questions of selfhood and alterity, affect and emotion, and the senses and knowledge. Graduate/Undergraduate Equivalency: ANTH 448. Mutually Exclusive: Cannot register for ANTH 648 if student has credit for ANTH 448.

ANTH 649 - CULTURES OF SEXUALITY
Short Title: CULTURES OF SEXUALITY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

Description: What is 'sexuality' across cultural milieux? This course analyzes understandings and practices of sexuality from a global, comparative perspective, including different social configurations of gender and intimacy, reproduction, sensuality and the erotic. Case studies explore the complex relationships between sexuality and gender, ethnicity, nationalism, globalization, commodification, politics, media, health and medicine. Graduate/Undergraduate Equivalency: ANTH 449. Mutually Exclusive: Cannot register for ANTH 649 if student has credit for ANTH 449.

ANTH 651 - THE ANTHROPOLOGY OF WATER
Short Title: THE ANTHROPOLOGY OF WATER
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

Description: This class will offer students concepts and methodological resources to conduct their own research projects on water related issues from an anthropological perspective. It will include reading materials and fieldwork according to each student's project specificities. Graduate/Undergraduate Equivalency: ANTH 451. Mutually Exclusive: Cannot register for ANTH 651 if student has credit for ANTH 451.

ANTH 652 - RESEARCH DESIGN
Short Title: RESEARCH DESIGN
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

Description: An exploration of the process of conceptualization and concrete design of dissertation-linked research. Recommended for third-or fourth-year graduate students.

ANTH 653 - COLLATERAL AFTERWORLDS
Short Title: COLLATERAL AFTERWORLDS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

Description: Drawing on ethnography and social theory, this course develops analytics attuned to the socialities, intimacies, temporalities, and forms of ethic that emerge in the precarious spaces of liberal and democratic violence and failure. In refugee camps or climate catastrophes, in a queer present or under enduring legacies, what happens if we think the social with hope and futurity in abeyance? Graduate/Undergraduate Equivalency: ANTH 453. Mutually Exclusive: Cannot register for ANTH 653 if student has credit for ANTH 453. Repeatable for Credit.

ANTH 655 - HERITAGE MANAGEMENT
Short Title: HERITAGE MANAGEMENT
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

Description: This course examines the policies and politics of heritage management from a global perspective. We examine how different nations define, protect, and manage heritage resources. Case studies will present debates over the meaning and interpretation of cultural heritage and illustrate connections between heritage and such issues as nationalism and identity. The graduate level course will engage students at a more advanced theoretical level through additional reading assignments and an additional paper. Graduate/Undergraduate Equivalency: ANTH 456. Mutually Exclusive: Cannot register for ANTH 656 if student has credit for ANTH 456.
ANTH 658 - HUMAN OSTEOLOGY
Short Title: HUMAN OSTEOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the analysis of human skeletal material from archaeological sites. Instructor Permission Required. Graduate/Undergraduate Equivalency: ANTH 458. Mutually Exclusive: Cannot register for ANTH 658 if student has credit for ANTH 458.

ANTH 660 - ADVANCED ARCHAEOLOGICAL THEORY
Short Title: ADVANCED ARCHAEOLOGICAL THEORY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ANTH 205
Description: History and analysis of the major currents of archaeological theory from the Encyclopaedist origins of positivism, through cultural evolutionism and historical particularism, to the New Archaeology and current trends. Graduate/Undergraduate Equivalency: ANTH 460. Mutually Exclusive: Cannot register for ANTH 660 if student has credit for ANTH 460. Repeatable for Credit.

ANTH 663 - WEST AFRICAN PREHISTORY
Short Title: WEST AFRICAN PREHISTORY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar providing in-depth consideration of the later prehistoric archaeology (late Stone Age and Iron Age) of the West African subcontinent. Graduate/Undergraduate Equivalency: ANTH 463. Mutually Exclusive: Cannot register for ANTH 663 if student has credit for ANTH 463.

ANTH 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Laboratory, Lecture, Lecture/Laboratory, Seminar, Independent Study
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

ANTH 683 - DOCUMENTARY AND ETHNOGRAPHIC FILM
Short Title: DOCUMENTARY AND ETHNOGRAPHIC FILM
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Overview of the history of documentary and ethnographic cinema from a worldwide perspective. Includes both canonical and alternative films and film movements, with emphasis on the shifting and overlapping boundaries of fiction and nonfiction genres. Graduate/Undergraduate Equivalency: ANTH 483. Mutually Exclusive: Cannot register for ANTH 683 if student has credit for ANTH 483.

ANTH 800 - RESEARCH AND THESIS
Short Title: RESEARCH AND THESIS
Department: Anthropology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 3-9
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

Applied Physics (APPL)

APPL 490 - RQI - REU SUMMER RESEARCH PROGRAM
Short Title: UNDERGRAD SUMMER RESEARCH-REU
Department: Applied Physics
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Research experience under supervision of graduate students and faculty. Summer semester only. Department Permission Required.

APPL 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Applied Physics
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

APPL 750 - INTERNATIONAL RESEARCH INTERNSHIP
Short Title: INTERNATIONAL RESEARCH INTERN
Department: Applied Physics
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Research internship in a foreign laboratory at institutes and universities in Mainz, Germany and Toulouse, France. Department Permission Required.
APPL 800 - RESEARCH AND THESIS
Short Title: RESEARCH AND THESIS
Department: Applied Physics
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Thesis research under the supervision of faculty. Repeatable for Credit.

Arabic (ARAB)

ARAB 141 - FIRST YEAR ARABIC I
Short Title: FIRST YEAR ARABIC I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Development of interactional competence in Arabic (sociolinguistic and sociocultural knowledge) to communicate and interact with speakers of Arabic. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. No prior knowledge of this language is necessary. Placement Test is required. Effective May 15, 2019, this course does not carry D1 credit. Mutually Exclusive: Cannot register for ARAB 141 if student has credit for ARAB 161.

ARAB 142 - FIRST YEAR ARABIC II
Short Title: FIRST YEAR ARABIC II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ARAB 141
Description: Continuation of ARAB 141. Development of interactional competence in Arabic (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Arabic. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Effective May 15, 2019, this course does not carry D1 credit. Mutually Exclusive: Cannot register for ARAB 142 if student has credit for ARAB 262.

ARAB 222 - AP CREDIT IN ARABIC LANGUAGE
Short Title: AP/OTH CREDIT ARABIC LANGUAGE
Department: Cntr Lang & Intercultural Comm
Grade Mode: Transfer Courses
Course Type: Transfer
Credit Hours: 4
Course Level: Undergraduate Lower-Level
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement and International Baccalaureate exams. This credit counts toward the total credit hours required for graduation. Credit may not be received for both ARAB 222 and ARAB 101. Does not receive distribution credit.

ARAB 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Laboratory, Seminar
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

ARAB 263 - SECOND YEAR ARABIC I
Short Title: SECOND YEAR ARABIC I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ARAB 142
Description: Continuation of ARAB 142. Development of interactional competence in Arabic (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Arabic. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Cannot register for ARAB 263 if student has credit for ARAB 201.

ARAB 264 - SECOND YEAR ARABIC II
Short Title: SECOND YEAR ARABIC II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ARAB 263
Description: Continuation of ARAB 263. Development of interactional competence in Arabic (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Arabic. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Cannot register for ARAB 264 if student has credit for ARAB 202.

ARAB 301 - THIRD YEAR ARABIC I
Short Title: THIRD YEAR ARABIC I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARAB 264
Description: Continuation of ARAB 264. Emphasis on developing reading and writing ability as more authentic materials and socio-cultural topics are introduced.
ARCH 101 - PRINCIPLES OF ARCHITECTURE I - ORDER
Short Title: PRINCIPLES OF ARCHITECTURE I
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 6
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This introductory studio frames architecture as a discipline through a set of short problems that examine the relationship between formal and spatial ordering, technical and material concepts, and issues of use and program, culminating in a small synthetic project. Permission Required by Director of Undergraduate Studies, Rice School of Architecture. Department Permission Required.

ARCH 102 - PRINCIPLES OF ARCHITECTURE II - REPRESENTATION
Short Title: PRINCIPLES OF ARCHITECTURE II
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 6
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ARCH 101
Description: What is the role of information and representation within the design process? This studio introduces and explores the tools and concepts of notation and representation in architecture and how they serve as instruments of inquiry in a design processes. The use of precedents is a focus early in the semester, in which students analyze a project and its formal concepts that inform the design of a small architectural project in the second part of the course.

ARCH 105 - ENVIRONMENT, CULTURE AND SOCIETY
Short Title: ENVIRONMENT, CULTURE & SOCIETY
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Continuation of ARCH 101. Emphasis on developing reading and writing ability as more authentic materials and socio-cultural topics are introduced.

ARCH 201 - PRINCIPLES OF ARCHITECTURE III - ORGANIZATION
Short Title: PRINCIPLES OF ARCHITECTURE III
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 6
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ARCH 102
Description: What is the relationship between diagrammatic organization systems and the tectonic systems of construction? What is the relationship between the internal organization of a building’s program and its immediate external context? The potentials of different structural systems in relationship to programmatic diagrams are foregrounded to develop an architectural proposal for a public program of medium size.

ARCH 202 - PRINCIPLES OF ARCHITECTURE IV - EFFECTS
Short Title: PRINCIPLES OF ARCHITECTURE IV
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 6
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ARCH 201
Description: What is the relationship between material, technique and spatial or formal effects? This studio focuses on developing a student’s understanding and experimentation with material and tectonic systems, building envelopes, and issues of sustainability.
ARCH 207 - TECHNOLOGY I
Short Title: TECHNOLOGY I
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Description: The course will introduce students to historical and contemporary structures through multi-media presentations, computer-based visualizations, field trips, and hands-on experiments with materials of construction and physical models of structures. This course also addresses sustainability issues specific to structural systems such as embodied energy, life-cycle cost, and material recycling. This is the introductory course on the art and science of designing engineered structures and is the first of four required courses in the architectural technology sequence. It is intended for first or second year students interested in both civil engineering and architecture. Graduate/Undergraduate Equivalency: ARCH 507. Mutually Exclusive: Cannot register for ARCH 207 if student has credit for ARCH 507.

ARCH 225 - INTRODUCTION TO ARCHITECTURAL THINKING
Short Title: INTRO ARCHITECTURAL THINKING
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction to architectural thought. Lectures and discussions focusing on practice and ideas that have exercised a significant influence on the discourse and production of architecture and urbanism. Cross-list: HART 225. Graduate/Undergraduate Equivalency: ARCH 525. Mutually Exclusive: Cannot register for ARCH 225 if student has credit for ARCH 525.

ARCH 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Architecture
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

ARCH 301 - INTERMEDIATE PROBLEMS IN ARCHITECTURE I - SITUATION
Short Title: INTERMEDIATE PROBLEMS ARCH I
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 6
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARCH 202
Description: What is the relationship between the building and larger systems of the environment, constructed and natural, in which it sits and affects? This studio focuses on issues of architecture’s relationship to site and landscape environmental considerations and the relationship between systems and processes across the scales of architecture, urban and infrastructure.

ARCH 302 - INTERMEDIATE PROBLEMS IN ARCHITECTURE II - LEGIBILITY
Short Title: INTERMEDIATE PROBLEMS ARCH II
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 6
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARCH 301
Description: How do questions of legibility in architecture engage a global milieu? This typically travel focused studio develops a large and complex architectural project in an urban context, examining through design the relationship between a specific locale and culture on the one hand and on the other a global economy and discipline.

ARCH 305 - ARCHITECTURE FOR NON-ARCHITECTS
Short Title: ARCH FOR NON-ARCHITECTS
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course is designed to increase awareness and appreciation of broad range of architectural issues through lectures, comparative building studies, design exercises, readings, and discussion. Intended for non-majors in architecture, the course will provide students the opportunity to understand the architectural design process through hands-on experience. Enrollment limited to 15 and requires instructor permission. Instructor Permission Required.
ARCH 309 - TECHNOLOGY II
Short Title: TECHNOLOGY II
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course is the second part of the introduction to contemporary building structures. The topics covered are the design of concrete structures and design of specialized structures including tilt wall, long span, and high rise. Each structural type is explored in terms of overall performance, design of individual components, and the relation of structure to other building subsystems such as foundations, enclosure, and interiors. This course also addresses sustainability issues specific to structural systems and is the second of four required courses in the architectural technology sequence. Graduate/Undergraduate Equivalency: ARCH 509. Recommended Prerequisite(s): Prior completion of Technology I. Mutually Exclusive: Cannot register for ARCH 309 if student has credit for ARCH 509.

ARCH 310 - VIRTUAL RECONSTRUCTION OF HISTORICAL CITIES
Short Title: VIRTL RECONSTR HISTORCL CITIES
Department: Architecture
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course, part of the HRC's Digital Humanities Initiative, is devoted to the virtual reconstruction of ancient urban landscapes with focus on individual buildings in their urban settings. All course activities will be based around interdisciplinary student teams who will work together through the semesters to complete a virtual reconstruction project. Instructor Permission Required. Cross-list: ANTH 346, COMP 316, HART 316.

ARCH 311 - HOUSTON ARCHITECTURE
Short Title: HOUSTON ARCHITECTURE
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Description: This course consists of a series of illustrated lectures and walking tours that describe and analyze the architecture of Houston from the city's founding in 1836 to the present. Characteristic building types and exceptional works of architecture are identified; tours stimulate an awareness of the historical dimension of urban sites. Mutually Exclusive: Cannot register for ARCH 311 if student has credit for ARCH 611.

ARCH 313 - CASE STUDIES IN SUSTAINABLE DESIGN
Short Title: CASE STUDIES IN SUSTAIN DESIGN
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will explore sustainable design from initial sustainable facility concepts and team organizations, to enlisting community support and process assessment. The course will develop into details about sustainable design, lessons learned, processes and outcomes. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day class by the individual instructor. Cross-list: ENST 313. Graduate/Undergraduate Equivalency: ARCH 613. Mutually Exclusive: Cannot register for ARCH 313 if student has credit for ARCH 613.

ARCH 314 - TECHNOLOGY III
Short Title: TECHNOLOGY III
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course is the second part of the introduction to contemporary building structures. The topics covered are the design of concrete structures and design of specialized structures including tilt wall, long span, and high rise. Each structural type is explored in terms of overall performance, design of individual components, and the relation of structure to other building subsystems such as foundations, enclosure, and interiors. This course also addresses sustainability issues specific to structural systems and is the second of four required courses in the architectural technology sequence. Graduate/Undergraduate Equivalency: ARCH 509. Recommended Prerequisite(s): Prior completion of Technology I. Mutually Exclusive: Cannot register for ARCH 309 if student has credit for ARCH 509.

Short Title: BRAZIL BUILT
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: From Brazil Builds, MOMA's 1943 celebrated exhibition to Brasilia, the supermodern capital created ex-nihilo in the middle of nowhere, to today's worldwide attention on Brail, this seminar examines the built environment - natural and architectural - as the main transmitter of modernism in Brazil. This is a seminar on Brazilian modernism and its discontents. Cross-list: HART 310. Graduate/Undergraduate Equivalency: ARCH 514. Mutually Exclusive: Cannot register for ARCH 315 if student has credit for ARCH 514.

ARCH 316 - HOUSTON ARCHITECTURE
Short Title: HOUSTON ARCHITECTURE
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course consists of a series of illustrated lectures and walking tours that describe and analyze the architecture of Houston from the city's founding in 1836 to the present. Characteristic building types and exceptional works of architecture are identified; tours stimulate an awareness of the historical dimension of urban sites. Mutually Exclusive: Cannot register for ARCH 311 if student has credit for ARCH 611.

ARCH 316 - TECHNOLOGY IV
Short Title: TECHNOLOGY IV
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course addresses building environmental systems including power, water, and wastewater with an emphasis on air conditioning systems. Through multimedia presentations and fieldtrips, students are taught to analyze the thermal environment in a variety of building types and select equipment to meet these needs. Sustainability issues related to environmental systems such as energy conservation and life cycle costs are also addressed. This is the fourth required course in the architectural technology sequence. Graduate/Undergraduate Equivalency: ARCH 516. Mutually Exclusive: Cannot register for ARCH 316 if student has credit for ARCH 516.

ARCH 318 - LIVING IN THE CITY IN THE OTTOMAN EMPIRE
Short Title: LIVING IN THE CITY
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Seminar combines primary and secondary sources to explore the urban experiences of Ottoman men and women in the 18th and early 19th centuries. Looking at several cities including Istanbul, Izmir, Salonika, Damascus, Aleppo and Alexandria, we will discuss such issues as neighborhood and community life, public spaces and recreational culture perceptions of space, urban institutions, Muslim and non-Muslim relations, migration and marginality, violence and death. Reading knowledge of French and/or Turkish helpful but not necessary. Cross-list: HART 308. Graduate/Undergraduate Equivalency: ARCH 518. Mutually Exclusive: Cannot register for ARCH 318 if student has credit for ARCH 518.

ARCH 321 - CASE STUDIES IN SUSTAINABILITY: THE HIGH PERFORMANCE BUILDING
Short Title: SUSTAINABILITY CASE STUDIES
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The project-based seminar will provide a means by which all those with an interest in the building science entailed in the design of commercial, institutional, and residential structures can investigate common issues, obtain information, discuss local strategies, and otherwise address subjects relating to building or campus performance over its lifecycle. To develop an approach of taking an existing Rice University building an optimizing its use via ‘repositioning’ or redesign the class will create an interdisciplinary forum where students of architecture, engineering (structural, mechanical, etc.), and human sciences will potentially collaborate with professional building consultants, materials manufactures, contractors, developers, owners, and Rice campus facility managers Cross-list: ENST 321. Graduate/Undergraduate Equivalency: ARCH 621. Mutually Exclusive: Cannot register for ARCH 321 if student has credit for ARCH 621.

ARCH 322 - CASE STUDIES IN SUSTAINABILITY: THE REGENERATIVE REPOSITIONING OF NEW OR EXISTING RICE CAMPUS BLDGS
Short Title: CASE STUDIES IN SUSTAINABILITY
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Description: This course will explore application of high performance, sustainable design to specific Rice University campus and facility targets. In partnership with Rice University leadership, the team effort will develop 'regenerative redesign' approaches based on investigation of other campuses' case study. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day of class by the individual instructor. Cross-list: ENST 322. Graduate/Undergraduate Equivalency: ARCH 622. Mutually Exclusive: Cannot register for ARCH 322 if student has credit for ARCH 622.

ARCH 323 - SEMINAR IN ARCHITECTURE
Short Title: SEMINAR IN ARCHITECTURE
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Seminar combines primary and secondary sources to explore the urban experiences of Ottoman men and women in the 18th and early 19th centuries. Looking at several cities including Istanbul, Izmir, Salonika, Damascus, Aleppo and Alexandria, we will discuss such issues as neighborhood and community life, public spaces and recreational culture perceptions of space, urban institutions, Muslim and non-Muslim relations, migration and marginality, violence and death. Reading knowledge of French and/or Turkish helpful but not necessary. Cross-list: HART 308. Graduate/Undergraduate Equivalency: ARCH 518. Mutually Exclusive: Cannot register for ARCH 318 if student has credit for ARCH 518.

ARCH 325 - MATERIAL, FORM, SPACE, TIME: CONCRETE AND THE REVOLUTION OF SPACE IN ANCIENT ROME
Short Title: MATERIAL, FORM, SPACE, TIME
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: ‘Architectural Revolution’ has been tied to Le Corbusier, the Eiffel Tower, the Louvre, Brunelleschi and to towering Gothic cathedrals. At the foundation of all these endeavors is the Concrete Revolution in Roman Architecture. In this course we’ll look at the four essential elements of this revolution from the fourth century BCE to the fifth century CE, and we’ll investigate how shifts in application and experience created a background that informs design to this day. Cross-list: CLAS 326, HART 326. Graduate/Undergraduate Equivalency: ARCH 626. Mutually Exclusive: Cannot register for ARCH 325 if student has credit for ARCH 626.
ARCH 327 - CONSTRUCT
Short Title: CONSTRUCT
Department: Architecture
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Description: The Rice Building Workshop involves graduate and undergraduate students in the design and construction of real projects at various scales. Elective courses and course sequences will be formatted to address the specific requirements of each project as required. Please consult postings for further information. Space is limited, and registration does not guarantee a space in this course. The final course roster is formulated on the first day of class by the individual instructor. Mutually Exclusive: Cannot register for ARCH 327 if student has credit for ARCH 627. Repeatable for Credit.

ARCH 329 - STREETS AND URBAN LIFE: PARIS TO ISTANBUL
Short Title: STREETS AND URBAN LIFE
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Exploration of the street as a focus of urban life in 18th and 19th century. We will look at ways streets functioned as spaces of livelihood, sociability, and transgression in cities such as London, Paris, Istanbul, Amsterdam & Cairo. Cross-list: HART 329, HIST 329. Graduate/Undergraduate Equivalency: ARCH 529. Mutually Exclusive: Cannot register for ARCH 329 if student has credit for ARCH 529.

ARCH 330 - CONSTRUCT II
Short Title: CONSTRUCT II
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Description: The Rice Building Workshop involves graduate and undergraduate students in the design and construction of real projects at various scales. Elective courses and course sequences will be formatted to address the specific requirements of each project as required. Please consult postings for further information. Space is limited, and registration does not guarantee a space in this course. The final roster is formulated on the first day of class by the individual instructor. Mutually Exclusive: Cannot register for ARCH 330 if student has credit for ARCH 630. Repeatable for Credit.

ARCH 331 - IMPERIAL CITY: ISTANBUL 1453-1922
Short Title: IMPERIAL CITY
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This thematic seminar examines significant historical moments in the architectural and urban cultural of the Ottoman imperial capital from the moment it was conquered until the demise of the Ottoman empire. Weekly readings and discussions will cover a range of topics including building patronage, architectural decorum, the Byzantine legacy, artistic relations with Persia, India and Europe, cultural pluralism, neighborhood and public life, law and urban order, modernity and modernization. Cross-list: HART 321. Graduate/Undergraduate Equivalency: ARCH 521. Mutually Exclusive: Cannot register for ARCH 331 if student has credit for ARCH 521.

ARCH 332 - JERUSALEM TO ISFAHAN
Short Title: JERUSALEM TO ISFAHAN
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A seminar on key topics of the study of visual cultures in the medieval and early modern Muslim world focused on specific works of art. Politics of architectural patronage, dissemination of visual languages, calligraphy, ‘ornament’ and figural representation in Islam, cross-cultural exchanges and trans-religious iconographies are among the topics discussed. Cross-list: HART 322. Graduate/Undergraduate Equivalency: ARCH 522. Mutually Exclusive: Cannot register for ARCH 332 if student has credit for ARCH 522.

ARCH 340 - LECTURE IN ARCHITECTURE
Short Title: LECTURE IN ARCHITECTURE
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Description: Large, introductory-level course in lecture/discussion format on topics related to current research in architecture. Current offerings and enrollment eligibility are listed on the Rice Architecture website: www.arch.rice.edu. Repeatable for Credit.

ARCH 345 - FOUNDATIONS IN THE HISTORY AND THEORY OF ARCHITECTURE I (1450-1850)
Short Title: FOUNDATIONS IN ARCH I
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Lectures and discussions focusing on significant architectural and urban practices and ideas formulated before 1850. Cross-list: HART 345. Graduate/Undergraduate Equivalency: ARCH 645. Mutually Exclusive: Cannot register for ARCH 345 if student has credit for ARCH 235/ARCH 535.
ARCH 346 - FOUNDATIONS IN THE HISTORY AND THEORY OF
ARCHITECTURE II (1850-1950)
Short Title: FOUNDATIONS IN ARCH II
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARCH 345 or ARCH 645 or HART 345 or HART 645
Description: Lectures and discussions focusing on significant architectural and urban practices and ideas formulated be 1850 and 1950. Graduate/Undergraduate Equivalency: ARCH 646. Mutually Exclusive: Cannot register for ARCH 346 if student has credit for ARCH 336/ARCH 536.

ARCH 350 - INTRODUCTORY ARCHITECTURE SEMINAR
Short Title: INTRODUCTORY ARCHITECTURE SEM
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Description: Small, focused, introductory-level course in discussion, workshop and/or design-based format on topics related to current research in architecture. Current offerings and enrollment eligibility are listed on the Rice Architecture website: arch.rice.edu. Space is limited and registration does not guarantee a space in this course. Repeatable for Credit.

ARCH 352 - FOUNDATIONS IN THE HISTORY AND THEORY OF
ARCHITECTURE III (1950-2000)
Short Title: FOUNDATIONS IN ARCH III
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ARCH 225 or ARCH 525) and (ARCH 345 or ARCH 645) or (ARCH 346 or ARCH 646)
Description: Lectures and discussions focusing on significant architectural and urban practices between 1950 and 2000. Graduate/Undergraduate Equivalency: ARCH 652. Mutually Exclusive: Cannot register for ARCH 352 if student has credit for ARCH 337/ARCH 537.

ARCH 353 - PHOTOGRAPHY FOR ARCHITECTS
Short Title: PHOTO FOR ARCHITECTS
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Description: Exploration of a variety of photographic techniques for architectural research, design, and presentation. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day class by the individual instructor. Mutually Exclusive: Cannot register for ARCH 353 if student has credit for ARCH 653.

ARCH 359 - CINEMAS OF URBAN ALIENATION
Short Title: CINEMAS OF URBAN ALIENATION
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar examines cinematic engagements with urban spaces and experiences around the world spanning the last two centuries. Particular attention will be paid to issues of migration, marginality, colonialism, war and post-war, nostalgia and memory, race and gender. Cities of focus include Berlin, Istanbul, Moscow, Algiers, Beirut and Paris. Our weekly discussions of individual films will be grounded in critical writings of the cities' histories and theories of space and film. Cross-list: FILM 359, HART 359. Graduate/Undergraduate Equivalency: ARCH 654. Mutually Exclusive: Cannot register for ARCH 359 if student has credit for ARCH 654.

ARCH 363 - ARCHITECTURAL FREEHAND DRAWING WORKSHOP
Short Title: ARCH FREEHAND DRAWING WKSHOP
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Description: The object of this workshop is to explore, practice and develop a series of drawing methods and techniques in the context of the architectural design process. Emphasis will be on the development of free-hand drawing skills that will enhance the ability of the design in communicating conceptual ideas. The course will consist of a combination of lectures/demonstrations, in-class drawing exercises, and out-of-class assignments. Two sketch books (one at mid-term and one at the end of the semester) will also be required. Attendance is critical. Please come to the first class prepared to draw with pen and an 8 1/2 x 11 or 9 x 12 sketch pad. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day class by the individual instructor. Mutually Exclusive: Cannot register for ARCH 363 if student has credit for ARCH 663. Repeatable for Credit.

ARCH 366 - RIO DE JANEIRO: A SOCIAL AND ARCHITECTURAL HISTORY
Short Title: RIO DE JANEIRO
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The development of Rio de Janeiro from a colonial capital to an Olympic host with emphasis on the peoples of the city and evolution of the urban panorama. Cross-list: HIST 366. Mutually Exclusive: Cannot register for ARCH 366 if student has credit for ARCH 666.
ARCH 367 - SCULPTURE STUDIO
Short Title: SCULPTURE STUDIO
Department: Architecture
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARTS 165
Description: Study of advanced problems in various sculptural media. Limited enrollment. The roster is formulated on the first day of class by the instructor, who may allow additional registration for majors and under-classmen. It is necessary to attend the first class meeting to confirm your place on the class roster. Cross-list: ARTS 366.

ARCH 375 - LATIN-EUROPE/LATIN-AMERICA: THE AESTHETICS AND POLITICS OF MODERN CITIES
Short Title: LATIN-EUROPE/LATIN-AMERICA
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course challenges our pre-conceived maps of the world, highlighting Latin America's place within our understanding of modernity as a product of transnational interconnections. Transversing the Atlantic, this course traces the interactions of capitalism and culture, science and aesthetics, and the ideologies that informed and formed the urban fabric and spatial politics of important cities in the modern Latin world - Paris, Rio de Janeiro, Rome, Buenos Aires, Barcelona, Havana, and Brasilia. Cross-list: HART 375. Graduate/Undergraduate Equivalency: ARCH 675. Mutually Exclusive: Cannot register for ARCH 375 if student has credit for ARCH 675.

ARCH 376 - THE ARCHITECTURE OF BOOKS
Short Title: THE ARCHITECTURE OF BOOKS
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Over the past decades, the conception of books has become an integral part of any architectural practice. This seminar aims to introduce students to the book as a means to think about the production of space, and as a critical vessel to discuss and disseminate architectural ideas. In the first part of the seminar students will engage in an in-depth analysis of seminal architectural publications, considering their historical background, conceptual background and introducing such topics as typography and layout- and in-class discussions of relevant literature. The second part will be dedicated to the actual ‘building’ of a small architectural publication, which will reflect critical and editorial skills as well as the craft of bookmaking. Graduate/Undergraduate Equivalency: ARCH 676. Mutually Exclusive: Cannot register for ARCH 376 if student has credit for ARCH 676.

ARCH 401 - ADVANCED TOPICS IN ARCHITECTURE - THE METROPOLIS
Short Title: ADVANCED TOPICS ARCHITECTURE
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 6
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARCH 302
Description: What is the agency of the architect as a public figure and the contributions of architecture to the emerging and existing public realms? This studio focuses on a very large building program or urban scaled design, engaging the complexity of the communities and shared spaces of the emerging metropolis/megalopolis.

ARCH 402 - ADVANCED TOPICS IN ARCHITECTURE - WILLIAM WARD WATKIN
Short Title: ADVANCED TOPICS ARCHITECTURE
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 6
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARCH 401 and ARCH 403
Description: The final design studio of the four year BA in Architecture is conducted as design research studio in which students pursue a topic and develop a brief under a conceptual umbrella provided by the instructor. The studio is linked to the ARCH 403 design research seminar taken the semester prior to the studio.

ARCH 403 - DEGREE PROJECT SEMINAR
Short Title: DEGREE PROJECT SEMINAR
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A special-topics seminar establishing the intellectual/design foundation for the spring Watkin Studio (ARCH 402). Texts, case studies, and design methods will be used to investigate focused subjects of particular contemporary relevance as established by the instructor. Assignments can consist of written papers, analytical projects, elaborations of design techniques, and other forms of investigation. Students are approved for section and topic, taking their preference into account. Students enrolled in each section will continue to work with the same instructor in the spring studio. Instructor Permission Required.
ARCH 412 - ADVANCED SEMINAR IN ARCHITECTURE
Short Title: ADV SEMINAR IN ARCHITECTURE
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Description: Small, focused, advanced discussion, workshop and/or design based courses on topics of recent research in architecture, delivered by RSA full time or visiting faculty. This seminar is open to RSA undergraduate students junior-level and above, and RSA graduate students. Students from other departments may enroll in the course with instructor permission. See the RSA website for more information: arch.rice.edu/courses. Cross-list: HART 412. Graduate/Undergraduate Equivalency: ARCH 612. Mutually Exclusive: Cannot register for ARCH 412 if student has credit for ARCH 612. Repeatable for Credit.

ARCH 423 - PROFESSIONALISM AND MANAGEMENT IN ARCHITECTURAL PRACTICE
Short Title: PROF&MGMT IN ARCH PRACTICE
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARCH 302
Description: This course is required for the completion of the Bachelor of Architecture professional degree; students may take the course in their fourth year of architectural study in the BA program or in their final year of study in the BArch program. Graduate/Undergraduate Equivalency: ARCH 623. Mutually Exclusive: Cannot register for ARCH 423 if student has credit for ARCH 623.

ARCH 431 - URBANISM: ARCHITECTURE AND THE CITY
Short Title: URBANISM: ARCH & THE CITY
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The intention of a course on urbanism is to view architecture in light of the city. An assembly of theoretical considerations serves to construct a perspective that allows us to critically assess modern urbanization. The goal is to help students form their own perspective on the practice of architecture and to broaden their understanding of the relentless urbanization that dominates the modern world. Students are expected to read extensively, to be prepared to discuss topics of urbanism in class, to form two-person teams to read selected texts to be presented in class and to shape a term project that may take the form of a final paper or a design proposal dealing with suburban issues. Grades are based on class participation, the reading project and the term project. Graduate/Undergraduate Equivalency: ARCH 631. Mutually Exclusive: Cannot register for ARCH 431 if student has credit for ARCH 631.

ARCH 433 - THE CULLINAN SEMINAR
Short Title: THE CULLINAN SEMINAR
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar for advanced undergraduate students and graduate students will focus on the writings and practice of the semester’s four RSA Cullinan visitors: art historian David Joselit (Yale), architect Michael Maltzan (L.A.), architect Alejandro Zaera-Polo (London), and art historian Neil Levine (Harvard). The seminar will be a platform for researching these four topics, including additional background references, other writings by these four figures as well as writings about them and their own work. Additionally, the seminar will feature one seminar session each with the four speakers. Graduate/Undergraduate Equivalency: ARCH 633. Mutually Exclusive: Cannot register for ARCH 433 if student has credit for ARCH 633. Repeatable for Credit.

ARCH 452 - PRACTICING UTOPIA: ARCHITECTURE, EUGENICS AND THE MODERN LATIN CITY
Short Title: PRACTICING UTOPIA
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar will explore the alliance between aesthetics, science, and ideology at the core of French and Latin American modernism. Focusing on early twentieth-century scientific and cultural dialogues between France and Latin America, this seminar will have as main territories of exploration: Paris, Rio de Janeiro, Buenos Aires, Havana, and Caracas. Cross-list: HART 463.

ARCH 455 - HOUSING AND URBAN PROGRAMS: ISSUES IN POLICY
Short Title: HOUSE&URBAN PROG:ISSUES POLICY
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Description: This course will explore current issues in the formulation and implementation of housing and urban development programs in the U.S. An oral presentation and written paper on a specific topic within a general policy area required.
ARCH 456 - FUTURES OF THE BOOK
Short Title: FUTURES OF THE BOOK
Department: Architecture
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: From an ongoing interest in the book as a physical object, to the exploration of its potentials expanding into a four-dimensional digital realm, to rapidly changing demands for the storage and retrieval of knowledge, this master class will provide a platform to engage experts from various disciplines in a debate on the shifting futures of the book. Instructor Permission Required. Cross-list: HURC 408. Graduate/Undergraduate Equivalency: ARCH 656. Mutually Exclusive: Cannot register for ARCH 456 if student has credit for ARCH 656.

ARCH 461 - SPECIAL PROJECTS
Short Title: SPECIAL PROJECTS
Department: Architecture
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-9
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Independent research or design arranged in consultation with a faculty member. Subject to approval of faculty advisor and director or undergraduate studies. Instructor Permission Required. Repeatable for Credit.

ARCH 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Internship/Practicum, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

ARCH 491 - REAL ESTATE LAB: DEVELOP, DESIGN AND CONSTRUCTION
Short Title: RE LAB: DEVELOP DESIGN CONSTR
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Description: Graduate/Undergraduate Equivalency: ARCH 691. Mutually Exclusive: Cannot register for ARCH 491 if student has credit for ARCH 691. Repeatable for Credit.

ARCH 500 - PRECEPTORSHIP PROGRAM
Short Title: PRECEPTORSHIP PROGRAM
Department: Architecture
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hours: 1-15
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: Full time internship for nine to twelve months under guidance of appointed preceptor. Required for all students enrolled in the Bachelor or Architecture degree program. Repeatable for Credit.
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<tr>
<th>Short Title: TECHNOLOGY I</th>
<th>Short Title: TECHNOLOGY IV</th>
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<td><strong>Description:</strong> The course will introduce students to historical and contemporary structures through multi-media presentations, computer-based visualizations, field trips, and hands-on experiments with materials of construction and physical models of structures. This course also addresses sustainability issues specific to structural systems such as embodied energy, life-cycle cost, and material recycling. This is the introductory course on the art and science of designing engineered structures and is the first of four required courses in the architectural technology sequence. It is intended for first year graduate students in architecture. Graduate/Undergraduate Equivalency: ARCH 207. Mutually Exclusive: Cannot register for ARCH 507 if student has credit for ARCH 207.</td>
<td><strong>Description:</strong> This course addresses building environmental systems including power, water, and wastewater with an emphasis on air condition systems. Through multimedia presentations and fieldtrips, students are taught to analyze the thermal environment in a variety of building types and select equipment to meet these needs. Sustainability issues related to environmental systems such as energy conservation and life cycle costs are also addressed. This is the fourth required course in the architectural technology sequence. Graduate/Undergraduate Equivalency: ARCH 316. Mutually Exclusive: Cannot register for ARCH 516 if student has credit for ARCH 316.</td>
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<td><strong>Course Level:</strong> Graduate</td>
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<th>Short Title: LIVING IN THE CITY IN THE OTTOMAN EMPIRE</th>
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<td><strong>Description:</strong> This seminar on Brazilian modernism and its influence, from Brazil Builds, MOMA's 1943 celebrated exhibition to Brasilia, the supermodern capital created ex-nihilo in the middle of nowhere, to today's worldwide attention on Brazil, this seminar examines the built environment - natural and architectural - as the main transmitter of modernist modernism in Brazil. This is a seminar on Brazilian modernism and its discontents. Cross-list: HART 526. Graduate/Undergraduate Equivalency: ARCH 315. Mutually Exclusive: Cannot register for ARCH 515 if student has credit for ARCH 315.</td>
<td><strong>Description:</strong> Seminar combines primary and secondary sources to explore the urban experiences of Ottoman men and women in the 18th and early 19th centuries. Looking at several cities including Istanbul, Izmir, Salonika, Damascus, Aleppo and Alexandria, we will discuss such issues as neighborhood and community life, public spaces and recreational culture perceptions of space, urban institutions, Muslim and non-Muslim relations, migration and marginality, violence and death. Reading knowledge of French and/or Turkish helpful but not necessary. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Cross-list: HART 508. Graduate/Undergraduate Equivalency: ARCH 318. Mutually Exclusive: Cannot register for ARCH 518 if student has credit for ARCH 318.</td>
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<td><strong>Course Level:</strong> Graduate</td>
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<td><strong>Restrictions:</strong> Undergraduate level students may not enroll.</td>
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<td><strong>Credit Hours:</strong> 3</td>
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ARCH 521 - IMPERIAL CITY: ISTANBUL 1453-1922
Short Title: ISTANBUL IMPERIAL CITY
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: This thematic seminar examines significant historical moments in the architectural and urban cultural of the Ottoman imperial capital from the moment it was conquered until the demise of the Ottoman Empire. Weekly readings and discussions will cover a range of topics including building patronage, architectural decorum, the Byzantine legacy, artistic relations with Persia, India and Europe, cultural pluralism, neighborhood and public life, law and urban order, modernity and modernization. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these reading to be turned in at the end of the semester. We will meet at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Cross-list: HART 521. Graduate/Undergraduate Equivalency: ARCH 331. Mutually Exclusive: Cannot register for ARCH 521 if student has credit for ARCH 331.

ARCH 522 - JERUSALEM TO ISFAHAN
Short Title: JERUSALEM TO ISFAHAN
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: A seminar on key topics of the study of visual cultures in the medieval and early modern Muslim world focused on specific works of art. Politics of architectural patronage, dissemination of visual languages, calligraphy, 'ornament' and figural representation in Islam, cross-cultural exchanges and trans-religious iconographies are among the topics discussed. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these reading to be turned in at the end of the semester. We will meet at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Cross-list: HART 522. Graduate/Undergraduate Equivalency: ARCH 332. Mutually Exclusive: Cannot register for ARCH 522 if student has credit for ARCH 332.

ARCH 523 - SEMINAR IN ARCHITECTURE
Short Title: SEMINAR IN ARCHITECTURE
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: Small, focused, discussion, workshop and/or design based courses on topics of recent research in architecture, delivered by RSA full time or visiting faculty. This seminar series is open to RSA undergraduate and graduate students. Students from other departments may enroll in the course with instructor permission. ‘See our website for more information: arch.rice.edu/courses’. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day class by the individual instructor. Graduate/Undergraduate Equivalency: ARCH 323. Repeatable for Credit.

ARCH 525 - INTRODUCTION TO ARCHITECTURAL THINKING
Short Title: INTRO ARCHITECTURAL THINKING
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: Introduction to architectural thought. Lectures and discussions focusing on practice and ideas that have exercised a significant influence on the discourse and production of architecture and urbanism. Cross-list: HART 545. Graduate/Undergraduate Equivalency: ARCH 225. Mutually Exclusive: Cannot register for ARCH 525 if student has credit for ARCH 225.

ARCH 529 - STREETS AND URBAN LIFE: PARIS TO ISTANBUL
Short Title: STREETS AND URBAN LIFE
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Cross-list: HART 529. Graduate/Undergraduate Equivalency: ARCH 329. Mutually Exclusive: Cannot register for ARCH 529 if student has credit for ARCH 329.
| Course Code | Title                                                                 | Department   | Grade Mode                  | Course Type                        | Credit Hours | Restrictions                                      | Course Level | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------|----------------------------------------------------------------------|--------------|-----------------------------|------------------------------------|--------------|-------------------------------------------------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
| ARCH 550    | INTERMEDIATE/ADVANCED ARCHITECTUER SEMINAR                           | Architecture | Standard Letter             | Seminar                            | 3            | Undergraduate level students may not enroll.  | Graduate     | Small, focused, intermediate/advanced-level course in discussion, workshop and/or design-based format on topics related to current research in architecture. Current offerings and enrollment eligibility are listed on the Rice Architecture website: arch.rice.edu. Space is limited and registration does not guarantee a space in this course. Repeatable for Credit.                                                                                     |
| ARCH 600    | M. ARCH. I INTERNSHIP                                               | Architecture | Satisfactory/Unsatisfactory  | Internship/Practicum               | 1-15         | Undergraduate level students may not enroll.  | Graduate     | Practical work experience for students who have completed at least four semesters in the Option I Program prior to their entrance into the regular Master of Architecture studio sequence. Instructor Permission Required. Repeatable for Credit.                                                                                                         |
| ARCH 601    | ARCHITECTURAL PROBLEMS: STUDIO                                       | Architecture | Standard Letter             | Lecture/Laboratory                 | 10           | Undergraduate level students may not enroll. | Graduate     | Emphasis on abstract thought and design capabilities relevant to systematic processes of designing specific buildings and facilities. Note: there are three separate sections for this course. The course is coordinated by RSA faculty Troy Schaum and Will Cannady. Repeatable for Credit.                                                                                                     |
| ARCH 602    | ARCHITECTURAL PROBLEMS                                              | Architecture | Standard Letter             | Lecture/Laboratory                 | 10,12        | Undergraduate level students may not enroll.  | Graduate     | Emphasis on abstract thought and design capabilities relevant to systematic processes of designing specific buildings and facilities. Repeatable for Credit.                                                                                                                                        |
| ARCH 605    | ARCHITECTURE FOR NON-ARCHITECTS INSTRUCTION                         | Architecture | Standard Letter             | Lecture/Laboratory                 | 3            | Undergraduate level students may not enroll.  | Graduate     | For selected graduate students only, this course will provide the opportunity for hands-on teaching experience by involvement in syllabus design and preparation of lectures, discussions, design exercises and other teaching methods, under the supervision of the course instructors. Enrollment limited to 6 and by permission only. Instructor Permission Required. Repeatable for Credit.                                                                                           |
| ARCH 610    | HISTORY, THEORY AND STRUCTURE/ PARIS PROGRAM (RSAP)                 | Architecture | Standard Letter             | Seminar                            | 6            | Undergraduate level students may not enroll.  | Graduate     | Seminar, comprised of separate modules, each addressing different issues of urban theory, historical evolution and structure of greater Paris, through lectures, discussions, research and site visits.                                                                                                               |
| ARCH 612    | ADVANCED SEMINAR IN ARCHITECTURE                                    | Architecture | Standard Letter             | Seminar                            | 3            | Undergraduate level students may not enroll.  | Graduate     | Small, focused, advanced discussion, workshop and/or design based courses on topics of recent research in architecture, delivered by RSA full time or visiting faculty. This seminar is open to RSA undergraduate students junior-level and above, and RSA graduate students. Students from other departments may enroll in the course with instructor permission. See the RSA website for more information: arch.rice.edu/courses. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day class by the individual instructor. Cross-list: HART 612. Graduate/Undergraduate Equivalency: ARCH 412. Mutually Exclusive: Cannot register for ARCH 612 if student has credit for ARCH 412. Repeatable for Credit. |
| ARCH 613    | CASE STUDIES IN SUSTAINABLE DESIGN                                  | Architecture | Standard Letter             | Seminar                            | 3            | Undergraduate level students may not enroll.  | Graduate     | Cross-list: ENST 613. Graduate/Undergraduate Equivalency: ARCH 313. Mutually Exclusive: Cannot register for ARCH 613 if student has credit for ARCH 313.                                                                                                                                                                                                                          |
ARCH 615 - WOODSHOP SAFETY
Short Title: WOODSHOP SAFETY
Department: Architecture
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Laboratory
Credit Hour: 1
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: This course will cover all safety concerns in the model shop. Students will learn the proper set up and maintenance of the stationary tools as well as how to do basic fabrication. Students will learn basic material layout and produce objects using the tools as we cover them. Repeatable for Credit.

ARCH 620 - ARCHITECTURAL PROBLEMS: STUDIO/PARIS PROGRAM (RSAP)
Short Title: ARCHITECTURAL PROBLEMS
Department: Architecture
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 10
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: Advanced issues in building design and urban infrastructure using greater Paris as context. Emphasis on abstract thought and design capabilities relevant to systematic processes of designing specific architectural interventions in the urban context.

ARCH 621 - CASE STUDIES IN SUSTAINABILITY: THE HIGH PERFORMANCE BUILDING
Short Title: SUSTAINABILITY CASE STUDIES
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: The project-based seminar will provide a means by which all those with an interest in the building science entailed in the design of commercial, institutional, and residential structures can investigate common issues, obtain information, discuss local strategies, and otherwise address subjects relating to building or campus performance over its lifecycle. To develop an approach of taking an existing Rice University building an optimizing its use via 'repositioning' or redesign the class will create an interdisciplinary forum where students of architecture, engineering (structural, mechanical, etc.), and human sciences will potentially collaborate with professional building consultants, materials manufactures, contractors, developers, owners, and Rice campus facility managers Cross-list: ENST 621. Graduate/Undergraduate Equivalency: ARCH 321. Mutually Exclusive: Cannot register for ARCH 621 if student has credit for ARCH 321.

ARCH 622 - CASE STUDIES IN SUSTAINABILITY: THE REGENERATIVE REPOSITIONING OF NEW OR EXISTING RICE CAMPUS BLDGS
Short Title: CASE STUDIES IN SUSTAINABILITY
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: This course will explore application of high performance, sustainable design to specific Rice University campus and facility targets. In partnership with Rice University leadership, the team effort will develop 'regenerative redesign' approaches based on investigation of other campuses' case study. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day of class by the individual instructor. Cross-list: ENST 622. Graduate/Undergraduate Equivalency: ARCH 322. Mutually Exclusive: Cannot register for ARCH 622 if student has credit for ARCH 322.

ARCH 623 - PROFESSIONALISM AND MANAGEMENT IN ARCHITECTURAL PRACTICE
Short Title: PROF&MGMT IN ARCH PRACTICE
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: . Graduate/Undergraduate Equivalency: ARCH 423. Mutually Exclusive: Cannot register for ARCH 623 if student has credit for ARCH 423.

ARCH 626 - MATERIAL, FORM, SPACE, TIME: CONCRETE AND THE REVOLUTION OF SPACE IN ANCIENT ROME
Short Title: MATERIAL, FORM, SPACE, TIME
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: 'Architectural Revolution' has been tied to Le Corbusier, the Eiffel Tower, the Louvre, Brunelleschi and to towering Gothic cathedrals. At the foundation of all these endeavors is the Concrete Revolution in Roman Architecture. In this course we'll look at the four essential elements of this revolution from the fourth century BCE to the fifth century CE, and we'll investigate how shifts in application and experience created a background that informs design to this day. Cross-list: HART 626. Graduate/Undergraduate Equivalency: ARCH 326. Mutually Exclusive: Cannot register for ARCH 626 if student has credit for ARCH 326.
ARCH 631 - URBANISM I: THE CITY THEORETICALLY CONSIDERED
Short Title: URBANISM I
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: The intention of a course on urbanism is to view architecture in light of the city. An assembly of theoretical considerations serves to construct a perspective that allows us to critically assess modern urbanization. The goal is to help students form their own perspective on the practice of architecture and to broaden their understanding of the relentless urbanization that dominates the modern world. Students are expected to read extensively, to be prepared to discuss topics of urbanism in class, to form two-person teams to read selected texts to be presented in class and to shape a term project that may take the form of a final paper or a design proposal dealing with suburban issues. Grades are based on class participation, the reading project and the term project. Graduate/Undergraduate Equivalency: ARCH 431. Mutually Exclusive: Cannot register for ARCH 631 if student has credit for ARCH 431.

ARCH 633 - THE CULLINAN SEMINAR
Short Title: THE CULLINAN SEMINAR
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: This seminar for advanced undergraduate students and graduate students will focus on the writings and practice of the semester's four RSA Cullinan visitors: art historian David Joselit (Yale), architect Michael Maltzan (L.A.), architect Alejandro Zaera-Polo (London), and art historian Neil Levine (Harvard). The seminar will be a platform for researching these four topics, including additional background references, other writings by these four figures as well as writings about them and their own work. Additionally, the seminar will feature one seminar session each with the four speakers. Graduate/Undergraduate Equivalency: ARCH 433. Mutually Exclusive: Cannot register for ARCH 633 if student has credit for ARCH 433. Repeatable for Credit.

ARCH 645 - FOUNDATIONS AND THE HISTORY AND THEORY OF ARCHITECTURE I (1450-1850)
Short Title: FOUNDATIONS IN ARCH I
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: Lectures and discussions focusing on significant architectural and urban practices and ideas formulated before 1850. Cross-list: HART 645. Graduate/Undergraduate Equivalency: ARCH 345. Mutually Exclusive: Cannot register for ARCH 645 if student has credit for ARCH 235/ARCH 535.
Short Title: FOUNDATIONS IN ARCH III
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Prerequisite(s): (ARCH 225 or ARCH 525) and (ARCH 345 or ARCH 645) and (ARCH 346 or ARCH 646)
Description: Lectures and discussions focusing on significant architectural and urban practices between 1950 and 2000. Graduate/Undergraduate Equivalency: ARCH 352. Mutually Exclusive: Cannot register for ARCH 652 if student has credit for ARCH 537.

ARCH 654 - CINEMAS OF URBAN ALIENATION
Short Title: CINEMAS OF URBAN ALIENATION
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: This seminar examines cinematic engagements with urban spaces and experiences around the world spanning the last two centuries. Particular attention will be paid to issues of migration, marginality, colonialism, war and post-war, nostalgia and memory, race and gender. Cities of focus include Berlin, Istanbul, Moscow, Algiers, Beirut and Paris. Our weekly discussions of individual films will be grounded in critical writings of the cities’ histories and theories of space and film. Cross-list: HART 659. Graduate/Undergraduate Equivalency: ARCH 359. Mutually Exclusive: Cannot register for ARCH 654 if student has credit for ARCH 359.

ARCH 655 - CONTEMPORARY PRACTICES IN ARCHITECTURE
Short Title: CONTEMPORARY PRACTICES
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Lectures and discussions focusing on issues and approaches central to current architectural discourse and practice. M.Archs take this course in their penultimate semester. Also open to undergraduates, seniors and above.

ARCH 656 - FUTURES OF THE BOOK
Short Title: FUTURES OF THE BOOK
Department: Architecture
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: From an ongoing interest in the book as a physical object, to the exploration of its potentials expanding into a four-dimensional digital realm, to rapidly changing demands for the storage and retrieval of knowledge, this master class will provide a platform to engage experts from various disciplines in a debate on the shifting futures of the book. Instructor Permission Required. Cross-list: HURC 608. Graduate/Undergraduate Equivalency: ARCH 456. Mutually Exclusive: Cannot register for ARCH 656 if student has credit for ARCH 456.

ARCH 675 - LATIN-EUROPE/LATIN-AMERICA: THE AESTHETICS AND POLITICS OF MODERN CITIES
Short Title: LATIN-EUROPE/LATIN-AMERICA
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: This course challenges our pre-conceived maps of the world, highlighting Latin America’s place within our understanding of modernity as a product of transnational interconnections. Transversing the Atlantic, this course traces the interactions of capitalism and culture, science and aesthetics, and the ideologies that informed and formed the urban fabric and spatial politics of important cities in the modern Latin world - Paris, Rio de Janeiro, Rome, Buenos Aires, Barcelona, Havana, and Brasilia. Cross-list: HART 675. Graduate/Undergraduate Equivalency: ARCH 375. Mutually Exclusive: Cannot register for ARCH 675 if student has credit for ARCH 375.

ARCH 676 - THE ARCHITECTURE OF BOOKS
Short Title: THE ARCHITECTURE OF BOOKS
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: Over the past decades, the conception of books has become an integral part of any architectural practice. This seminar aims to introduce students to the book as a means to think about the production of space, and as a critical vessel to discuss and disseminate architectural ideas. In the first part of the seminar students will engage in an in-depth analysis of seminal architectural publications, considering their historical background, conceptual background and introducing such topics as typography and layout- and in-class discussions of relevant literature. The second part will be dedicated to the actual ‘building’ of a small architectural publication, which will reflect critical and editorial skills as well as the craft of bookmaking. Graduate/Undergraduate Equivalency: ARCH 376. Mutually Exclusive: Cannot register for ARCH 676 if student has credit for ARCH 376.
ARCH 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Graduate
Description: Topics and credit hours may vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

ARCH 690 - PEDAGOGY PRACTICUM
Short Title: PEDAGOGY PRACTICUM
Department: Architecture
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: This course addresses the development of skills for the teaching of History & Technology core courses. Weekly meetings will be held and supervised by faculty in the teaching of whose courses practicum students are involved. Department Permission Required. Repeatable for Credit.

ARCH 691 - REAL ESTATE LAB: DEVELOP, DESIGN AND CONSTRUCTION
Short Title: RE LAB:DEVELOP DESIGN CONSTR
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: Cross-list: MGMT 757. Graduate/Undergraduate Equivalency. ARCH 491. Mutually Exclusive: Cannot register for ARCH 691 if student has credit for ARCH 491. Repeatable for Credit.

ARCH 700 - PRACTICUM
Short Title: PRACTICUM
Department: Architecture
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: Full-time internship service in approved local offices under interdisciplinary supervision. Emphasis on real world design, planning, or research experiences. Special tuition. May be taken in any semester or in summer. Instructor Permission Required. Repeatable for Credit.

ARCH 701 - THESIS PROPOSAL
Short Title: THESIS PROPOSAL
Department: Architecture
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Independent Study
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course provides a structure in which the independent conceptual formulation, articulation, and critical evaluation of thesis proposals can take place. By the end of the semester, each student is expected to clearly outline a thesis focus, its architectural implications, contemporary relevance, and projected material results.

ARCH 702 - PRE-THESIS PREPARATION
Short Title: PRE-THESIS PREPARATION
Department: Architecture
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: The aim of this course is to locate potential thesis topics and hone those topics by situating them within a lineage of architectural and urban paradigms. The aim is also to develop and rehearse a focused argument for your particular approach to the topic. The thesis design project tests this approach in a project, the underpinnings of which seek a synthesis of intellectual and design objectives. Thesis concludes with a public final review, where the project is evaluated both on its own terms and within the broader field of contemporary architectural discourse. Mutually Exclusive: Cannot register for ARCH 702 if student has credit for ARCH 638.

ARCH 703 - DESIGN THESIS STUDIO
Short Title: DESIGN THESIS STUDIO
Department: Architecture
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 10
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: Independent research or design arranged in consultation with a faculty member subject to approval of the student’s faculty advisor and director. Repeatable for Credit.

ARCH 711 - SPECIAL PROJECTS
Short Title: SPECIAL PROJECTS
Department: Architecture
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-9
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: Independent research or design arranged in consultation with a faculty member subject to approval of the student’s faculty advisor and director. Repeatable for Credit.

ARCH 729 - THESIS WRITTEN DOCUMENT (FALL)
Short Title: FALL WRITTEN THESIS
Department: Architecture
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Independent Study
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: All architecture thesis students are required to provide a written document to the university on completion of their thesis as a requirement for graduation. This document, prepared in consultation with the thesis director and the director of the thesis program, should include a written and graphic description of the project and conform to the university requirements for thesis documents.
ARCH 730 - THESIS WRITTEN DOCUMENT (SPRING)
Short Title: SPRING WRITTEN THESIS
Department: Architecture
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Independent Study
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Description: All architecture thesis students are required to provide a written document to the university on completion of their thesis as a requirement for graduation. This document, prepared in consultation with the thesis director and the director of the thesis program, should include a written and graphic description of the project and conform to the university requirements for thesis documents.

ARCH 751 - PRESENT FUTURE II
Short Title: PRESENT FUTURE II
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: ARCH 751 is the third core course of the Master of Arts degree program. It is the concluding semester of the three semester research project, the subject of which changes with each class. The purpose of the semester is to draw the conclusions of the project and produce and package the results. The formats vary with each project.

Art History (HART)

HART 100 - AP/OTH CREDIT IN ART HISTORY
Short Title: AP/OTH CREDIT IN ART HISTORY
Department: Art History
Grade Mode: Standard Letter
Course Type: Transfer
Credit Hours: 3
Course Level: Undergraduate Lower-Level
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement Exams. This credit counts toward the total credit hours required for graduation, but does not count toward total credit hours required for the Art History Major.

HART 101 - INTRODUCTION TO THE HISTORY OF WESTERN ART I: ANTIQUITY TO GOTHIC
Short Title: INTRO HIST OF WESTERN ART I
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A survey of painting, sculpture, and architecture from Antiquity through the 15th century. Students will also attend a one-hour weekly tutorial with a teaching assistant. Cross-list: CLAS 102, MDEM 111. Mutually Exclusive: Cannot register for HART 101 if student has credit for HART 220.

HART 102 - INTRODUCTION TO THE HISTORY OF WESTERN ART II: RENAISSANCE TO PRESENT
Short Title: INTRO HIST OF WESTERN ART II
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A survey of painting, sculpture, and architecture from the Renaissance through the 20th century.

HART 105 - KEY MONUMENTS AND ARTISTS OF WESTERN ART
Short Title: KEY MONUMENTS & ARTISTS
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An in-depth look at important moments in the history of European and American art, from the Renaissance to the 20th century. Rather than being a comprehensive survey, the course will focus on a limited number of works by leading artists in the fields of painting, sculpture, and architecture.

HART 115 - MONUMENTS AND METHODS OF ART HISTORY
Short Title: MONUMENTS AND METHODS
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Focusing on a range of topics--from Greek temples to Chinese painting, Michelangelo to Andy Warhol--this class introduces students to a selection of primary monuments and figures from art history, as well as to some of the questions art historians have asked about them. Guest lecturers and visits to local museums are planned.

HART 125 - GREAT ARTISTS AND FILMS ABOUT THEM
Short Title: GREAT ARTISTS AND FILMS
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will introduce the works of fourteen great artists from the Renaissance to modern times. We will learn about the artists through readings, images shown in class, trips to Houston's museums, and by viewing feature-length films that dramatize the lives of the artists.
HART 180 - 14 FILMS YOU SHOULD SEE BEFORE YOU GRADUATE FROM RICE UNIVERSITY
Short Title: 14 FILMS BEFORE YOU GRADUATE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Featuring the important, but less familiar works of American and European directors from the 1930s - 1960s. This class represents an ideal mixture of modernist auteur cinema and shameless viewing pleasure. Cross-list: FILM 180.

HART 201 - ART OF ANCIENT ROME
Short Title: ART OF ANCIENT ROME
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: In this course, you'll learn about the history of Ancient Roman art, which spans a period of more than 1500 years and saw the conquest of Alexander the Great, Aristotelian philosophy, the birth of republican government and the religion of Christianity, and myriad humanistic revolutions that shaped the world.

HART 202 - AVANT-GARDE AND AFTER: MODERN ART IN EUROPE, 1900-1945
Short Title: MODERN ART IN EUROPE,1900-1945
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This class surveys European art from roughly 1900-1945, paying particular attention to the social contexts in which this work emerged and the interpretive strategies that have been used to understand it. Among the topics to be considered, are Cubism, Futurism, Constructivism, Dada, and Surrealism, as well as the reaction against these by emergent authoritarian regimes of the 1930s. Students cannot receive credit for HART 202 and HART 305. Mutually Exclusive: Cannot register for HART 202 if student has credit for HART 305.

HART 205 - ART SINCE 1945
Short Title: ART SINCE 1945
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course introduces the major developments, figures, and works of late modernism beginning with the shift, during the 1940s, from Paris to New York as the cultural center of avant-garde. The class charts the rise of Abstract Expressionism in the 1940s and 50s and follows its divided legacies in the 1960s and 70s. We will examine the post-modern debates of the 1980s and the 90s and conclude with a look at trends in contemporary art.

HART 207 - FOURTEEN ARTWORKS AT THE MFAH
Short Title: FOURTEEN ARTWORKS AT THE MFAH
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is designed to provide students with no previous background in art history with an introduction to the discipline through the ‘in situ’ study of 14 works from the permanent collection of The Museum of Fine Arts, Houston. Some of the topics to be addressed include British aristocratic portraiture, French Impressionist painting, the aesthetic dialogues of Matisse and Picasso, the abstracted sculptures of Brancusi and Calder, and the site-specific installation of Turrell’s light tunnel.

HART 209 - BEGINNING DIGITAL PHOTOGRAPHY
Short Title: BEGINNING DIGITAL PHOTOGRAPHY
Department: Art History
Grade Mode: Standard Letter
Course Type: Studio
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction to digital photography through exploration of light, camera, and computer. Assignments include looking, taking, discussing, adjusting, printing and writing about photographs. The class is a balance of visual awareness, technical skills and meaning in the context of photography’s continuing history. Cross-list: FOTO 210.
HART 216 - CITIES, SANCTUARIES, CIVILIZATIONS: INTRODUCTION TO GREEK ART AND ARCHAEOLOGY
Short Title: GREEK ART AND ARCHAEOLOGY
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An introduction to the art and archaeology of the ancient Greek world. Artistic media, such as sculpture and vase painting will be examined in a broad range of the material culture ancient Greeks created and used. Consideration of these materials within their cultural, social and religious contexts will be discussed. Cross-list: CLAS 218.

HART 220 - INTRODUCTION TO MEDIEVAL ART AND ARCHITECTURE OF WESTERN EUROPE
Short Title: INTRODUCTION TO MEDIEVAL ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will focus on art and architecture produced in Western Europe from the 4th to the 15th centuries. The broad survey of material will be covered chronologically and by geographic region. Mutually Exclusive: Cannot register for HART 220 if student has credit for CLAS 102/HART 101/MDEM 111.

HART 221 - INTRODUCTION TO ISLAMIC ART AND ARCHITECTURE
Short Title: INTRO TO ISLAMIC ART AND ARCH
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is an introduction to the monuments and masterpieces of Islamic art and architecture. Proceeding chronologically, we will examine building types such as mosques, tombs, and palaces, along with examples of pottery, calligraphy, and contemporary art. Special emphasis will be placed on the global context and cross-cultural dimensions of Islamic art. The course will have some meetings at the Museum of Fine Arts, Houston.

HART 225 - INTRODUCTION TO ARCHITECTURAL THINKING
Short Title: INTRO ARCHITECTURAL THINKING
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction to architectural thought. Lectures and discussions focusing on practice and ideas that have exercised a significant influence on the discourse and production of architecture and urbanism. Cross-list: ARCH 225. Graduate/Undergraduate Equivalency: HART 545. Mutually Exclusive: Cannot register for HART 225 if student has credit for HART 545.

HART 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Art History
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

HART 250 - CONTEMPORARY EUROPEAN CINEMA
Short Title: CONTEMPORARY EUROPEAN CINEMA
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This class examines trends in European cinema of the last fifteen years. Particular attention will be given to the issues of history, memory and national identity in Europe's shifting geopolitical climate, and to the formal and aesthetic concerns with which filmmakers responded to these shifts. The discussion will include films by Michael Haneke, Fatih Akin, Christian Mingiu and others. Cross-list: FILM 250.
HART 263 - EPISODES IN THE HISTORY OF PHOTOGRAPHY: FROM INVENTION TO THE PRESENT
Short Title: HISTORY OF PHOTOGRAPHY
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This class aims to examine the history of photography in the nineteenth century as it develops within a number of specific thematics, from medium's conception in the late eighteenth-century through to debates in the twentieth century about photography's relationship to artistic and social issues. Instructor Permission Required. Cross-list: FOTO 263. Mutually Exclusive: Cannot register for HART 263 if student has credit for HART 363.

HART 265 - A VISUAL CULTURE TRAVELOGUE: ART AND POLITICS IN MODERN LATIN AMERICA
Short Title: ART/ POLITICS MOD LATIN AMER
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Providing an alternative understanding of modernity and its artistic partner, modernism, this survey course traverses the political, social and cultural landscapes that informed and formed the art and architecture of Latin America, from the early twentieth century to the present. Graduate/Undergraduate Equivalency: HART 665. Mutually Exclusive: Cannot register for HART 265 if student has credit for HART 665.

HART 280 - HISTORY AND AESTHETICS OF FILM
Short Title: HISTORY & AESTHETICS OF FILM
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction to the art and aesthetics of film as an artifact produced within certain social contexts. Includes style, narration, mise-en-scene, editing, sound, and ideology in classical Hollywood cinema, as well as in independent, alternative, nonfiction, and Third World cinemas. Cross-list: ARTS 280, FILM 280.

HART 281 - THE BEGINNINGS OF CINEMA
Short Title: THE BEGINNINGS OF CINEMA
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This class studies the emergence of cinema in the context of cultural developments at the turn of the 20th century. Early films will be examined together with such contemporaneous issues as technologies of vision, modern mass culture, urban expansion and consumerism. Cross-list: FILM 281.

HART 283 - AUTEUR FILM: CASE STUDIES OF THREE AUTEURS
Short Title: AUTEUR FILM
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will explore the tradition of auteur filmmaking, with an emphasis on how this particular artistic mode situates itself within the evolving system of Hollywood institutional film. The auteur, in contrast to other filmmakers, exhibits unparalleled control over the production and post-production processes and is uniquely identifiable through the notable conventions of aesthetics, style, theme, content, atmosphere, etc. FILM 485/HART 481 (4 Credit Hours) will require completion of additional coursework for the additional credit than the FILM 285/HART 283 (3 Credit Hours). Credit may not be received for more than one of FILM 285 or FILM 485 or Hart 283 or HART 481. Cross-list: FILM 285. Equivalency: HART 481. Mutually Exclusive: Cannot register for HART 283 if student has credit for HART 481.

HART 284 - NONFICTION FILM
Short Title: NONFICTION FILM
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction to the history and aesthetics of nonfiction film as both a social artifact and as a work of art. Includes discussions of actualities, the city film, the social documentary, surrealist cinema, propaganda, ethnography, the essay film, and the contemporary nonfiction film from around the world. Cross-list: FILM 284.
HART 286 - CLASSICAL AND CONTEMPORARY FILM AND THEORY  
Short Title: CLASSICAL & CONTEMPORARY FILM  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: A course focusing on contexts such as movies and ads, familiar plots and conventions define their significance. Cross-list: ENGL 286.  
Course URL: www.english.rice.edu (http://www.english.rice.edu)  

HART 297 - SPECIAL TOPICS IN MUSEUM CURATORIAL STUDIES  
Short Title: SPECIAL TOPICS: MUSEUM STUDIES  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: Special Topics class taught by visiting Curators from the MFAH. FA 2016: Intro to Islamic Art at the MFAH: This course explores the dynamic, multifaceted character of Islamic art and architecture across the globe. Travel from Spain to India studying original art at the Museum of Fine Arts. Gain understanding of the historical, religious, social, craft, and visual contexts of the art. Graduate/Undergraduate Equivalency: HART 597. Mutually Exclusive: Cannot register for HART 297 if student has credit for HART 597.  

HART 299 - INDEPENDENT STUDY IN ART THEORY AND CRITICISM  
Short Title: INDEPENDENT STUDY  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Independent Study  
Credit Hours: 1-6  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: Independent study, reading, or special research in art history. Instructor Permission Required. Repeatable for Credit.  

HART 300 - MUSEUM INTERNSHIP I  
Short Title: MUSEUM INTERNSHIP I  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Internship/Practicum  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: The aim of this course is to provide select students a practicum in museum work accompanied by an introduction to a history of museums, including the varieties of museums, their role in society and significant issues in museums today. Instructor Permission Required.  

HART 301 - MUSEUM INTERNSHIP II  
Short Title: MUSEUM INTERNSHIP II  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Internship/Practicum  
Credit Hours: 1-6  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: The aim of this course is to provide select students a practicum in museum work accompanied by an introduction to a history of museums, including the varieties of museums, their role in society and significant issues in museums today. Instructor Permission Required.  

HART 302 - FROM THE SUBLIME TO THE SUSTAINABLE: ART, ARCHITECTURE AND NATURE  
Short Title: ART, ARCHITECTURE AND NATURE  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This seminar considers theories and narratives of nature in the crafting of modern and contemporary art and architecture in the Americas. Artists and architects will include Maria Fernanda Cardoso, Rogelio Salmona (Colombia); Ana Mendieta, Ricardo Porro (Cuba); Ana Maria Tavaraes, Lina Bo Bardi (Brazil); Mark Dion and Buckminster Fuller (USA). Graduate/Undergraduate Equivalency: HART 568. Mutually Exclusive: Cannot register for HART 302 if student has credit for HART 568.  

HART 303 - INDEPENDENT STUDY  
Short Title: INDEPENDENT STUDY  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Independent Study  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Independent Study in Art History. Instructor Permission Required.  

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HART 304 - A REVOLUTION FROM WITHIN: TRENDS IN CONTEMPORARY CUBAN CULTURE
Short Title: TRENDS IN CUBAN CULTURE
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This research seminar will explore contemporary trends in Cuban culture through literary texts, films, music and works of art. We will examine the ways in which politics and the practices of artistic representation intersect in post-revolutionary Cuba. A research trip to Cuba has been organized as part of this seminar. (The trip is optional. There is a course fee.) Course taught in Spanish. Instructor Permission Required. Cross-list: FILM 339, SPPO 375. Graduate/Undergraduate Equivalency: HART 565. Recommended Prerequisite(s): Third year Spanish Mutually Exclusive: Cannot register for HART 304 if student has credit for HART 565.

HART 307 - TECHNICAL ART HISTORY: STUDYING THE TECHNIQUES OF WESTERN PAINTING, 13TH-20TH CENTURIES
Short Title: TECHNICAL ART HISTORY
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Art historians, especially in the United States, tend to rely on photographs, but a study of the actual object is invaluable in studying works of art. This course aims to inform students about the technical study of art, which in the last fifty years has become a major field of research. Most classes will be held at the Museum of Fine Arts, Houston, or other Houston collections. Graduate/Undergraduate Equivalency: HART 549. Mutually Exclusive: Cannot register for HART 307 if student has credit for HART 549.

HART 308 - LIVING IN THE CITY IN THE OTTOMAN EMPIRE
Short Title: LIVING IN THE CITY
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Seminar combines primary and secondary sources to explore the urban experiences of Ottoman men and women in the 18th and early 19th centuries. Looking at several cities including Istanbul, Izmir, Salonika, Damascus, Aleppo and Alexandria, we will discuss such issues as neighborhood and community life, public spaces and recreational culture perceptions of space, urban institutions, Muslim and non-Muslim relations, migration and marginality, violence and death. Reading knowledge of French and/or Turkish helpful but not necessary. Cross-list: ARCH 318. Graduate/Undergraduate Equivalency: HART 508. Mutually Exclusive: Cannot register for HART 308 if student has credit for HART 508.

Short Title: THE DAWN OF ROME
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: In this course you will uncover the roots of the Eternal City, Rome. Through analysis of archaeological remains, art historical methodologies and theories of social space, intentionality, structuration and agency, you will question how and why Rome became a city and a culture the reshaped the world. The course will focus on the first 500 years of Roman art and society, ca. 800-300 BCE, looking closely at the kingship of Rome, the genesis of the Roman Republic, and the ability to understand a distant culture through artistic manufacture, materiality and philosophical shift. Cross-list: CLAS 309. Graduate/Undergraduate Equivalency: HART 509. Mutually Exclusive: Cannot register for HART 309 if student has credit for HART 509.

HART 310 - BRAZIL BUILT: THE CLINIC, THE TROPICAL, AND THE AESTHETIC
Short Title: BRAZIL BUILT
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: From Brazil Builds, MOMA’s 1943 celebrated exhibition to Brasilia, the supermodern capital created ex-nihilo in the middle of nowhere, to today’s worldwide attention on Brazil, this seminar examines the built environment - natural and architectural - as the main transmitter of modernism in Brazil. This is a seminar on Brazilian modernism and its discontents. Cross-list: ARCH 315. Graduate/Undergraduate Equivalency: HART 526. Mutually Exclusive: Cannot register for HART 310 if student has credit for HART 526.

HART 311 - ART AND ARCHAEOLOGY OF THE ANCIENT NEAR EAST
Short Title: ANCIENT NEAR EAST
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An in-depth examination of the art and archaeology of ancient Mesopotamia, Syria, Anatolia and Persia. Beginning in the Neolithic period, we will examine the development of Near Eastern art and architecture through the study of ancient sites and their associated material culture. Cross-list: ANTH 331. Graduate/Undergraduate Equivalency: HART 511. Mutually Exclusive: Cannot register for HART 311 if student has credit for HART 511.
HART 312 - ADVANCED STUDY IN MUSEUMS AND HERITAGE: ARTS OF ANCIENT MEDITERRANEAN AT THE MENIL COLLECTION
Short Title: ADV STUDY IN MUSEUMS/HERITAGE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course introduces students to advanced ethical, legal and practical issues facing museums as they acquire and maintain collections from areas prone to looting and destruction, especially the Ancient Mediterranean. We will examine the civic engagement and operation of the Menil Collection through close, on-site archival and object study. Cross-list: HURC 308. Graduate/Undergraduate Equivalency: HART 540. Mutually Exclusive: Cannot register for HART 312 if student has credit for HART 540.

HART 314 - POLITICS OF CULTURAL HERITAGE IN THE MODERN MIDDLE EAST, 1800 TO THE PRESENT
Short Title: POLITICS OF CULTURAL HERITAGE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar will examine the history of the concept of 'cultural heritage' in the modern Middle East. We will explore the emergence of concerns for archaeological sites and architectural monuments, and the ability of cultural heritage to shore up contested claims of identity, ideology, and political legitimacy.

HART 316 - VIRTUAL RECONSTRUCTION OF HISTORICAL CITIES
Short Title: VIRT RECONSTR HISTORCL CITIES
Department: Art History
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course, part of the HRC's Digital Humanities Initiative, is devoted to the virtual reconstruction of ancient urban landscapes with focus on individual buildings in their urban settings. All course activities will be based around interdisciplinary student teams who will work together through the semesters to complete a virtual reconstruction project. Instructor Permission Required. Cross-list: ANTH 346, ARCH 310, COMP 316.

HART 317 - MODERN ART AND MONSTROSITY
Short Title: MODERN ART AND MONSTROSITY
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Why is it that in the modern era, beginning around the middle of the eighteenth century, artists begin to see various forms of monstrosity in aesthetic terms, as something beautiful? What is it about the modern period that accounts for this shift in how monstrosity is represented and understood and how does it differ from earlier historical images of the monster. This class will examine the modernist fascination with monstrosity, asking not only why it became a topic of such particular and widespread interest to artists, writers, and filmmakers during this time, but also what it can tell us about modernist aesthetics more broadly. Examining a range of representations from the 18th century on, we will look at a variety of visual artists, filmmakers, and novelists who depict various forms of monsters, be they human (Jack the Ripper) or non-human (the Golem). From Mary Shelley’s Frankenstein and the myth of the vampire, to Picasso’s monstrous images of 1920s, to the distinctly modern phenomenon of serial killing, this course will chart the dark monstrous underside to modern art. Graduate/Undergraduate Equivalency: HART 517. Mutually Exclusive: Cannot register for HART 317 if student has credit for HART 517.

HART 318 - SPECIAL TOPICS IN ANCIENT ART
Short Title: ROME: THE ETERNAL CITY
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will introduce you to the major monuments of Rome, Pompeii, and Herculaneum. We will focus not only on the history and functions of these monuments in antiquity but also on how their meaning and representation has changed and evolved in the post-classical world. Instructor Permission Required. Cross-list: CLAS 321. Repeatable for Credit.

HART 321 - IMPERIAL CITY: ISTANBUL 1453-1922
Short Title: ISTANBUL IMPERIAL CITY
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This thematic seminar examines significant historical moments in the architectural and urban cultural of the Ottoman imperial capital from the moment it was conquered until the demise of the Ottoman empire. Weekly readings and discussions will cover a range of topics including building patronage, architectural decorum, the Byzantine legacy, artistic relations with Persia, India and Europe, cultural pluralism, neighborhood and public life, law and urban order, modernity and modernization. Cross-list: ARCH 331. Graduate/Undergraduate Equivalency: HART 521. Mutually Exclusive: Cannot register for HART 321 if student has credit for HART 521.

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HART 322 - JERUSALEM TO ISFAHAN
Short Title: JERUSALEM TO ISFAHAN
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A seminar on key topics of the study of visual cultures in the medieval and early modern Muslim world focused on specific works of art. Politics of architectural patronage, dissemination of visual languages, calligraphy, 'ornament' and figural representation in Islam, cross-cultural exchanges and trans-religious iconographies are among the topics discussed. Cross-list: ARCH 332. Graduate/Undergraduate Equivalency: HART 522. Mutually Exclusive: Cannot register for HART 322 if student has credit for HART 522.

HART 323 - BUDDHIST AND DAOIST VISUAL CULTURES IN TRADITIONAL CHINA
Short Title: BUDDHIST AND DAOIST ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar explores the visual materials and their context that shed light on pre-modern China's Buddhist, Daoist, funeral and other diverse religious and ritual practices. Topics of discussion include methodologies, Dunhuang Buddhist grottoes and "library caves", Daoist body and cosmos, images of heaven, hell and rebirth, art and ritual, multi-cultural aspects, patronage, tombs, printing, women, and so on. Through careful examinations of the proposed topics and assigned readings, students will develop analytical skills, critical thinking, and holistic views regarding the meaning, function, and style of the arts of diverse religious traditions, as well as people from different social and ethnic backgrounds who participated in the making, spreading, and use of religious visual culture in traditional China. Students should have some background in Chinese art, history, or religions. Cross-list: ASIA 323, MDEM 323. Graduate/Undergraduate Equivalency: HART 623. Recommended Prerequisite(s): HART372/ASIA372, ASIA211, HART371/ASIA371. Mutually Exclusive: Cannot register for HART 323 if student has credit for HART 623.

HART 324 - PERSIANATE ARTS OF THE BOOK
Short Title: PERSIANATE BOOK ARTS
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar explores figural painting and arts of the book in the Persianate cultural sphere, ca. 1300s-1800s. We will study concepts of the book in Islamic civilization, illustrated narratives of Persian literature, word/image relationships, albums, and single-page portraits. The class also examines artistic interactions with East Asia and Europe, and concludes with the advent of lithography in the nineteenth century. Some course meetings will take place at Houston-area museums. Graduate/Undergraduate Equivalency: HART 524. Mutually Exclusive: Cannot register for HART 324 if student has credit for HART 524.

HART 326 - MATERIAL, FORM, SPACE, TIME: CONCRETE AND THE REVOLUTION OF SPACE IN ANCIENT ROME
Short Title: MATERIAL, FORM, SPACE, TIME
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: "Architectural Revolution" has been tied to Le Corbusier, the Eiffel Tower, the Louvre, Brunelleschi and to towering Gothic cathedrals. At the foundation of all these endeavors is the Concrete Revolution in Roman Architecture. In this course we'll look at the four essential elements of this revolution from the fourth century BCE to the fifth century CE, and we'll investigate how shifts in application and experience created a background that informs design to this day. Cross-list: ARCH 326, CLAS 326. Graduate/Undergraduate Equivalency: HART 626. Mutually Exclusive: Cannot register for HART 326 if student has credit for HART 626.

HART 327 - THE GENESIS OF ROMAN ART
Short Title: THE GENESIS OF ROMAN ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores the roots of the art and architecture of ancient Rome (ca. 600-200 BCE). In it we will examine the earliest vestiges of sculpture, painting and architecture from the Archaic and Classical periods to the twisted forms of Hellenistic conquest. You will grapple with the questions of cultural agency, connoisseurship, cultural interaction, network and object theories and spatial imagination to question standard narratives that divide Rome in this time from neighboring Greek polities. Cross-list: CLAS 324. Graduate/Undergraduate Equivalency: HART 627. Mutually Exclusive: Cannot register for HART 327 if student has credit for HART 627.
HART 328 - EPHIPANIES: SEEING IN A NEW LIGHT AND RECOGNIZING THE RADIANCE

Short Title: EPHIPANIES
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Epiphanies are events or objects that can note a striking appearance or manifestation, just as an epiphanic experience contains a significant moment of revelation. This course examines expressions of epiphanies in modernist art, literature, film, sacred experience, and in the mundane details of life itself. Cross-list: RELI 375.

HART 329 - STREETS AND URBAN LIFE: PARIS TO ISTANBUL

Short Title: STREETS AND URBAN LIFE
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Exploration of the street as a focus of urban life in 18th and 19th century. We will look at ways streets functioned as spaces of livelihood, sociability, and transgression in cities such as London, Paris, Istanbul, Amsterdam and Cairo. Cross-list: ARCH 329, HIST 329. Graduate/Undergraduate Equivalency: HART 529. Mutually Exclusive: Cannot register for HART 329 if student has credit for HART 529.

HART 330 - EARLY MEDIEVAL ART

Short Title: EARLY MEDIEVAL ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Early Medieval Art from the 5th Century to the Romanesque period. This course begins with a study of the art and architecture of the Ostrogoths, Visigoths, Lombards, Celts, Anglo-Saxons, Franks, and Merovingians, and the transformation of the Roman World through new Germanic, Barbarian, and Christian forces. The second part of the course considers the cultural Renaissance of the Carolingian and Ottonian Periods under rulers such as Charlemagne and Otto III. The last third of the course focuses on themes of pilgrimage, relics, crusades and the emergence of new monumental tradition in art and architecture during the Romanesque Period. Cross-list: MDEM 330. Graduate/Undergraduate Equivalency: HART 530. Mutually Exclusive: Cannot register for HART 330 if student has credit for HART 530.

HART 331 - GOTHIC ART

Short Title: GOTHIC ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Examination of the full array of sacred art and architecture produced in the early and high gothic periods in northern Europe. Includes cathedral architecture, sculpture, stained glass, manuscripts, and metalwork studies in relationship to the expansion of royal and Episcopal power. Cross-list: MDEM 331. Graduate/Undergraduate Equivalency: HART 531. Mutually Exclusive: Cannot register for HART 331 if student has credit for HART 531.

HART 332 - ART OF THE COURTS

Short Title: ART OF THE COURTS
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Examination of art and architecture produced in the late gothic period within three distinct settings—the court, the city, and the church. Includes private, public, and religious life as expressed in the objects, architecture, and decoration of the castle and palace, the house, the city hall and hospital, and the chapel and parish church. Cross-list: MDEM 332. Graduate/Undergraduate Equivalency: HART 532. Mutually Exclusive: Cannot register for HART 332 if student has credit for HART 532.

HART 333 - LOOKING AT EUROPEAN PRINTS 1400-1700

Short Title: LOOKING AT PRINTS 1400-1700
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The class has several goals: to gain a thorough historical understanding of prints by major masters as Schongauer, Mantegna, Düer, and Rembrandt as well as more popular prints, explore key issues in the study of prints, such as how they revolutionized European culture, their patronage, markets, functions, and techniques; and to examine the prints first-hand. Graduate/Undergraduate Equivalency: HART 525. Mutually Exclusive: Cannot register for HART 333 if student has credit for HART 525.
HART 334 - PICASSO, POLLOCK, WARHOL
Short Title: PICASSO, POLLOCK, WARHOL
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar will look in detail at three of the twentieth century’s most important artists: Pablo Picasso, Jackson Pollock, and Andy Warhol. Our central focus in doing so will be painting, in particular, the means by which these three artists tested, expanded or even 'destroyed' the medium. What did it mean to make (or reject) painting in 1910, 1950, and 1965? Special attention will be paid to recent scholarly literature and close looking at works in local collections. Graduate/Undergraduate Equivalency: HART 546. Mutually Exclusive: Cannot register for HART 334 if student has credit for HART 546.

HART 336 - CINEMA AND THE CITY
Short Title: CINEMA AND THE CITY
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This class explores representations of the city in 20th and 21st century world cinema. Central concerns will include the city as cinematic protagonist, parallels between urban and cinematic space and the intertwined histories of both film and urban design over the last century. Cross-list: ASIA 355, FILM 336. Graduate/Undergraduate Equivalency: HART 536. Mutually Exclusive: Cannot register for HART 336 if student has credit for HART 536.

HART 338 - HART IN THE WORLD SPRING SEMINAR
Short Title: HART IN THE WORLD SEM
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate or Undergraduate Professional level students.
Course Level: Undergraduate Upper-Level
Description: This seminar serves as required preparation for the planned "HART in the World" research travel course (HART 397) offered in the immediately following summer session. Students will study a range of materials—including works of art, literature, films, and historical studies—related to the planned destination city. To be offered every other year. Graduating students are not eligible. More information available at: https://arthistory.rice.edu/opportunities/hart-world Instructor Permission Required. Graduate/Undergraduate Equivalency: HART 638. Mutually Exclusive: Cannot register for HART 338 if student has credit for HART 638. Repeatable for Credit.
Course URL: www.arthistory.rice.edu/opportunities/hart-world (http://www.arthistory.rice.edu/opportunities/hart-world/)

HART 339 - AMERICAN ART AND ARCHITECTURE I: 1620-1800
Short Title: AMERICAN ART: 1620-1800
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Painting, architecture, urban design, and the decorative arts in the colonies and early United States. Highlights will include design at Monticello and Mount Vernon; the portraiture of John Singleton Copley; Georgian and Federal-period architecture in Boston, New York, Williamsburg, and Philadelphia; and Spanish and Dutch colonial art and architecture. Graduate/Undergraduate Equivalency: HART 539. Mutually Exclusive: Cannot register for HART 339 if student has credit for HART 539.

HART 340 - NORTHERN RENAISSANCE ART
Short Title: NORTHERN RENAISSANCE ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of art in northern Europe from Jan van Eyck to Peter Bruegel. Cross-list: MDEM 340. Graduate/Undergraduate Equivalency: HART 553. Mutually Exclusive: Cannot register for HART 340 if student has credit for HART 553.

HART 341 - EARLY RENAISSANCE ART IN ITALY
Short Title: EARLY RENAISSANCE ART IN ITALY
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of Italian art and architecture from Giotto to Botticelli, with emphasis on painting and sculpture in the 15th century. Graduate/Undergraduate Equivalency: HART 541. Mutually Exclusive: Cannot register for HART 341 if student has credit for HART 541.
HART 342 - THE HIGH RENAISSANCE AND MANNERISM IN ITALY
Short Title: HIGH RENAISSN&MANNERISM ITALY
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of the High Renaissance, with emphasis on its leading masters (e.g., Leonardo, Raphael, Bramante, Michelangelo, and Titian). Includes a study of mannerism, the stylish art produced after the first quarter of the 16th century. Graduate/Undergraduate Equivalency: HART 542. Mutually Exclusive: Cannot register for HART 342 if student has credit for HART 542.

HART 343 - MASTERS OF THE BAROQUE ERA
Short Title: MASTERS OF THE BAROQUE ERA
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of the works of the greatest painters and sculptors in Europe during the Baroque period. Includes Rembrandt, Rubens, Caravaggio, Poussin, Claude, and Velazquez. Cross-list: MDEM 343. Graduate/Undergraduate Equivalency: HART 543. Mutually Exclusive: Cannot register for HART 343 if student has credit for HART 543.

HART 344 - CAPITALISM AND CULTURE
Short Title: CAPITALISM AND CULTURE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar will examine the way European culture, especially art, was shaped by the rise of the monetary economy and capitalism, beginning in the late Middle Ages and continuing into modern times. Graduate/Undergraduate Equivalency: HART 544. Mutually Exclusive: Cannot register for HART 344 if student has credit for HART 544.

HART 345 - FOUNDATIONS IN THE HISTORY AND THEORY OF ARCHITECTURE I (1450-1850)
Short Title: FOUNDATIONS IN ARCH I
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Lectures and discussions focusing on significant architectural and urban practices and ideas formulated before 1850. Cross-list: ARCH 345.

HART 346 - SEMINAR ON LOVE: MAKING LOVE IN MODERN ART AND THOUGHT
Short Title: MAKING LOVE IN MODERN ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar explores various conceptions of love from the classical era to our postmodern age. Ranging from eros to philia to agape, we will examine literary, philosophical, and artistic expressions of love in painting, cinema, literature, psychoanalysis, philosophy, religion, and culture. Cross-list: SWGS 346.

HART 347 - SEMINAR ON LOVE
Short Title: SEMINAR ON LOVE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar explores the themes of love, sex, and spirit from the classical era through the postmodern age. We will examine literary, philosophical, and artistic expressions in painting, sculpture, cinema, novels, poetry, psychoanalysis, religion, and culture. Cross-list: RELI 343.

HART 348 - A REVOLUTION FROM WITHIN: TRENDS IN CONTEMPORARY CUBAN CULTURE
Short Title: TRENDS IN CUBAN CULTURE
Department: Art History
Grade Mode: Standard Letter
Course Type: Research
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This research seminar will explore contemporary trends in Cuban culture through literary texts, films, music and works of art. We will examine the ways in which politics and the practices of artistic representation intersect in post-revolutionary Cuba. A research trip to Cuba has been organized as part of this seminar. This course is taught in Spanish. Graduate students will be required to complete all the requirements for the course in addition to writing a substantial research paper at the end of the semester. This is the credit for the actual trip to Cuba. Graduate/Undergraduate Equivalency: HART 548. Mutually Exclusive: Cannot register for HART 348 if student has credit for HART 548.
HART 349 - TRENDS IN CONTEMPORARY ART
Short Title: TRENDS IN CONTEMPORARY ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar will map the terrain of contemporary art as it has developed in the wake of political and theoretical engagements of the 1990’s. For many critics, Contemporary Art practice has given way to the worst aspects of spectacular culture losing sight of the political, theoretical, and artistic rigor that characterized the historical and neo-avant-garde. Graduate/Undergraduate Equivalency: HART 570. Mutually Exclusive: Cannot register for HART 349 if student has credit for HART 570.

HART 351 - ART, REVOLUTION, WAR: MODERN ART IN VIOLENT TIMES
Short Title: ART, REVOLUTION, WAR
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar examines the ambition (or lack thereof) of modern art to play an active role during periods of violent conflict. From the French Revolution to the recent disastrous American engagements in the Middle East wars to the never-ending war on terror, artists have produced images that attempt to actively engage in these conflicts. This class will examine the relative successes and failures of art during times of violent revolution and war within the modern era. Graduate/Undergraduate Equivalency: HART 651. Mutually Exclusive: Cannot register for HART 351 if student has credit for HART 651.

HART 353 - ART AND EMOTION
Short Title: ART AND EMOTION
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar will examine the role played by emotion in our response to works of art. What is the relationship of emotion to the specific formal properties of a given work of art, such as color, texture, shape, line quality, sound, and so on? What role does our cognitive faculties play in determining our emotional response to art? Are there political stakes to emotional affect? These and other questions will be examined. Graduate/Undergraduate Equivalency: HART 653. Mutually Exclusive: Cannot register for HART 353 if student has credit for HART 653.

HART 354 - AGE OF ROMANTICISM IN EUROPE
Short Title: AGE OF ROMANTICISM IN EUROPE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will consider the emergence and flourishing of Romanticism in the visual arts in Europe. We will consider artists from France, Germany and Britain, including Eugene Delacroix, J.M.W. Turner, John Constable and Caspar David Friedrich. We will combine study of paintings with readings of contemporaneous philosophers and writers, including Hegel and Byron. Graduate/Undergraduate Equivalency: HART 554. Mutually Exclusive: Cannot register for HART 354 if student has credit for HART 554.

HART 355 - JACQUES-LOUIS DAVID: REVOLUTION
Short Title: JACQUES-LOUIS DAVID: REVOLUTION
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This class will consider the painting of Jacques-Louis David with particular reference to the ideas of revolution. This seminar will combine close reading and looking, using primary and secondary readings to explore issues of classicism, politics, eroticism, and aesthetics in the work of this central figure in art history. Graduate/Undergraduate Equivalency: HART 555. Mutually Exclusive: Cannot register for HART 355 if student has credit for HART 555.

HART 356 - SEX AND MONEY: THE SPECIES DIVIDE
Short Title: SEX & MONEY THE SPECIES DIVIDE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will explore the visual representations of lust and greed, both human and non-human. It will introduce students to such theories as feminism and posthumanism as well as medieval beliefs about the Seven Deadly Sins and demons. Graduate/Undergraduate Equivalency: HART 556.
HART 357 - CONSTABLE AND TURNER
Short Title: CONSTABLE AND TURNER
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar will explore critical issues surrounding the careers of John Constable and J.M.W. Turner, arguably the greatest landscape painters of the early 19th century. We will look at both similarities and differences in the work of these two rivals, while considering their work in the context of great historical change in England. Graduate/Undergraduate Equivalency: HART 547. Mutually Exclusive: Cannot register for HART 357 if student has credit for HART 547.

HART 358 - IMPRESSIONISM AND POST-IMPRESSIONISM
Short Title: IMPRESSIONISM/POST-IMP
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This class will explore painting in France from approximately 1865 to 1900. Mixing lectures and classroom discussion, we will focus on individual artists including Claude Monet, Edgar Degas, Mary Cassatt, Georges Seurat, Vincent van Gogh, and Paul Czanne. We will also consider and discuss a set of critical issues surrounding these painters, including the politics of gender and class within the changing urban setting of Paris. Graduate/Undergraduate Equivalency: HART 558. Mutually Exclusive: Cannot register for HART 358 if student has credit for HART 558.

HART 359 - CINEMAS OF URBAN ALIENATION
Short Title: CINEMAS OF URBAN ALIENATION
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar examines cinematic engagements with urban spaces and experiences around the world spanning the last two centuries. Particular attention will be paid to issues of migration, marginality, colonialism, war and post-war, nostalgia and memory, race and gender. Cities of focus include Berlin, Istanbul, Moscow, Algiers, Beirut and Paris. Our weekly discussions of individual films will be grounded in critical writings of the cities' histories and theories of space and film. Cross-list: ARCH 359, FILM 359. Graduate/Undergraduate Equivalency: HART 659. Mutually Exclusive: Cannot register for HART 359 if student has credit for HART 659.

HART 361 - WHAT IS CINEMA? CLASSIC READINGS OF CLASSIC FILMS
Short Title: WHAT IS CINEMA?
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Using a variety of readings now considered classics as our guide, this class will look closely at a broad range of films and film movements discussed by critics and theorists such as Rudolf Amheim, Jean Epstein, Sergei Fisenstein, Walter Benjamin and Andre Bazin. Cross-list: FILM 361. Graduate/Undergraduate Equivalency: HART 561. Mutually Exclusive: Cannot register for HART 361 if student has credit for HART 561.

HART 362 - UPCYCLING: MEANINGFUL REUSE IN ART AND MONUMENTS FROM ANTIQUITY TO TODAY
Short Title: UPCYCLING
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: In this seminar, we will explore the phenomenon of upcycling - intentionally meaningful reuse - by investigating the intersection of reuse and memory in the art and monuments of many different times, places, and people, from prehistory to the modern art that surrounds us on the Rice campus. Graduate/Undergraduate Equivalency: HART 562. Mutually Exclusive: Cannot register for HART 362 if student has credit for HART 562.

HART 365 - ART BETWEEN THE WARS: EUROPEAN MODERNISM, 1918-1940
Short Title: ART BETWEEN THE WARS
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Beginning in the aftermath of the First World War, a conflict that devastated the physical and psychological landscape of Europe, and ending with the rise of various totalitarian regimes (Fascism, Stalinism) this seminar will examine European art of the interwar period, from 1918-1940. Potential topics will include Surrealism, The Russian avant-garde, the return to order, Esprit-Nouveau, the machine aesthetic, De Stijl, avant-garde cinema, etc. Graduate/Undergraduate Equivalency: HART 575. Mutually Exclusive: Cannot register for HART 365 if student has credit for HART 575.
HART 369 - STATE OF THE ART
Short Title: STATE OF THE ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: What is the current state of the art historical field? Looking at contemporary scholarship across a range of historical periods, the class will introduce students to a selection of some of the most important, ground-breaking, and/or influential writings in art history produced in the last 25 years or so. Paying particular attention to an array of recent trends, methodologies, and political interventions, this class will examine some of the most pressing questions, debates, and advanced interdisciplinary theories within current art historical practice.
Graduate/Undergraduate Equivalency: HART 569. Mutually Exclusive: Cannot register for HART 369 if student has credit for HART 569.

HART 371 - CHINESE PAINTING
Short Title: CHINESE PAINTING
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines Chinese painting from ancient times to the early twentieth century. Issues of examination include themes, styles, and functions of Chinese painting; the interrelationship between paintings and the intended viewers; regionalism; images and words; foreign elements in Chinese painting. Cross-list: ASIA 371. Graduate/Undergraduate Equivalency: HART 571. Mutually Exclusive: Cannot register for HART 371 if student has credit for HART 571.

HART 372 - CHINESE ART AND VISUAL CULTURE
Short Title: CHINESE ART AND VISUAL CULTURE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Chinese Art and Visual Culture is an introductory seminar studying the history of traditional Chinese art and visual culture from ancient times to the nineteenth century. This course draws upon masterpieces and monuments from both archaeological finds and museum collections, including bronze vessels, funeral objects, painting, calligraphy, sculptures, architecture, ceramics, and so on. Designed for students who have no background in Chinese art, Chinese history, or art history, the seminar uses diverse teaching materials in multiple media beyond traditional textbook-based readings to achieve four main goals: 1) Develop visual literacy through a direct encounter with objects. The development of specialized vocabulary to describe, analyze, and communicate function, composition, and meaning in art. 2) Understand major artistic movements of art and architecture within historical, social, political contexts. 3) Develop specialized knowledge in art from specific geographical locations (e.g., China), time periods, artists or artistic movements. 4) Evaluate and use primary and secondary source materials. Cross-list: ASIA 372, MDEM 373. Graduate/Undergraduate Equivalency: HART 572. Mutually Exclusive: Cannot register for HART 372 if student has credit for HART 572.

HART 374 - THE VISUAL CULTURE OF THE FRENCH REVOLUTION
Short Title: ART OF THE FRENCH REVOLUTION
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will address the central role that art and visual culture played in the French Revolution. While engaging in a detailed study of the causes, progress and outcome of the Revolution we will pay attention to painting, prints, festivals and the wide range of visual culture that not only reflected the Revolution but helped fuel it. Graduate/Undergraduate Equivalency: HART 574. Mutually Exclusive: Cannot register for HART 374 if student has credit for HART 574.
HART 375 - LATIN-EUROPE/LATIN-AMERICA: THE AESTHETICS AND POLITICS OF MODERN CITIES
Short Title: LATIN-EUROPE/LATIN-AMERICA
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course challenges our pre-conceived maps of the world, highlighting Latin America’s place within our understanding of modernity as a product of transnational interconnections. Transversing the Atlantic, this course traces the interactions of capitalism and culture, science and aesthetics, and the ideologies that informed and formed the urban fabric and spatial politics of important cities in the modern Latin world - Paris, Rio de Janeiro, Rome, Buenos Aires, Barcelona, Havana, and Brasilia. Cross-list: ARCH 375. Graduate/Undergraduate Equivalency: HART 675. Mutually Exclusive: Cannot register for HART 375 if student has credit for HART 675.

HART 376 - EAST & WEST: MEDIEVAL VISUAL CULTURE IN CHINA AND NORTHERN EUROPE
Short Title: EAST AND WEST
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores a series of issues that are critically important for the medieval art of both China and northern Europe. Topics include materials and techniques; public and private art: commerce, technology and prints; art and motion; archaeology; paradise and hell; maps and space; the gaze; erotica; patronage; and multiculturalism. Cross-list: ASIA 376, MDEM 376. Graduate/Undergraduate Equivalency: HART 576. Mutually Exclusive: Cannot register for HART 376 if student has credit for HART 576.

HART 377 - MEDIEVAL MANUSCRIPTS
Short Title: MEDIEVAL MANUSCRIPTS
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar explores illuminated European manuscripts from late antiquity through the early sixteenth century. It examines manuscripts’ functions, patrons, makers, and materials and technique, as well as such issues as the relationship between text and image and the manuscript’s ideological stance. Students have the opportunity to study original medieval illuminations. Cross-list: MDEM 377. Graduate/Undergraduate Equivalency: HART 577. Mutually Exclusive: Cannot register for HART 377 if student has credit for HART 577.

HART 378 - DUTCH ART IN THE AGE OF REMBRANDT
Short Title: DUTCH ART IN AGE OF REMBRANDT
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will examine Dutch and Flemish seventeenth-century art, including major masters, such as Rembrandt, Rubens, and Vermeer, and major developments, such as the rise of still life, genre, and landscape painting. Cross-list: MDEM 378. Graduate/Undergraduate Equivalency: HART 578. Mutually Exclusive: Cannot register for HART 378 if student has credit for HART 578.

HART 380 - SURVEY OF AMERICAN FILM AND CULTURE
Short Title: SURVEY OF AMER FILM & CULTURE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course that explores the history of cinema in the U.S. from its origins to the present day. This course will examine the development of narrative, sound, the classical Hollywood form and style; film genres; the emergence of television; the influence of postwar “art cinemas”; the origins of the blockbuster; and the status of Hollywood as “global cinema.” Cross-list: ENGL 373, FILM 373.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

HART 381 - COLLAGE AND ITS HISTORIES
Short Title: COLLAGE AND ITS HISTORIES
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This class will explore the centrality of collage to the development of the 20th century art and film. Beginning with the seminal achievements of Picasso and Braque, we will examine works across geographical and medium boundaries, including Dada photomontage, early avant-garde film, 1960s happenings, and the reformulation of collage aesthetics in 1980s postmodernism. Graduate/Undergraduate Equivalency: HART 581. Mutually Exclusive: Cannot register for HART 381 if student has credit for HART 581.
HART 382 - MODALITIES OF CINEMA  
Short Title: MODALITIES OF CINEMA  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: In this course we will survey the range of organizing principles in cinema - the differing and combative ways cinema arranges its images and sounds. We will look at classicism, modernism, postmodernism and many other modes. The films will range from early silent pictures, to experimental shorts, to commercial blockbusters. Cross-list: FILM 382.

HART 383 - GLOBAL CINEMA  
Short Title: GLOBAL CINEMA  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 4  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This course introduces students to cinema as a global enterprise. It explores the relationship between nations, identities, races, concepts, and genres. It inquires into the question of globalization as it relates to the motion picture audience, corporations, and the commerce of ideas. Cross-list: FILM 383.

HART 386 - DADA  
Short Title: DADA  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Inaugurated against the calamitous backdrop of the First World War, 'Dada,' the artist Francis Picabia claimed, 'smells of nothing, it is nothing, nothing, nothing.' This seminar will examine the aesthetics of shock and nihilism (literally, 'nothingness'), developed by Dada in six cities: Zurich, Berlin, Cologne, Hannover, New York, and Paris. Graduate/Undergraduate Equivalency: HART 586. Mutually Exclusive: Cannot register for HART 386 if student has credit for HART 586.

HART 387 - HOLOCAUST MEMORY IN MODERN GERMANY  
Short Title: HOLOCAUST MEMORY  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3-4  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This course traces and examines forms of Holocaust memory and memorialization in film, literature, art, architecture, city planning, museums, and memorials in Germany. For an additional credit hour, students will participate in a week-long trip to Berlin. Instructor Permission Required. Cross-list: GERM 351.

HART 388 - POST WAR EUROPEAN CINEMA  
Short Title: POST WAR EUROPEAN CINEMA  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 4  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This class surveys major developments in European cinema from the late 1940s to the late 1960s. Our study will include such movements as Italian Neorealism, German Rubble Films, French New Wave, and Soviet cinema in the Thaw. Particular attention will be paid to such issues as cinema and post-war reconstruction, memory and nation, and body and space. Cross-list: FILM 388. Graduate/Undergraduate Equivalency: HART 588. Mutually Exclusive: Cannot register for HART 388 if student has credit for HART 588.

HART 391 - PLACE AND MEMORY IN MIDDLE EASTERN AND EUROPEAN CINEMA  
Short Title: MEMORY AND PLACE IN CINEMA  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 4  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Focuses on cinematic explorations of and preoccupations with the notion of place. Screenings include iconic and lesser-known films from Europe and the Middle East that offer diverse lenses and contexts (love, family, landscapes, borders, trauma, exile) through which we will examine questions of real and imagined place and the politics of memory. Cross-list: ANTH 378, FILM 378. Graduate/Undergraduate Equivalency: HART 691. Mutually Exclusive: Cannot register for HART 391 if student has credit for HART 691.

HART 395 - ROMAN ARCHAEOLOGY: FIELD SCHOOL  
Short Title: ROMAN ARCHAEOLOGY FIELD SCHOOL  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Research  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This is a traditional archaeological field course, taught in the Roman Forum. Techniques and advanced technologies for processing, conserving, and recording archeological materials are emphasized. Students will become familiar with procedures for ceramics, metals, plant and animal remains and building materials. Course work include lectures, hands-on excavation, and informal discussion. Instructor Permission Required. Graduate/Undergraduate Equivalency: HART 695. Recommended Prerequisite(s): HART 201 or ANTH 205 or ANTH 303. Mutually Exclusive: Cannot register for HART 395 if student has credit for HART 695.
HART 396 - MEDICAL HUMANITIES VISUAL CULTURE
Short Title: MED HUMANITIES VISUAL CULTURES
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: In this course we will examine literal and symbolic representations of the human body in order to explore the relations between the visuality of medicine, corporeality, subjectivity, and healing. Repeatable for Credit.

HART 397 - HART IN THE WORLD FIELD STUDY
Short Title: FIELD STUDY
Department: Art History
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate or Undergraduate Professional level students.
Course Level: Undergraduate Upper-Level
Description: Through on-site lectures, seminar discussions, museum visits, architectural itineraries, and field trips, this course will explore the complex political, social, and cultural histories of a major international metropolis. The city visited changes each time the course is offered; past locations have included Istanbul, Rome, and Rio de Janeiro. More information on upcoming locations is available at https://arthistory.rice.edu/opportunities/hart-world. Graduating students are not eligible. Instructor Permission Required. Graduate/Undergraduate Equivalency: HART 697. Mutually Exclusive: Cannot register for HART 397 if student has credit for HART 697. Repeatable for Credit.
Course URL: www.arthistory.rice.edu/opportunities/hart-world (http://www.arthistory.rice.edu/opportunities/hart-world/)

HART 398 - FROM EXPRESSIONISM TO FASCISM: ART AND FILM IN GERMANY
Short Title: FROM EXPRESSIONISM TO FASCISM
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Focusing on the tumultuous years of the Weimar Republic, this class will examine art and film in Germany from the birth of Expressionism through the end of the Nazi dictatorship. Topics covered will include Expressionism, Dada, the Bauhaus, and Fascist aesthetics. Particular attention will be paid to the relations between aesthetics and politics and art and everyday life, all central concerns of the art and criticism of the period. Cross-list: GERM 339. Graduate/Undergraduate Equivalency: HART 596. Mutually Exclusive: Cannot register for HART 398 if student has credit for HART 596.

HART 399 - EXHIBITING SEXUALITIES
Short Title: EXHIBITING SEXUALITIES
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This class investigates how sexuality has been constructed, avoided, celebrated, and suppressed in museums. In addition to studying a genealogy of sexual display and spectatorship in museums, students will also do the work of collectors, curators, and critics of artistic, historical, and scientific displays of sex and sexuality. Cross-list: SWGS 321.

HART 400 - BAYOU BEND UNDERGRADUATE INTERNSHIP I
Short Title: BAYOU BEND UG INTERNSHIP I
Department: Art History
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Undergraduate Internship at Bayou Bend, the American Decorative Arts Center of the Museum of Fine Arts, Houston. Must be a Jameson Fellowship recipient to enroll. Instructor Permission Required. Graduate/Undergraduate Equivalency: HART 603. Mutually Exclusive: Cannot register for HART 400 if student has credit for HART 603.

HART 401 - BAYOU BEND UNDERGRADUATE INTERNSHIP II
Short Title: BAYOU BEND UG INTERNSHIP II
Department: Art History
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Undergraduate Internship at Bayou Bend and The American Decorative Arts Center of the Museum of Fine Arts, Houston. Must be a Jameson Fellowship recipient to enroll. Instructor Permission Required. Graduate/Undergraduate Equivalency: HART 604. Mutually Exclusive: Cannot register for HART 401 if student has credit for HART 604.

HART 402 - HONORS THESIS
Short Title: HONORS THESIS
Department: Art History
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Honors thesis project in art history. Students must receive permission of the department faculty prior to enrolling. For additional information, please see Honors Program in the Rice University General Announcements. Department Permission Required.
HART 403 - HONORS THESIS
Short Title: HONORS THESIS
Department: Art History
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate
Description: Honors thesis project in art history. Students must receive permission of the department faculty prior to enrolling. For additional information, please see Honors Program in the Rice University General Announcements. Instructor Permission Required.

HART 406 - ICONOCLASMS: THE DESTRUCTION OF IMAGES
Short Title: ICONOCLASMS
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate
Description: With a focus on the modern period, this seminar will examine iconoclastic theory and practice from antiquity to the present. Why, we will ask, have people so incessantly felt compelled to ban or destroy images, and what can this compulsion tell us about the nature of visual representation itself? Graduate/Undergraduate Equivalency: HART 606. Mutually Exclusive: Cannot register for HART 406 if student has credit for HART 606.

HART 407 - POP ART
Short Title: POP ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate
Description: This seminar will examine the history and significance of Pop art by looking in detail at three or four primary figures associated with the term; likely subjects include Andy Warhol, Gerhard Richter, Ed Ruscha, Richard Hamilton, and others. Visits to local museum collections and attention to theoretical writings on art and mass culture are planned. Graduate/Undergraduate Equivalency: HART 607. Mutually Exclusive: Cannot register for HART 407 if student has credit for HART 607.

HART 412 - ADVANCED SEMINAR IN ARCHITECTURE
Short Title: ADV SEMINAR IN ARCHITECTURE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate
Description: Small, focused, advanced discussion, workshop and/or design based courses on topics of recent research in architecture, delivered by RSA full time or visiting faculty. This seminar is open to RSA undergraduate students junior-level and above, and RSA graduate students. Students from other departments may enroll in the course with instructor permission. See the RSA website for more information: arch.rice.edu/courses. Cross-list: ARCH 412. Graduate/Undergraduate Equivalency: HART 612. Mutually Exclusive: Cannot register for HART 412 if student has credit for HART 612. Repeatable for Credit.

HART 413 - MURDER AND MODERNISM
Short Title: MURDER AND MODERNISM
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate
Description: 'Murder, George Orwell lamented in his 1946 essay 'Decline of the English Murder,' isn't what it used to be. Unlike what he calls 'our great period in murder' - roughly 1850 to the beginning of the Second World War - contemporary murder has lost it aesthetic appeal. 'There is,' he writes, 'no depth of feeling in it.' This class will examine the modernist fascination with murder, asking not only why it became a topic of such particular interest to artists, writers, and filmmakers during this time, but what it can tell us about modernist aesthetics more broadly.' Graduate/Undergraduate Equivalency: HART 507. Mutually Exclusive: Cannot register for HART 413 if student has credit for HART 507.

HART 427 - VISUAL CULTURE OF MEDIEVAL PILGRIMAGE
Short Title: MEDIEVAL PILGRIMAGE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate
Description: This seminar explores the rich visual culture associated with Medieval pilgrimage between the fourth and fifteenth centuries. The experience of pilgrimage was shaped by symbols, images, and places encountered along the routes to sites of sacred significance, especially the roads to Jerusalem, Rome, Santiago, and Canterbury. We will examine the theological, practical, visual, and experiential aspects of pilgrimage in Western Europe and the Holy Land as understood through visual culture and contemporary texts. Instructor Permission Required. Graduate/Undergraduate Equivalency: HART 527. Mutually Exclusive: Cannot register for HART 427 if student has credit for HART 527.
HART 430 - THE GROTESQUE
Short Title: THE GROTESQUE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines the grotesque in literature and art. It covers a variety of textual and visual sources across periods; theoretical materials will include works from literary studies, visual culture, art history, critical theory and aesthetics. Cross-list: ENGL 438.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

HART 431 - ARCHITECTURE OF THE GOTHIC CATHEDRAL FROM THE MIDDLE AGES TO THE TWENTIETH CENTURY
Short Title: ARCH OF GOTHIC CATHEDRAL
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will focus on one of the most important contributions to the history of western architecture—the Gothic cathedral. The course will approach the material from a number of different perspectives—the formal and technical development of Gothic architecture; the Medieval architect and the design of Gothic buildings, the social, economic, and political history of ‘big church’ building in the Middle Ages; Gothic architecture as experience and metaphor; and the afterlife of the Gothic cathedral from Vasari to the National Cathedral in Washington, D.C. Cross-list: MDEM 431.

HART 433 - THE BAYEUX TAPESTRY AND THE ANGLO-NORMAN WORLD
Short Title: THE BAYEUX TAPESTRY
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course focuses on the most important secular work from the middle ages—a 230-foot long embroidery depicting the Battle of Hastings. We will consider the relationship between the textual and visual narratives of the historical events; the tapestry as an artifact and its history; its origin, date, purpose and patronage of the tapestry; the artistic context of the tapestry in the eleventh century; issues of narratology; and reception and vitality in the century. Several eleventh- and twelfth-century texts such as the ‘Chanson de Roland,’ the ‘Lais’ and the ‘Fables’ of Marie de France, ‘Le Jeu d’Adam’ and ‘La Vie de Saint Alexis’ will be examined with particular attention to the authors’ desire to create a visual experience for the audience. Graduate/Undergraduate Equivalency: HART 533. Mutually Exclusive: Cannot register for HART 433 if student has credit for HART 533.

HART 434 - SEEING SEX IN EUROPEAN ART, 1400-1700
Short Title: SEEING SEX IN EUROPEAN ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will examine the visual history of sexuality from 1400-1700. It will explore how imagery structured sexual desire; the role of erotic sacred art; the rise of pornography; the intersection of spatial topography and sexuality; the linkage of licit and illicit sexualities; and the sexuality of artist and patrons. Cross-list: MDEM 434, SWGS 434. Graduate/Undergraduate Equivalency: HART 534. Mutually Exclusive: Cannot register for HART 434 if student has credit for HART 534.

HART 435 - MULTICULTURAL EUROPE, 1400-1700
Short Title: MULTICULTURAL EUROPE, 1400-1700
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The art of Europe was never the product of a single culture working in isolation. This seminar will explore the multicultural aspects of medieval and early modern Europe by focusing on the visual culture of groups who defined themselves or are today defined by nationality, race, or religion. Cross-list: HIST 443, MDEM 435. Mutually Exclusive: Cannot register for HART 435 if student has credit for HART 535.

HART 440 - ISSUES IN THE HISTORY OF PRINTS, PRE-MODERN TO PRESENT
Short Title: ISSUES IN HISTORY OF PRINTS
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: With their distinctive technical, social, and commercial associations, prints are often sidelined in traditional art histories. This course will introduce recent scholarship on the multiple image from the late middle ages to the present, with stress on the transformations of printmaking from the development of photography into our digital age. Graduate/Undergraduate Equivalency: HART 640. Mutually Exclusive: Cannot register for HART 440 if student has credit for HART 640.
HART 451 - MODELS OF ABSTRACTION
Short Title: MODELS OF ABSTRACTION
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will examine a range of different models of abstract painting and sculpture as they appear throughout the twentieth century. Looking closely at the historical contexts that gave rise to abstraction particular attention will be paid to how apparently similar forms of abstraction can denote very different kinds of meaning.
Graduate/Undergraduate Equivalency: HART 551. Mutually Exclusive: Cannot register for HART 451 if student has credit for HART 551.

HART 452 - MANET(S) AND MODERNISM(S)
Short Title: MANET(S) AND MODERNISM(S)
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar considers the pivotal figure of Edouard Manet. Combining a study of paintings from throughout his career, with close readings of primary sources, we will assess the key aspects of his style and subject matter. We will also consider art historical to his work and relationship to modernity. Graduate/Undergraduate Equivalency: HART 552. Mutually Exclusive: Cannot register for HART 452 if student has credit for HART 552.

HART 457 - VIDEO AND EXPANDED CINEMA
Short Title: VIDEO AND EXPANDED CINEMA
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar explores the emergence of video and ‘expanded cinema’ as a primary field of artistic practice over the course of the 1960s and 1970s. We will examine seminal works by artists including Andy Warhol, Dan Graham, and Robert Whitman as well as the shifting aesthetic, political, and media landscapes in which this work emerged. Cross-list: FILM 455. Graduate/Undergraduate Equivalency: HART 557. Mutually Exclusive: Cannot register for HART 457 if student has credit for HART 557.

HART 460 - CHINESE BUDDHIST WOODCUTS 850-1450
Short Title: CHINESE BUDDHIST WOODCUTS
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will study woodblock print illustrations in the context of cultural change. Buddhism and printing have been closely related since the dawn of the age of print. Many scriptures reproduced by woodblock printing were imbedded with illustrations, which themselves offer an effective tool to study cultural transformation. The seminar draws sources from both images and texts. Its cross-cultural perspective highlights nomads and non-Chinese peoples as agents of cultural transformation, with additional visual comparisons from Korean, Japanese, and Islamic traditions. In addition to weekly discussions, the final evaluation includes a research paper and a 30-minute presentation. Students should have an advanced background in Chinese art to take this seminar. Readings will include both Chinese and English sources. Some classes will meet at area museums. Instructor Permission Required. Graduate/Undergraduate Equivalency: HART 661. Recommended Prerequisite(s): HART 372 or ASIA 372; students should have Chinese reading skills Mutually Exclusive: Cannot register for HART 460 if student has credit for HART 661.

HART 461 - ART OF THE 60s AND 70s
Short Title: ART OF THE 60s AND 70s
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: By all accounts the 1960s and 1970s marked one of the most vibrant, experimental, audacious, and - above all - contentious periods in the history of avant-garde modernism. This seminar will examine the momentous shift from the international dominance of American Abstract Expressionism in the 1950s to a wide array of global counter-movements in the 1960s and 70s. Possible topics include: Happenings, Minimalism, Fluxus, Conceptualism, Nouveau Realisme, Body Art, Structuralist Film, Gutai, Light and Space, Neocreatism, Arte Povera, The Situationalist International, etc. Graduate/Undergraduate Equivalency: HART 559. Mutually Exclusive: Cannot register for HART 461 if student has credit for HART 559.
HART 463 - PRACTICING UTOPIA: ARCHITECTURE, EUGENICS AND THE MODERN LATIN CITY
Short Title: PRACTICING UTOPIA
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar will explore the alliance between aesthetics, science, and ideology at the core of French and Latin American modernism. Focusing on early twentieth-century scientific and cultural dialogues between France and Latin America, this seminar will have as main territories of exploration: Paris, Rio de Janeiro, Buenos Aires, Havana, and Caracas. Cross-list: ARCH 452. Graduate/Undergraduate Equivalency: HART 563. Mutually Exclusive: Cannot register for HART 463 if student has credit for HART 563.

HART 465 - LATIN AMERICAN BODIES: ON MODERNISM
Short Title: LATIN AMER BODIES:ON MODERNISM
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar will examine theories and practices of modernism and modernization within Latin America-Europe Dialogues. Designed as a laboratory of ideas and forms, this seminar will probe critical perspectives on art and architecture's relation to society and science. Each week, we will examine a theorist, an artist, and an architect. Graduate/Undergraduate Equivalency: HART 566. Mutually Exclusive: Cannot register for HART 465 if student has credit for HART 566.

HART 467 - EVOLUTION CUSTOM BUILT: ARCHITECTURE, GENETICS, AND THE ANTHROPOCENE
Short Title: EVOLUTION CUSTOM BUILT
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: In the twentieth century, architects, scientists, engineers and technocrats attempted to free humanity from the constraints of nature...and were met with developments in science and technology sufficient to do so. Tracking the late nineteenth and twentieth century techno-scientific impetus to re/design the shape of the future, from the level of genes to the scale of the built environment, this seminar combines investigations and theories of landscape, object oriented ontology, architecture and ecocriticism. In the first part of the course, we'll unpack the history of modern agrilogistic thought, which projected empty, unoccupied space for opportunity and development onto otherwise occupied chromosomes, cultures and landscapes. The second section of this seminar traces the drive to order the biological world, using logics of efficiency and accountability, by rereading developments in energy, industry and resource development through the lens of object oriented ontology. Finally, we'll reconsider developments in the plant, animal and human sciences which bolstered humanity's twentieth century hubris, from the birth of genetics to the role radiation played in liberating plant breeding from the confines of Mendelian crosses. Graduate students will have six additional readings and extra presentations of the landscape and architecture projects for two given weeks, per student. Graduate/Undergraduate Equivalency: HART 573. Mutually Exclusive: Cannot register for HART 473 if student has credit for HART 573.

HART 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Art History
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Laboratory, Lecture, Seminar, Lecture/Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

HART 480 - SEMINAR ON FILM AUTHORSHIP: THE NEW HOLLYWOOD
Short Title: SEMINAR ON FILM AUTHORSHIP
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar covers the concept of authorship in Hollywood cinema since 1968. Topics include: the auteur theory, biography, voice, the implied author, intention, and others. Cross-list: ARTS 435, FILM 435.
HART 481 - AUTEUR FILM: CASE STUDIES OF THREE AUTEURS
Short Title: AUTEUR FILM
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will explore the tradition of auteur filmmaking, with an emphasis on how this particular artistic mode situates itself within the evolving system of Hollywood institutional film. The auteur, in contrast to other filmmakers, exhibits unparalleled control over the production and post-production processes and is uniquely identifiable through the notable conventions of aesthetics, style, theme, content, atmosphere, etc. FILM 485/HART 481 (4 Credit Hours) will require completion of additional coursework for the additional credit than the FILM 285/HART 283 (3 Credit Hours). Credit may not be received for more than one of FILM 285 or FILM 485 or Hart 283 or HART 481. Cross-list: FILM 485. Equivalency: HART 283. Mutually Exclusive: Cannot register for HART 481 if student has credit for HART 283.

HART 482 - CAESAR'S PALACE: AUTHOR(ITY) AND MEANING IN THE ROMAN IMPERIAL RESIDENCE
Short Title: CAESAR'S PALACE
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Described as both a “Hall of Despotism” and a “Citadel of Majesty,” the palace of the Roman emperors is one of the great enigmas of antiquity. Its vast remains (larger than Versailles) are relatively well preserved, but it is poorly understood as part of the concept of emperorship. In this course we will examine the palace within the context of Imperial Roman art and politics; then we will dissect its meaning(s), the intentions of those who created it, and generally deconstruct it, brick by brick, to question agency and spatial experience from a macro-historical perspective. Cross-list: CLAS 482. Graduate/Undergraduate Equivalency: HART 582. Mutually Exclusive: Cannot register for HART 482 if student has credit for HART 582.

HART 493 - WALTER BENJAMIN, MEDIA & MODERNITY
Short Title: WALTER BENJAMIN
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar will examine the key theoretical writings on media and modernity by Walter Benjamin, one of the first twentieth-century critics to place new forms of visual experience and technology at the center of his understanding of modern life. The course will pay particular attention to Benjamin’s writings on urbanism, film and photography, and the ways in which these relate to avant-garde practices such as Dada, Surrealism, and New Objectivity (Neue Sachlichkeit). Graduate/Undergraduate Equivalency: HART 593. Mutually Exclusive: Cannot register for HART 493 if student has credit for HART 593.

HART 495 - READINGS IN MEDIA HISTORY AND THEORY
Short Title: READINGS IN MEDIA HISTORY
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Understanding ‘media’ broadly, this class explores a range of historical and theoretical readings around the term. Typewriters, photography and television will be among our topics, guided by two primary questions: how have developments in media affected, even determined, human perception and communication, and how have artists and critics responded to such changes? Graduate/Undergraduate Equivalency: HART 595. Mutually Exclusive: Cannot register for HART 495 if student has credit for HART 595.

HART 501 - INTERNSHIP PROGRAM II
Short Title: MUSEUM INTERNSHIP
Department: Art History
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate credit for work as museum intern at a variety of museums. Instructor Permission Required. Repeatable for Credit.

HART 503 - GRADUATE RESEARCH PAPER
Short Title: GRADUATE RESEARCH PAPER
Department: Art History
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate research paper.

HART 504 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Art History
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3-6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate independent study, reading and research on variable topics. Instructor Permission Required. Repeatable for Credit.

HART 506 - FOUNDATIONS IN THE HISTORY AND THEORY OF ARCHITECTURE II (1850-1950)
Short Title: FOUNDATIONS IN ARCH II
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ARCH 345 or HART 345 or ARCH 645 or HART 645
Description: Lectures and discussions focusing on significant architectural and urban practices and ideas formulated be 1850 and 1950. Cross-list: ARCH 646.
HART 507 - MURDER AND MODERNISM
Short Title: MURDER AND MODERNISM
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: ‘Murder, George Orwell lamented in his 1946 essay ‘Decline of the English Murder,’ isn’t what it used to be. Unlike what he calls ‘our great period in murder’ - roughly 1850 to the beginning of the Second World War - contemporary murder has lost it aesthetic appeal. ‘There is,’ he writes, ‘no depth of feeling in it.’ This class will examine the modernist fascination with murder, asking not only why it became a topic of such particular interest to artists, writers, and filmmakers during this time, but what it can tell us about modernist aesthetics more broadly.’
Graduate/Undergraduate Equivalency: HART 413. Mutually Exclusive: Cannot register for HART 507 if student has credit for HART 413.

HART 508 - LIVING IN THE CITY IN THE OTTOMAN EMPIRE
Short Title: LIVING IN THE CITY
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar combines primary and secondary sources to explore the urban experiences of Ottoman men and women in the 18th and early 19th centuries. Looking at several cities including Istanbul, Izmir, Salonika, Damascus, Aleppo and Alexandria, we will discuss such issues as neighborhood and community life, public spaces and recreational culture perceptions of space, urban institutions, Muslim and non-Muslim relations, migration and marginality, violence and death. Reading knowledge of French and/or Turkish helpful but not necessary. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 308. Mutually Exclusive: Cannot register for HART 508 if student has credit for HART 308.

HART 509 - THE DAWN OF ROME: GENERATING THE URBAN, SOCIAL AND POLITICAL LIFE OF THE ETERNAL CITY
Short Title: THE DAWN OF ROME
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this course you will uncover the roots of the Eternal City, Rome. Through analysis of archaeological remains, art historical methodologies and theories of social space, intentionality, structuration and agency, you will question how and why Rome became a city and a culture the reshaped the world. The course will focus on the first 500 years of Roman art and society, ca. 800-300 BCE, looking closely at the kingship of Rome, the genesis of the Roman Republic, and the ability to understand a distant culture through artistic manufacture, materiality and philosophical shift. Graduate students will be expected to complete all the requirements of this class in addition to writing a substantial research paper at the end of the semester. Graduate/Undergraduate Equivalency: HART 309. Mutually Exclusive: Cannot register for HART 509 if student has credit for HART 309.

HART 510 - ARCHITECTURE AND DYNASTIC ASPIRATION IN THE EARLY ROMAN EMPIRE
Short Title: ARCH AND DYNASTIC ASPIRATIONS
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Nero is often remembered as the tyrannical emperor who let the city burn and gorged on ill-gotten luxury; his successors conceived as good emperors who built the Coliseum, Imperial Palace and the vast majority of Rome's remaining monuments. In this course you will question whether things were so straightforward. Graduate students will be expected to complete additional readings and write a substantial research paper, due at the end of the semester. Mutually Exclusive: Cannot register for HART 510 if student has credit for HART 410.

HART 511 - ART AND ARCHAEOLOGY OF THE ANCIENT NEAR EAST
Short Title: ANCIENT NEAR EAST
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An in-depth examination of the art and archaeology of ancient Mesopotamia, Syria, Anatolia and Persia. Beginning in The Neolithic period, we will examine the development of Near Eastern art and architecture through the study of ancient sites and their associated material culture. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 311. Mutually Exclusive: Cannot register for HART 511 if student has credit for HART 311.
HART 515 - OTTOMAN EMPIRE
Short Title: OTTOMAN EMPIRE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This graduate seminar examines different approaches to study of modernity and modernization in the Ottoman Empire from the onset of the Tanzimat reforms in 1839 until after WWI and the empire's demise. By engaging equally the social and spatial dimensions of the major societies, including Istanbul, Damascus, Beirut, Cairo, and Izmir we will explore the various meanings of modernity and modernization as these reflect at the urban architectural scales, in urban life, in localized discourses on the city, through such emerging institutions as the museum, and the context of expanding migration and global works.

HART 516 - CITY & FESTIVAL: CULT PRACTICES & THE ARCHITECTURAL PRODUCTION IN THE ANCIENT GRECO-ROMAN WORLD
Short Title: CITY AND FESTIVAL
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: How do social events, festivals, cult practices, public spectacles shape a city? The course will explore what makes a city in the first place, and attempt to make sense of the fragmentary archaeological evidence from the ancient Greco-Roman world in understanding, reconstructing cities. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester.

HART 517 - MODERN ART AND MONSTROSITY
Short Title: MODERN ART AND MONSTROSITY
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Why is it that in the modern era, beginning around the middle of the eighteenth century, artists begin to see various forms of monstrosity in aesthetic terms – as something beautiful? What is it about the modern period that accounts for this shift in how monstrosity is represented and understood and how does it differ from earlier historical images of the monster? This class will examine the modernist fascination with monstrosity, asking why it became a topic of such interest to artists, writers, and filmmakers during this time, and what it can tell us about modernist aesthetics more broadly. Examining a range of representations from the 18th century on, we will look at visual artists, filmmakers, and novelists who depict various forms of monsters, be they human (Jack the Ripper) or non-human (the Golem). From Mary Shelley's Frankenstein and the myth of the vampire, to Picasso's monstrous images of 1920s, to the distinctly modern phenomenon of serial killing, this course will chart the dark monstrous underside to modern art. Graduate students will be required to give two twenty-minute presentations in class, and write two papers, one short (10-12 pages) and one long (20-30 pages).
Graduate/Undergraduate Equivalency: HART 317. Mutually Exclusive: Cannot register for HART 517 if student has credit for HART 317.

HART 518 - LITERATURE AND VISUAL ART
Short Title: LITERATURE AND VISUAL ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines the relationship between literature and visual art. It covers a variety of textual and visual sources; theoretical materials will include works from literary studies, visual culture, art history, critical theory and aesthetics. Cross-list: ENGL 525. Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)
HART 521 - IMPERIAL CITY: ISTANBUL 1453-1922
Short Title: ISTANBUL IMPERIAL CITY
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This thematic seminar examines significant historical moments in the architectural and urban cultural of the Ottoman imperial capital from the moment it was conquered until the demise of the Ottoman Empire. Weekly readings and discussions will cover a range of topics including building patronage, architectural decorum, the Byzantine legacy, artistic relations with Persia, India and Europe, cultural pluralism, neighborhood and public life, law and urban order, modernity and modernization. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these reading to be turned in at the end of the semester. We will meet at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester.

HART 522 - JERUSALEM TO ISFAHAN
Short Title: JERUSALEM TO ISFAHAN
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A seminar on key topics of the study of visual cultures in the medieval and early modern Muslim world focused on specific works of art. Politics of architectural patronage, dissemination of visual languages, calligraphy, 'ornament' and figural representation in Islam, cross-cultural exchanges and trans-religious iconographies are among the topics discussed. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these reading to be turned in at the end of the semester. We will meet at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester.
Cross-list: ARCH 522. Graduate/Undergraduate Equivalency: HART 322. Mutually Exclusive: Cannot register for HART 522 if student has credit for HART 322.

HART 523 - THE MEDITERRANEAN WORLD
Short Title: THE MEDITERRANEAN WORLD
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate seminar focused on significant moments of the history of cultural exchanges around the Mediterranean. Explores questions of reception, adoption and adaptation of artistic and architectural vocabularies, shifting secular and religious iconographic meanings, circulation of aesthetics and channels of exchange form the vantage point of medieval and early modern Muslim empires.

HART 524 - PERSIANATE ARTS OF THE BOOK
Short Title: PERSIANATE BOOK ARTS
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar explores figural painting and arts of the book in the Persianate cultural sphere, ca. 1300s-1800s. We will study concepts of the book in Islamic civilization, illustrated narratives of Persian literature, word/image relationship, albums, and single-page portraits. The class also examines artistic interactions with East Asia and Europe, and concludes with the advent of lithography in the nineteenth century. Some course meetings will take place at Houston-area museums. Graduate students are required to submit a research paper (15-20 pages). Graduate/Undergraduate Equivalency: HART 324. Mutually Exclusive: Cannot register for HART 524 if student has credit for HART 324.

HART 525 - LOOKING AT PRINTS 1400-1700
Short Title: LOOKING AT PRINTS 1400-1700
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar explores figural painting and arts of the book in the Persianate cultural sphere, ca. 1300s-1800s. We will study concepts of the book in Islamic civilization, illustrated narratives of Persian literature, word/image relationship, albums, and single-page portraits. The class also examines artistic interactions with East Asia and Europe, and concludes with the advent of lithography in the nineteenth century. Some course meetings will take place at Houston-area museums. Graduate students are required to submit a research paper (15-20 pages). Graduate/Undergraduate Equivalency: HART 324. Mutually Exclusive: Cannot register for HART 524 if student has credit for HART 324.
HART 526 - BRAZIL BUILT: THE CLINIC, THE TROPICAL AND THE AESTHETIC
Short Title: BRAZIL BUILT
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: From Brazil Builds, MOMA’s 1943 celebrated exhibition to Brasilia, the supermodern capital created ex-nihilo in the middle of nowhere, to today’s worldwide attention on Brazil, this seminar examines the built environment - natural and architectural - as the main transmitter of modernism in Brazil. This is a seminar on Brazilian modernism and its discontents. Cross-list: ARCH 515. Graduate/Undergraduate Equivalency: HART 310. Mutually Exclusive: Cannot register for HART 526 if student has credit for HART 310.

HART 527 - VISUAL CULTURE OF MEDIEVAL PILGRIMAGE
Short Title: MEDIEVAL PILGRIMAGE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar explores the rich visual culture associated with Medieval pilgrimage between the fourth and fifteenth centuries. The experience of pilgrimage was shaped by symbols, images, and places encountered along the routes to sites of sacred significance, especially the roads to Jerusalem, Rome, Santiago, and Canterbury. We will examine the theological, practical, visual, and experiential aspects of pilgrimage in Western Europe and the Holy Land as understood through visual culture and contemporary texts. Graduate students will meet with the professor every other week to discuss 16 additional recommended readings - beyond those assigned to the undergraduates - and to discuss the progress of their 20-25 page research paper. Instructor Permission Required. Graduate/Undergraduate Equivalency: HART 427. Mutually Exclusive: Cannot register for HART 527 if student has credit for HART 427.

HART 529 - STREETS AND URBAN LIFE: PARIS TO ISTANBUL
Short Title: STREETS AND URBAN LIFE
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Cross-list: ARCH 529. Graduate/Undergraduate Equivalency: HART 329. Mutually Exclusive: Cannot register for HART 529 if student has credit for HART 329.

HART 530 - EARLY MEDIEVAL ART
Short Title: EARLY MEDIEVAL ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 330. Mutually Exclusive: Cannot register for HART 530 if student has credit for HART 330.

HART 531 - GOTHIC ART
Short Title: GOTHIC ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 331. Mutually Exclusive: Cannot register for HART 531 if student has credit for HART 331.

HART 532 - ART OF THE COURTS
Short Title: ART OF THE COURTS
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 332. Mutually Exclusive: Cannot register for HART 532 if student has credit for HART 332.
HART 533 - THE BAYEUX TAPESTRY AND THE ANGLO-NORMAN WORLD
Short Title: THE BAYEUX TAPESTRY
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course focuses on the most important secular work from the Middle Ages--a 230-foot long embroidery depicting the Battle of Hastings. We will consider the relationship between the textual and visual narratives of the historical events; the tapestry as an artifact and its history; its origin, date, purpose and patronage; the artistic context of the tapestry in the eleventh century; issues of narratology; and reception and visuality. Several eleventh- and twelfth-century texts such as the 'Chanson de Roland'; the 'Lais' and the 'Fables' of Marie de France, 'Le Jeu d'Adam' and 'La Vie de Saint Alexis' will be examined with particular attention to the authors' desire to create a visual experience for the audience. Graduate students will work on a more advanced level than undergraduate students with higher expectations and additional readings. They will meet on a regular basis outside of the weekly class to advance discussion of issues brought up in the class. Research projects undertaken by graduate students are expected to be done in multiple languages (especially French and German), and in addition to demonstrating a knowledge of the subject matter as it appears in the scholarship, they will be expected to critically evaluate this scholarship and begin to draw their own conclusions. Graduate/Undergraduate Equivalency: HART 433. Mutually Exclusive: Cannot register for HART 533 if student has credit for HART 433.

HART 534 - SEEING SEX IN EUROPEAN ART, 1400-1700
Short Title: SEEING SEX IN EUROPEAN ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Cross-list: SWGS 534. Graduate/Undergraduate Equivalency: HART 434. Mutually Exclusive: Cannot register for HART 534 if student has credit for HART 434.

HART 535 - MULTICULTURAL EUROPE, 1400-1700
Short Title: MULTICULTURAL EUROPE, 1400-1700
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The art of Europe was never the product of a single culture working in isolation. This seminar will explore the multicultural aspects of medieval and early modern Europe by focusing on the visual culture of groups who defined themselves or are today defined by nationality, race, or religion. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all the readings to be turned in at the end of the semester. We will meet for an additional two or three weeks to discuss the interpretive and methodological problems and ideas associated with the readings. Graduate students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Mutually Exclusive: Cannot register for HART 535 if student has credit for HART 435.

HART 536 - CINEMA AND THE CITY
Short Title: CINEMA AND THE CITY
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 336. Mutually Exclusive: Cannot register for HART 536 if student has credit for HART 336.

HART 538 - RENAISSANCE GOTHIC ARCHITECTURE
Short Title: RENAISSANCE GOTHIC ARCHITECTURE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar will examine the architecture constructed in northern Europe between 1450 and 1550 bridging the gap between the end of the Middle Ages and the Early Modern Period. The ambiguous term of 'Renaissance Gothic' has been coined to describe a form of architecture that straddles two fundamentally different periods with radically different approaches to the meaning, function and form of architecture. We will explore why and how Gothic architecture, the dominant style of church building for almost 350 years, was abandoned in favor of a new imported form.
HART 539 - AMERICAN ART AND ARCHITECTURE I: 1620-1800
Short Title: AMERICAN ART: 1620-1800
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Painting, architecture, urban design, and the decorative arts in the colonies and early United States. Highlights will include design at Monticello and Mount Vernon; the portraiture of John Singleton Copley; Georgian and Federal-period architecture in Boston, New York, Williamsburg, and Philadelphia; and Spanish and Dutch colonial art and architecture. Graduate/Undergraduate Equivalency: HART 339.
Mutually Exclusive: Cannot register for HART 539 if student has credit for HART 339.

HART 540 - ADVANCED STUDY IN MUSEUMS AND HERITAGE: ARTS OF ANCIENT MEDITERRANEAN AT THE MENIL COLLECTION
Short Title: ADV STUDY IN MUSEUMS/HERITAGE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course introduces students to advanced ethical, legal and practical issues facing museums as they acquire and maintain collections from areas prone to looting and destruction, especially the Ancient Mediterranean. We will examine the civic engagement and operation of the Menil Collection through close, on-site archival and object study. Cross-list: HURC 508. Graduate/Undergraduate Equivalency: HART 312. Mutually Exclusive: Cannot register for HART 540 if student has credit for HART 312.

HART 541 - EARLY RENAISSANCE ART IN ITALY
Short Title: EARLY RENAISSANCE ART IN ITALY
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of Italian art and architecture from Giotto to Botticelli, with emphasis on painting and sculpture in the 15th century. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 341. Mutually Exclusive: Cannot register for HART 541 if student has credit for HART 341.

HART 542 - THE HIGH RENAISSANCE AND MANNERISM IN ITALY
Short Title: HIGH RENAISSANCE/MANNERISM IN ITALY
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of the High Renaissance, with emphasis on its leading masters (e.g., Leonardo, Raphael, Bramante, Michelangelo, and Titian). Includes a study of mannerism, the stylish art produced after the first quarter of the 16th century. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 342. Mutually Exclusive: Cannot register for HART 542 if student has credit for HART 342.

HART 543 - MASTERS OF THE BAROQUE ERA
Short Title: MASTERS OF THE BAROQUE ERA
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of the works of the greatest painters and sculptors in Europe during the Baroque period. Includes Rembrandt, Rubens, Caravaggio, Poussin, Claude, and Velazquez. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideals associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 343. Mutually Exclusive: Cannot register for HART 543 if student has credit for HART 343.

HART 544 - CAPITALISM AND CULTURE
Short Title: CAPITALISM AND CULTURE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar will examine the way European culture, especially art, was shaped by the rise of the monetary economy and capitalism, beginning in the late Middle Ages and continuing into modern times. Faculty will meet separately on a bi-weekly basis with graduate students in the class who will also be assigned extra readings. Graduate work will be evaluated on a more challenging scale, with particular attention to methodological and interpretive rigor. Graduate/Undergraduate Equivalency: HART 344. Mutually Exclusive: Cannot register for HART 544 if student has credit for HART 344.
HART 545 - INTRODUCTION TO ARCHITECTURAL THINKING
Short Title: INTRO ARCHITECTURAL THINKING
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to architectural thought. Lectures and discussions focusing on practice and ideas that have exercised a significant influence on the discourse and production of architecture and urbanism. Cross-list: ARCH 525. Graduate/Undergraduate Equivalency: HART 225. Mutually Exclusive: Cannot register for HART 545 if student has credit for HART 225.

HART 546 - PICASSO, POLLOCK, WARHOL
Short Title: PICASSO, POLLOCK, WARHOL
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar will look in detail at three of the twentieth century's most important artists: Pablo Picasso, Jackson Pollock, and Andy Warhol. Our central focus in doing so will be painting, in particular, the means by which these three artists tested, expanded or even 'destroyed' the medium. What did it mean to make (or reject) painting in 1910, 1950, and 1965? Special attention will be paid to recent scholarly literature and close looking at works in local collections. Graduate/Undergraduate Equivalency: HART 334. Mutually Exclusive: Cannot register for HART 546 if student has credit for HART 334.

HART 547 - CONSTABLE AND TURNER
Short Title: CONSTABLE AND TURNER
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar will explore critical issues surrounding the careers of John Constable and J.M.W. Turner, arguably the greatest landscape painters of the early 19th century. We will look at both similarities and differences in the work of these two rivals, while considering their work in the context of great historical change in England. Graduate students will be required to do additional reading in addition to those already assigned. Graduate/Undergraduate Equivalency: HART 357. Mutually Exclusive: Cannot register for HART 547 if student has credit for HART 357.

HART 548 - A REVOLUTION FROM WITHIN: TRENDS IN CONTEMPORARY CUBAN CULTURE
Short Title: TRENDS IN CUBAN CULTURE
Department: Art History
Grade Mode: Standard Letter
Course Type: Research
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This research seminar will explore contemporary trends in Cuban culture through literary texts, films, music and works of art. We will examine the ways in which politics and the practices of artistic representation intersect in post-revolutionary Cuba. A research trip to Cuba has been organized as part of this seminar. This course is taught in Spanish. Graduate students will be required to complete all the requirements for the course in addition to writing a substantial research paper at the end of the semester. This is the credit for the actual trip to Cuba. Graduate/Undergraduate Equivalency: HART 348. Mutually Exclusive: Cannot register for HART 548 if student has credit for HART 348.

HART 549 - TECHNICAL ART HISTORY: STUDYING THE TECHNIQUES OF WESTERN PAINTING, 13TH-20TH CENTURIES
Short Title: TECHNICAL ART HISTORY
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This research seminar will explore contemporary trends in art history, especially in the United States, that tend to rely on photographs, but a study of the actual object is invaluable in studying works of art. This course aims to inform students about the technical study of art, which in the last fifty years has become a major field of research. Most classes will be held at the Museum of Fine Arts, Houston, or other Houston collections. Graduate/Undergraduate Equivalency: HART 307. Mutually Exclusive: Cannot register for HART 549 if student has credit for HART 307.

HART 551 - MODELS OF ABSTRACTION
Short Title: MODELS OF ABSTRACTION
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will examine a range of different models of abstract painting and sculpture as they appear throughout the twentieth century. Looking closely at the historical contexts that gave rise to abstraction particular attention will be paid to how apparently similar forms of abstraction can denote very different kinds of meaning. Graduate students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 451. Mutually Exclusive: Cannot register for HART 551 if student has credit for HART 451.
HART 552 - MANET(S) AND MODERNISM(S)
Short Title: MANET(S) AND MODERNISM(S)
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar considers the pivotal figure of Edouard Manet. Combining a study of paintings from throughout his career, with close readings of primary sources, we will assess the key aspects of his style and subject matter. We will also consider art historical to his work and relationship to modernity. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideals associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 452. Mutually Exclusive: Cannot register for HART 552 if student has credit for HART 452.

HART 553 - NORTHERN RENAISSANCE ART
Short Title: NORTHERN RENAISSANCE ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will consider the emergence and flourishing of Northern Renaissance art. The course will be divided into several major themes and artists, including Van Eyck, Dürer, Botticelli,丢勒, Holbein, and Old Masters of Northern European art. Students will be expected to attend all classes, complete all assignments, and write a substantial research paper. Graduate/Undergraduate Equivalency: HART 350. Mutually Exclusive: Cannot register for HART 553 if student has credit for HART 350.

HART 554 - AGE OF ROMANTICISM IN EUROPE
Short Title: AGE OF ROMANTICISM IN EUROPE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will consider the emergence and flourishing of Romanticism in the visual arts in Europe. We will consider artists from France, Germany and Britain, including Eugene Delacroix, J.M.W. Turner, John Constable and Caspar David Friedrich. We will combine study of paintings with readings of contemporaneous philosophers and writers, including Hegel and Byron. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 354. Mutually Exclusive: Cannot register for HART 554 if student has credit for HART 354.

HART 555 - JACQUES-LOUIS DAVID: REVOLUTION
Short Title: JACQUES-LOUIS DAVID: REVOLUTION
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar explores the emergence of video and 'expanded cinema' as a primary field of artistic practice over the course of the 1960s and 1970s. We will examine seminal works by artists including Andy Warhol, Dan Graham, and Robert Whitman as well as the shifting aesthetic, political, and media landscapes in which this work emerged. For each lecture, Graduate Students will be assigned readings. They will write an annotated bibliography of all the readings to be turned in at the end of the semester. We will meet for an additional two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 457. Mutually Exclusive: Cannot register for HART 555 if student has credit for HART 355.

HART 556 - SEX AND MONEY: THE SPECIES DIVIDE
Short Title: SEX & MONEY: THE SPECIES DIVIDE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will explore issues surrounding sex and money in medieval and early modern Europe and their impact on visual representations of both humans and non-humans. It will introduce students to such theories as feminism, Marxism, and posthumanism as well as medieval beliefs about the Seven Deadly Sins. Some course meetings will take place at Houston-area museums where students will engage with artworks in person. Graduate students will work on a more advanced level than undergraduate students with higher expectations and additional readings. Graduate students will be expected to complete all requirements of the class and will meet an additional seven times to discuss the interpretive and methodological ideas associated with the readings and their research papers. Graduate/Undergraduate Equivalency: HART 356.

HART 557 - VIDEO AND EXPANDED CINEMA
Short Title: VIDEO AND EXPANDED CINEMA
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar explores the emergence of video and 'expanded cinema' as a primary field of artistic practice over the course of the 1960s and 1970s. We will examine seminal works by artists including Andy Warhol, Dan Graham, and Robert Whitman as well as the shifting aesthetic, political, and media landscapes in which this work emerged. For each lecture, Graduate Students will be assigned readings. They will write an annotated bibliography of all the readings to be turned in at the end of the semester. We will meet for an additional two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 457. Mutually Exclusive: Cannot register for HART 557 if student has credit for HART 457.
HART 558 - IMPRESSIONISM AND POST-IMPRESSIONISM
Short Title: IMPRESSIONISM/POST-IMP
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This class will explore painting in France from approximately 1865 to 1900. Mixing lectures and classroom discussion, we will focus on individual artists including Claude Monet, Edgar Degas, Mary Cassatt, Georges Seurat, Vincent van Gogh, and Paul Czanne. We will also consider and discuss a set of critical issues surrounding these artists, including the politics of gender and class within the changing urban setting of Paris. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 358. Mutually Exclusive: Cannot register for HART 558 if student has credit for HART 358.

HART 559 - ART OF THE 60s AND 70s
Short Title: ART OF THE 60s AND 70s
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: By all accounts the 1960s and 1970s marked one of the most vibrant, experimental, audacious, and - above all - contentious periods in the history of avant-garde modernism. This seminar will examine the momentous shift from the international dominance of American Abstract Expressionism in the 1950s to a wide array of global counter-movements in the 1960s and 70s. Possible topics include: Happenings, Minimalism, Fluxus, Conceptualism, Nouveau Realisme, Body Art, Structuralist Film, Gutai, Light and Space, Noeconetism, Arte Povera, The Situationist International, etc. Graduate students will be expected to complete all the requirements of the class in addition to writing a substantial research paper. Graduate/Undergraduate Equivalency: HART 461. Mutually Exclusive: Cannot register for HART 559 if student has credit for HART 461.

HART 561 - WHAT IS CINEMA? CLASSIC READINGS OF CLASSIC FILMS
Short Title: WHAT IS CINEMA?
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Using a variety of readings now considered classics as our guide, this class will look closely at a broad range of films and film movements discussed by critics and theorists such as Rudolf Amheim, Jean Epstein, Sergei Eisenstein, Walter Benjamin and Andre Bazin. Graduate students will be assigned additional readings and will be required to write a substantial research paper (20-25 pages). Graduate/Undergraduate Equivalency: HART 361. Mutually Exclusive: Cannot register for HART 561 if student has credit for HART 361.

HART 562 - UPCYCLING: MEANINGFUL REUSE IN ART AND MONUMENTS FROM ANTIQUITY TO TODAY
Short Title: UPCYCLING
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this seminar, we will explore the phenomenon of upcycling - intentionally meaningful reuse - by investigating the intersection of reuse and memory in the art and monuments of many different times, places, and people, from prehistory to the modern art that surrounds us on the Rice campus. Graduate students will be assigned up to 10 additional readings over the semester and complete a 15-20 page final paper. Graduate/Undergraduate Equivalency: HART 362. Mutually Exclusive: Cannot register for HART 562 if student has credit for HART 362.

HART 563 - PRACTICINGUTOPIA: ARCHITECTURE, EUGENICS AND THE MODERN LATIN CITY
Short Title: PRACTICING UTOPIA
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar will explore the alliance between aesthetics, science, and ideology at the core of French and Latin American modernism. Focusing on early twentieth-century scientific and cultural dialogues between France and Latin America, this seminar will have as main territories of exploration: Paris, Rio de Janeiro, Buenos Aires, Havana, and Caracas. Graduate/Undergraduate Equivalency: HART 463. Mutually Exclusive: Cannot register for HART 563 if student has credit for HART 463.

HART 565 - A REVOLUTION FROM WITHIN: TRENDS IN CONTEMPORARY CUBAN CULTURE
Short Title: TRENDS IN CUBAN CULTURE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This research seminar will explore contemporary trends in Cuban culture through literary texts, films, music and works of art. We will examine the ways in which politics and the practices of artistic representation intersect in post-revolutionary Cuba. A research trip to Cuba has been organized as part of this seminar. Course taught in Spanish. Graduate students will be expected to complete all the requirements of the course in addition to writing a research paper at the end of the semester. Instructor Permission Required. Graduate/Undergraduate Equivalency: HART 304. Mutually Exclusive: Cannot register for HART 565 if student has credit for HART 304.
### HART 566 - LATIN AMERICAN BODIES: ON MODERNISM
**Short Title:** LATIN AMER BODIES: ON MODERNISM  
**Department:** Art History  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This seminar will examine theories and practices of modernism and modernization within Latin America-Europe Dialogues. Designed as a laboratory of ideas and forms, this seminar will probe critical perspectives on art and architecture’s relation to society and science. Each week, we will examine a theorist, an artist, and an architect. Graduate students will be expected to complete all the requirements in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 465. Mutually Exclusive: Cannot register for HART 566 if student has credit for HART 465.

### HART 568 - FROM THE SUBLIME TO THE SUSTAINABLE: ART, ARCHITECTURE AND NATURE
**Short Title:** ART, ARCHITECTURE AND NATURE  
**Department:** Art History  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This seminar considers theories and narratives of nature in the crafting of modern and contemporary art and architecture in the Americas. Artists and architects will include Maria Fernanda Cardoso, Rogelio Salmona (Colombia); Ana Mendieta, Ricardo Porro (Cuba); Ana Maria Tavares, Lina Bo Bardi (Brazil); Mark Dion and Buckminster Fuller (USA). For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 302. Mutually Exclusive: Cannot register for HART 568 if student has credit for HART 302.

### HART 569 - STATE OF THE ART
**Short Title:** STATE OF THE ART  
**Department:** Art History  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** What is the current state of the art historical field? Looking at contemporary scholarship across a range of historical periods, the class will introduce students to a selection of some of the most important, ground-breaking, and / or influential writings in art history produced in the last 25 years or so. Paying particular attention to an array of recent trends, methodologies, and political interventions, this class will examine some of the most pressing questions, debates, and advanced interdisciplinary theories within current art historical practice. In addition to the presentations and short-analysis paper (4-5 pages) required for the undergraduate-level course, the graduate-level course requires a final paper of 20-25 pages. Graduate/Undergraduate Equivalency: HART 369. Mutually Exclusive: Cannot register for HART 569 if student has credit for HART 369. Repeatable for Credit.

### HART 570 - TRENDS IN CONTEMPORARY ART
**Short Title:** TRENDS IN CONTEMPORARY ART  
**Department:** Art History  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This seminar will map the terrain of contemporary art as it has developed in the wake of political and theoretical engagements of the 1990’s. For many critics, Contemporary Art practice has given way to the worst aspects of spectacular culture losing sight of the political, theoretical, and artistic rigor that characterized the historical and avant-garde. Graduate students will be assigned 1-2 additional readings each week and prepare a final seminar paper of 20-30 pages. Graduate/Undergraduate Equivalency: HART 349. Mutually Exclusive: Cannot register for HART 570 if student has credit for HART 349.

### HART 571 - CHINESE PAINTING
**Short Title:** CHINESE PAINTING  
**Department:** Art History  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This course examines Chinese painting from ancient times to the early twentieth century. Issues of examination include themes, styles, and functions of Chinese painting; the interrelationship between paintings and the intended viewers; regionalism; images and words; foreign elements in Chinese painting. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 371. Mutually Exclusive: Cannot register for HART 571 if student has credit for HART 371.
HART 572 - CHINESE ART AND VISUAL CULTURE
Short Title: CHINESE ART AND VISUAL CULTURE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this course, we will study how various artistic styles developed in historical, social and cultural contexts from the ancient period to the present day. Through the careful examination of architecture, calligraphy, painting, sculpture, ceramics, bronze, and film, students will gain a deeper understanding of Chinese art and visual culture. For each class meeting, graduate students will be assigned additional readings. They will write an annotated bibliography of all the readings to be turned in at the end of the semester. We will meet for an additional two or three times to discuss the interpretive and methodological problems and ideas associated with the readings. Graduate students will be expected to complete all requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 372. Mutually Exclusive: Cannot register for HART 572 if student has credit for HART 372.

HART 573 - EVOLUTION CUSTOM BUILT: ARCHITECTURE, GENETICS, AND THE ANTHROPOCENE
Short Title: EVOLUTION CUSTOM BUILT
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In the twentieth century, architects, scientists, engineers and technocrats attempted to free humanity from the constraints of nature... and were met with developments in science and technology sufficient to do so. Tracking the late nineteenth- and twentieth-century techno-scientific impetus to re/design the shape of the future, from the level of genes to the scale of the built environment, this seminar combines investigations and theories of landscape, object-oriented ontology, architecture and ecocriticism. In the first part of the course, we’ll unpack the history of modern agrilogistic thought, which projected empty, unoccupied space for opportunity and development onto otherwise occupied chromosomes, cultures and landscapes. The second section of this seminar traces the drive to order the biological world, using logics of efficiency and accountability, by rereading developments in energy, industry and resource development through the lens of object oriented ontology. Finally, we’ll reconsider developments in the plant, animal and human sciences that bolstered humanity’s twentieth-century hubris, from the birth of genetics to the role radiation played in liberating plant breeding from the confines of Mendelian crosses. Graduate students will have six additional readings and extra presentations of the landscape and architecture projects. Graduate/Undergraduate Equivalency: HART 473. Mutually Exclusive: Cannot register for HART 573 if student has credit for HART 473.

HART 574 - THE VISUAL CULTURE OF THE FRENCH REVOLUTION
Short Title: ART OF THE FRENCH REVOLUTION
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will address the central role that art and visual culture played in the French Revolution. While engaging in a detailed study of the causes, progress and outcome of the Revolution we will pay attention to painting, prints, festivals and the wide range of visual culture that not only reflected the Revolution but helped fuel it. Graduate students will have extensive readings, a graduate discussion section in addition to the usual class meeting times. Three short reaction papers and a final original research seminar paper (15-20 pages) will also be required. Graduate/Undergraduate Equivalency: HART 374. Mutually Exclusive: Cannot register for HART 574 if student has credit for HART 374.

HART 575 - ART BETWEEN THE WARS: EUROPEAN MODERNISM, 1918-1940
Short Title: ART BETWEEN WARS
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Beginning in the aftermath of the First World War, a conflict that devastated the physical and psychological landscape of Europe, and ending with the rise of various totalitarian regimes (Fascism, Stalinism) this seminar will examine European art of the interwar period, from 1918-1940. Potential topics will include Surrealism, The Russian avant-garde, the return to order, Esprit-Nouveau, the machine aesthetic, De Stijl, avant-garde cinema, etc. Graduate/Undergraduate Equivalency: HART 365. Mutually Exclusive: Cannot register for HART 575 if student has credit for HART 365.

HART 576 - EAST & WEST: MEDIEVAL VISUAL CULTURE IN CHINA AND NORTHERN EUROPE
Short Title: EAST AND WEST
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course explores a series of issues that are critically important for the medieval art of both China and northern Europe. Topics include materials and techniques; public and private art: commerce, technology and prints; art and motion; archaeology; paradise and hell; maps and space; the gaze; erotica; patronage; and multiculturalism. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional hour every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 376. Mutually Exclusive: Cannot register for HART 576 if student has credit for HART 376.
HART 577 - MEDIEVAL MANUSCRIPTS
Short Title: MEDIEVAL MANUSCRIPTS
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar explores illuminated European manuscripts from late antiquity through the early sixteenth century. It examines manuscripts’ functions, patrons, makers, and materials and technique, as well as such issues as the relationship between text and image and the manuscript’s ideological stance. Students have the opportunity to study original medieval illuminations. Graduate/Undergraduate Equivalency: HART 377. Mutually Exclusive: Cannot register for HART 577 if student has credit for HART 377.

HART 578 - DUTCH ART IN THE AGE OF REMBRANDT
Short Title: DUTCH ART IN AGE OF REMBRANDT
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will examine Dutch and Flemish seventeenth-century art, including major masters, such as Rembrandt, Rubens, and Vermeer, and major developments, such as the rise of still life, genre, and landscape painting. It will also explore women artists, Delft tiles, doll’s houses, and multicultural aspects of art production. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 482. Mutually Exclusive: Cannot register for HART 578 if student has credit for HART 482.

HART 581 - COLLAGE AND ITS HISTORIES
Short Title: COLLAGE AND ITS HISTORIES
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This class will explore the centrality of collage to the development of the 20th century art and film. Beginning with the seminal achievements of Picasso and Braque, we will examine works across geographical and medium boundaries, including Dada photomontage, early avant-garde film, 1960s happenings, and the reformulation of collage aesthetics in 1980s postmodernism. For each lecture, Graduate students will be assigned additional readings. They will write an annotated bibliography of all the readings to be turned in at the end of the semester. We will meet for an additional two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 381. Mutually Exclusive: Cannot register for HART 581 if student has credit for HART 381.

HART 582 - CAESAR’S PALACE: AUTHOR(ITY) AND MEANING IN THE ROMAN IMPERIAL RESIDENCE
Short Title: CAESAR’S PALACE
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Inaugurated against the calamitous backdrop of the First World War, 'Dada,' the artist Francis Picabia claimed, 'smells of nothing, it is nothing, nothing, nothing.' This seminar will examine the aesthetics of shock and nihilism (literally, 'nothingness'), developed by Dada in six cities: Zurich, Berlin, Colgne, Hannover, New York, and Paris. For each lecture Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 386. Mutually Exclusive: Cannot register for HART 586 if student has credit for HART 386.
HART 588 - POST WAR EUROPEAN CINEMA
Short Title: POST WAR EUROPEAN CINEMA
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This class surveys major developments in European cinema from the late 1940s to the late 1960s. Our study will include such movements as Italian Neorealism, German Rubble Films, French New Wave, and Soviet cinema in the Thaw. Particular attention will be paid to such issues as cinema and post-war reconstruction, memory and nation, and body and space. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional hour every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 388. Mutually Exclusive: Cannot register for HART 588 if student has credit for HART 388.

HART 590 - METHODS OF ART HISTORY
Short Title: METHODS OF ART HISTORY
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar surveys approaches the study of art and visual culture from art history's origins as a discipline to the present day. We will study a range of works of art and interrogate many of the essential terms of art historical study. Frequent guest lectures will be featured. Instructor Permission Required.

HART 593 - WALTER BENJAMIN
Short Title: WALTER BENJAMIN
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar will examine the key theoretical writings on media and modernity by Walter Benjamin, one of the first twentieth-century critics to place new forms of visual experience and technology at the center of his understanding of modern life. The course will pay particular attention to Benjamin's writings on urbanism, film and photography, and the ways in which these relate to avant-garde practices such as Dada, Surrealism, and New Objectivity (Neue Sachlichkeit). For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional hour every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 493. Mutually Exclusive: Cannot register for HART 593 if student has credit for HART 493.

HART 594 - STUDIES IN CONTEMPORARY LITERATURE AND CULTURE
Short Title: CONTEMP. LIT AND CULTURE
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Please consult the English department website for additional course information. Recent topics have included Global English; Globalization and its Discontents; and Critical Regionalisms. Cross-list: ENGL 594. Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

HART 595 - READINGS IN MEDIA HISTORY AND THEORY
Short Title: READINGS IN MEDIA HISTORY
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Understanding ‘media’ broadly, this class explores a range of historical and theoretical readings around the term. Typewriters, photography and television will be among our topics, guided by two primary questions: how have developments in media affected, even determined, human perception and communication, and how have artists and critics responded to such changes? In addition to all undergraduate requirements, graduate students will be assigned additional weekly readings and asked to write a final research paper of 20-30 pages. Graduate/Undergraduate Equivalency: HART 495. Mutually Exclusive: Cannot register for HART 595 if student has credit for HART 495.

HART 596 - FROM EXPRESSIONISM TO FASCISM: ART AND FILM IN GERMANY
Short Title: FROM EXPRESSIONISM TO FASCISM
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Focusing on the tumultuous years of the Weimar Republic, this class will examine art and film in Germany from the birth of Expressionism through the end of the Nazi dictatorship. Topics covered will include Expressionism, Dada, the Bauhaus, and Fascist aesthetics. Particular attention will be paid to the relations between aesthetics and politics and art and everyday life, all central concerns of the art and criticism of the period. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 398. Mutually Exclusive: Cannot register for HART 596 if student has credit for HART 398.
HART 597 - SPECIAL TOPICS IN MUSEUM CURATORIAL STUDIES
Short Title: SPECIAL TOPICS: MUSEUM STUDIES
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Special Topics class taught by visiting Curators from the MFAH. FA 2016: Intro to Islamic Art at the MFAH: This course explores the dynamic, multifaceted character of Islamic art and architecture across the globe. Travel from Spain to India studying original art at the Museum of Fine Arts. Gain understanding of the historical, religious, social, craft, and visual contexts of the art. Graduate/Undergraduate Equivalency: HART 297. Mutually Exclusive: Cannot register for HART 597 if student has credit for HART 297.

HART 600 - PREPARATION FOR CANDIDACY I
Short Title: PREPARATION FOR CANDIDACY I
Department: Art History
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Independent Study
Credit Hours: 3-9
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Preparation for qualifying exams.

HART 601 - PREPARATION FOR CANDIDACY II
Short Title: PREPARATION FOR CANDIDACY II
Department: Art History
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Independent Study
Credit Hours: 3-9
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Preparation for qualifying exams and dissertation prospectus.

HART 603 - BAYOU BEND GRADUATE INTERNSHIP I
Short Title: BAYOU BEND GRAD INTERNSHIP I
Department: Art History
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate Internship at Bayou Bend, the American Decorative Arts Center of the Museum of Fine Arts, Houston. Must be a Jameson Fellowship recipient to enroll. Instructor Permission Required. Graduate/Undergraduate Equivalency: HART 400. Mutually Exclusive: Cannot register for HART 603 if student has credit for HART 400. Repeatable for Credit.

HART 604 - BAYOU BEND GRADUATE INTERNSHIP II
Short Title: BAYOU BEND GRAD INTERNSHIP II
Department: Art History
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate Internship at Bayou Bend and The American Decorative Arts Center of the Museum of Fine Arts, Houston. Must be a Jameson Fellowship recipient to enroll. Instructor Permission Required. Graduate/Undergraduate Equivalency: HART 401. Mutually Exclusive: Cannot register for HART 604 if student has credit for HART 401. Repeatable for Credit.

HART 606 - ICONOCLASMS: THE DESTRUCTION OF IMAGES
Short Title: ICONOCLASMS
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: With a focus on the modern period, this seminar will examine iconoclastic theory and practice from antiquity to the present. Why, we will ask, have people so incessantly felt compelled to ban or destroy images, and what can this compulsion tell us about the nature of visual representation itself? Graduate/Undergraduate Equivalency: HART 406. Mutually Exclusive: Cannot register for HART 606 if student has credit for HART 406.

HART 607 - POP ART
Short Title: POP ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar will examine the history and significance of Pop art by looking in detail at three or four primary figures associated with the term; likely subjects include Andy Warhol, Gerhard Richter, Ed Ruscha, Richard Hamilton, and others. Visits to local museum collections and attention to theoretical writings on art and mass culture are planned. Graduate/Undergraduate Equivalency: HART 407. Mutually Exclusive: Cannot register for HART 607 if student has credit for HART 407.
HART 612 - ADVANCED SEMINAR IN ARCHITECTURE
Short Title: ADV SEMINAR IN ARCHITECTURE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Small, focused, advanced discussion, workshop and/or design based courses on topics of recent research in architecture, delivered by RSA full time or visiting faculty. This seminar is open to RSA undergraduate students junior-level and above, and RSA graduate students. Students from other departments may enroll in the course with instructor permission. See the RSA website for more information: arch.rice.edu/courses. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day class by the individual instructor. Cross-list: ARCH 612. Mutually Exclusive: Cannot register for HART 612 if student has credit for HART 412. Repeatable for Credit.

HART 623 - BUDDHIST AND DAOIST VISUAL CULTURES IN TRADITIONAL CHINA
Short Title: BUDDHIST AND DAOIST ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar explores the visual materials and their context that shed light on pre-modern China's Buddhist, Daoist, funeral, and other diverse religious and ritual practices. Topics of discussion include methodologies, Dunhuang Buddhist grottoes and 'library caves,' Daoist body and cosmos, images of heaven, hell and rebirth, art and ritual, multicultural aspects, patronage, tombs, printing, women, and so on. Through careful examinations of the proposed topics and assigned readings, students will develop analytical skills, critical thinking, and holistic views regarding the meaning, function, and style of the arts of diverse religious traditions, as well as people from different social and ethnic backgrounds who participated in the making, spreading, and use of religious visual culture in traditional China. Graduate Students will be assigned additional readings and be required to write a substantial research paper (20-25 pages, excluding footnotes). Students should have some background in Chinese art, history, or religions. Graduate/Undergraduate Equivalency: HART 326. Mutually Exclusive: Cannot register for HART 623 if student has credit for HART 323.

HART 626 - MATERIAL, FORM, SPACE, TIME: CONCRETE AND THE REVOLUTION OF SPACE IN ANCIENT ROME
Short Title: MATERIAL, FORM, SPACE, TIME
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: 'Architectural Revolution' has been tied to Le Corbusier, the Eiffel Tower, the Louvre, Brunelleschi and to towering Gothic cathedrals. At the foundation of all these endeavors is the Concrete Revolution in Roman Architecture. In this course we'll look at the four essential elements of this revolution from the fourth century BCE to the fifth century CE, and we'll investigate how shifts in application and experience created a background that informs design to this day. Cross-list: ARCH 626. Graduate/Undergraduate Equivalency: HART 326. Mutually Exclusive: Cannot register for HART 626 if student has credit for HART 326.

HART 627 - THE GENESIS OF ROMAN ART
Short Title: THE GENESIS OF ROMAN ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course explores the roots of the art and architecture of ancient Rome (ca. 600-200 BCE). In it we will examine the earliest vestiges of sculpture, painting and architecture from the Archaic and Classical periods to the twisted forms of Hellenistic conquest. You will grapple with the questions of cultural agency, connoisseurship, cultural interaction, network and object theories and spatial imagination to question standard narratives that divide Rome in this time from neighboring Greek polities. Graduate/Undergraduate Equivalency: HART 327. Mutually Exclusive: Cannot register for HART 627 if student has credit for HART 327.

HART 630 - INDEPENDENT STUDY - FOURTEENTH CENTURY GOTHIC ARCHITECTURE
Short Title: INDEPENDENT STUDY
Department: Art History
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Individual readings in 14th century gothic art and architecture. Instructor Permission Required.
HART 638 - HART IN THE WORLD SPRING SEMINAR
Short Title: HART IN THE WORLD SEM
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar serves as required preparation for the planned "HART in the World" research travel course (HART 697) offered in the immediately following summer session. Students will study a range of materials—including works of art, literature, films, and historical studies—related to the planned destination city. Graduate students will be required to do additional reading, give two presentations, and submit a 25-35 page paper. To be offered every other year. Graduating students are not eligible. More information available at: https://arthistory.rice.edu/opportunities/hart-world
HART 638. Mutually Exclusive: Cannot register for HART 638 if student has credit for HART 338. Repeatable for Credit.
Course URL: www.arthistory.rice.edu/opportunities/hart-world (http://www.arthistory.rice.edu/opportunities/hart-world/)

HART 640 - ISSUES IN THE HISTORY OF PRINTS, PRE-MODERN TO PRESENT
Short Title: ISSUES IN HISTORY OF PRINTS
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: With their distinctive technical, social, and commercial associations, prints are often sidelined in traditional art histories. This course will introduce recent scholarship on the multiple image from the late middle ages to the present, with stress on the transformations of printmaking from the development of photography into our digital age. Graduate/Undergraduate Equivalency: HART 440. Mutually Exclusive: Cannot register for HART 640 if student has credit for HART 440.

HART 645 - FOUNDATIONS AND THE HISTORY AND THEORY OF ARCHITECTURE I (1450-1850)
Short Title: FOUNDATIONS IN ARCH I
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Lectures and discussions focusing on significant architectural and urban practices and ideas formulated before 1850. Cross-list: ARCH 645.

HART 651 - ART, REVOLUTION, WAR: MODERN ART IN VIOLENT TIMES
Short Title: ART, REVOLUTION, WAR
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar examines the ambition (or lack thereof) of modern art to play an active role during periods of violent conflict. From the French Revolution to the recent disastrous American engagements in the Middle East wars to the never-ending war on terror, artists have produced images that attempt to actively engage in these conflicts. This class will examine the relative successes and failures of art during times of violent revolution and war within the modern era. Graduate/Undergraduate Equivalency: HART 351. Mutually Exclusive: Cannot register for HART 651 if student has credit for HART 351.

HART 653 - ART AND EMOTION
Short Title: ART AND EMOTION
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar will examine the role played by emotion in our response to works of art. What is the relationship of emotion to the specific formal properties of a given work of art, such as color, texture, shape, line quality, sound, and so on? What role does our cognitive faculties play in determining our emotional response to art? Are there political stakes to emotional affect? These and other questions will be examined. Graduate/Undergraduate Equivalency: HART 353. Mutually Exclusive: Cannot register for HART 653 if student has credit for HART 353.

HART 658 - SPECIAL TOPICS: THE POLITICAL HISTORY OF ART BETWEEN THE WORLD WARS
Short Title: SPECIAL TOPIC: ART BETWEEN WARS
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course focuses on art and architecture that intersected with the struggles between democracy, communism, and fascism. It will deal with prominent architects and artists who worked for or critiqued specific regimes. We will engage with fundamental political events in modern society - such as the Soviet Revolution, the rise of fascism in Italy, Hitler and the Jewish genocide, and democratic struggles of the Popular Front in France. Graduate students will be expected to complete all the requirements for the class in addition to writing a substantial research paper at the end of the semester.
HART 659 - CINEMAS OF URBAN ALIENATION
Short Title: CINEMAS OF URBAN ALIENATION
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar examines cinematic engagements with urban spaces and experiences around the world spanning the last two centuries. Particular attention will be paid to issues of migration, marginality, colonialism, war and post-war, nostalgia and memory, race and gender. Cities of focus include Berlin, Istanbul, Moscow, Algiers, Beirut and Paris. Our weekly discussions of individual films will be grounded in critical writings of the cities’ histories and theories of space and film. Cross-list: ARCH 654. Graduate/Undergraduate Equivalency: HART 359. Mutually Exclusive: Cannot register for HART 659 if student has credit for HART 359.

HART 661 - CHINESE BUDDHIST WOODCUTS 850-1450
Short Title: CHINESE BUDDHIST WOODCUTS
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): HART 571 or HART 623
Description: This course will study woodblock print illustrations in the context of cultural change. Buddhism and printing have been closely related since the dawn of the age of print. Many scriptures reproduced by woodblock printing were imbedded with illustrations, which themselves offer an effective tool to study cultural transformation. The seminar draws sources from both images and texts. Its cross-cultural perspective highlights nomads and non-Chinese peoples as agents of cultural transformation, with additional visual comparisons from Korean, Japanese, and Islamic traditions. In addition to weekly discussions, the final evaluation includes a 25-page research paper and a 30-minute presentation. Students should have an advanced background in Chinese art to take this seminar. Course will be taught in English and Chinese. Instructor Permission Required. Graduate/Undergraduate Equivalency: HART 460. Mutually Exclusive: Cannot register for HART 661 if student has credit for HART 460.

HART 665 - A VISUAL CULTURE TRAVELOGUE: ART AND POLITICS IN MODERN LATIN AMERICA
Short Title: ART/ POLITICS MOD LATIN AMER
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Providing an alternative understanding of modernity and its artistic partner, modernism, this survey course traverses the political, social and cultural landscapes that informed and formed the art and architecture of Latin America, from the early twentieth century to the present. Graduate students will be expected to write a more extensive research paper (20-25 page-long paper rather than the 8-10 page - paper required to undergraduate students. The use of primary sources is mandatory. Graduate/Undergraduate Equivalency: HART 265. Mutually Exclusive: Cannot register for HART 665 if student has credit for HART 265.

HART 675 - LATIN-EUROPE/LATIN-AMERICA: THE AESTHETICS AND POLITICS OF MODERN CITIES
Short Title: LATIN-EUROPE/LATIN-AMERICA
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course challenges our pre-conceived maps of the world, highlighting Latin America’s place within our understanding of modernity as a product of transnational interconnections. Transversing the Atlantic, this course traces the interactions of capitalism and culture, science and aesthetics, and the ideologies that informed and formed the urban fabric and spatial politics of important cities in the modern Latin world - Paris, Rio de Janeiro, Rome, Buenos Aires, Barcelona, Havana, and Brasilia. Cross-list: ARCH 675. Graduate/Undergraduate Equivalency: HART 375. Mutually Exclusive: Cannot register for HART 675 if student has credit for HART 375.

HART 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Art History
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Laboratory, Lecture, Seminar, Lecture/Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

HART 689 - INDEPENDENT STUDY IN FILM AND MEDIA STUDIES
Short Title: INDEPENDENT STUDY
Department: Art History
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Independent study, reading, or special research in film & media studies on the graduate level. Repeatable for Credit.

HART 691 - MIDDLE EASTERN EUROPEAN CINEMA
Short Title: MEMORY AND PLACE IN CINEMA
Department: Art History
Grade Mode: Audit
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Focuses on cinematic explorations of and preoccupations with the notion of place. Screenings include iconic and lesser - known films from Europe and the Middle East that offer diverse lenses and contexts (love, family, landscapes, borders, trauma, exile) through which we will examine questions of real and imagined place and the politics of memory. Cross-list: ANTH 578. Graduate/Undergraduate Equivalency: HART 391. Mutually Exclusive: Cannot register for HART 691 if student has credit for HART 391.
HART 695 - ROMAN ARCHAEOLOGY FIELD SCHOOL  
Short Title: ROMAN ARCHAEOLOGY FIELD SCHOOL  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Research  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This is a traditional archaeological field course, taught in the Roman Forum. Techniques and advanced technologies for processing, conserving, and recording archeological materials are emphasized. Students will become familiar with procedures for ceramics, metals, plant and animal remains and building materials. Course work include lectures, hands-on excavation, and informal discussion. Instructor Permission Required. Graduate/Undergraduate Equivalency: HART 395. Recommended Prerequisite(s): HART 201 or ANTH 205 or ANTH 303. Mutually Exclusive: Cannot register for HART 695 if student has credit for HART 395.

HART 697 - HART IN THE WORLD FIELD STUDY  
Short Title: FIELD STUDY  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Research  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Through on-site lectures, seminar discussions, museum visits, architectural itineraries, and field trips, this course will explore the complex political, social, and cultural histories of a major international metropolis. The city visited changes each time the course is offered; past locations have included Istanbul, Rome, and Rio de Janeiro. More information on upcoming locations is available at http://arthistory.rice.edu/opportunities/hart-world. Graduating students are not eligible. Instructor Permission Required. Graduate/Undergraduate Equivalency: HART 397. Mutually Exclusive: Cannot register for HART 697 if student has credit for HART 397. Repeatable for Credit.  
Course URL: www.arthistory.rice.edu/opportunities/hart-world (http://www.arthistory.rice.edu/opportunities/hart-world/)

HART 700 - SUMMER RESEARCH FOR Ph.D.  
Short Title: SUMMER RESEARCH FOR Ph.D.  
Department: Art History  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Research  
Credit Hours: 6  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Summer Research of Ph.D. Repeatable for Credit.

HART 800 - Ph.D. RESEARCH  
Short Title: DISSERTATION RESEARCH  
Department: Art History  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Research  
Credit Hours: 1-9  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Dissertation Research for Ph.D. candidates. Repeatable for Credit.
ASIA 222 - THE WORLD AND SOUTH ASIA
Short Title: WORLD AND SOUTH ASIA
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction to important 20th and 21st-century writers in English from South Asia - the region that includes India, Pakistan, Bangladesh and Sri Lanka. Readings include award-winning and bestselling works (fiction and non-fiction) by writers who address a wide range of issues including national and cultural identity, colonialism, sexuality, religion, globalization and political violence. Cross-list: ENGL 222.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ASIA 227 - MODERN KOREA: HISTORY, CULTURE, AND SOCIETY
Short Title: MODERN KOREA
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course aims to introduce students to modern Korean culture and society from a historical perspective. The course will map the historical and geopolitical elements that have shaped the national identity and mentalities to help students better understand the transformation of Korean society as the world order changed. Counts as HIST credit.

ASIA 230 - ASIAN RELIGIONS IN AMERICA
Short Title: ASIAN RELIGIONS IN AMERICA
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A survey course on Hinduism, Buddhism, Taoism, and Jainism in America, from the colonial period to the present, with a special focus on American metaphysical religion, the counterculture, the New Age, and the history of Western Colonialism, transcultural encounter, translation and immigration. Cross-list: RELI 230.

ASIA 231 - AMERICAN METAPHYSICAL RELIGION
Short Title: AMERICAN METAPHYSICAL RELIGION
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will survey the religions of India, namely Hinduism, Buddhism, Jainism, Christianity, Islam, and Sikhism. Emphasis will be placed on the study of scriptures of these traditions and their continuing global relevance, particularly in American history and culture. Cross-list: RELI 231.

ASIA 232 - RELIGIONS FROM INDIA
Short Title: RELIGIONS FROM INDIA
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will survey the religions of India, namely Hinduism, Buddhism, Jainism, Christianity, Islam, and Sikhism. Emphasis will be placed on the study of scriptures of these traditions and their continuing global relevance, particularly in American history and culture. Cross-list: RELI 232.

ASIA 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

ASIA 251 - SEX, MONEY, AND POWER AROUND THE WORLD
Short Title: SEX, MONEY, AND POWER
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An interdisciplinary course exploring lives and well-being in the context of gendered international and domestic politics and economic processes. Emphasis on the implications of power relations at levels from the household to the global for women and men around the world (with particular attention to Asia). Cross-list: POLI 250, SWGS 250.
ASIA 295 - INTRODUCTION TO TRANSTATIONAL ASIAN STUDIES
Short Title: INTRO TO TRANSTATIONAL ASIA
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: As a gateway course for the Asian Studies major, Introduction to Transnational Asia is designed to give students diverse perspectives of learning about Asia. The course combines lecture, historical and contemporary textual analysis, group study, mini research project, and presentation.

ASIA 299 - DISCOVER ASIA IN HOUSTON
Short Title: DISCOVER ASIA IN HOUSTON
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The goal of this course is to help students learn about others' cultures, leading them to critically reflect on their own culture. Through readings, audio-visual and hands-on materials, guest lectures, and field trips, students are exposed to diverse cultures of Asia in Houston. International students and domestic students are paired to form a team for the final presentation. Department Permission Required.

ASIA 303 - ASIA ON THE MOVE: GENDER, SEXUALITY, AND GLOBAL MIGRATION
Short Title: ASIA ON THE MOVE
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An interdisciplinary course exploring the contemporary lived experiences of migrants from Asia. We will analyze how gender and sexuality shape patterns of migration, the regulation of mobilities, and citizenship and belonging. This course focuses on the critical role of colonialism and contemporary globalization in shaping Asian migrations.

ASIA 304 - HUMAN MOBILITY IN THE ASIA-PACIFIC
Short Title: HUMAN MOBILITY IN ASIA-PACIFIC
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Description: This course introduces students to the cross-disciplinary study of human mobility in the Asia-Pacific. Intra-Asia flows of people will be examined in order to trace their multifaceted implications. On completing the course, students should be able to present their own thinking on complex issues related to global migration.

ASIA 314 - RELIGION, IDENTITY, AND NATION IN MODERN SOUTH ASIA
Short Title: RELIGION IN MODERN SOUTH ASIA
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines how religion has emerged to define collective identities of modern nation states in South Asia. It will delineate how Buddhism, Hinduism, and Islam were conceptualized in colonial period and how they have influenced the shaping of identities of post-colonial nations. Case studies from India, Pakistan, Bangladesh, and Sri Lanka will be discussed in detail.

ASIA 315 - GENDER AND ISLAM
Short Title: GENDER AND ISLAM
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Explores the lives of Muslim women in Asia, the Middle East, Europe, and North America; analyzes constructions of gender in the Islamic world overtime; the challenges faced from such diverse quarters as colonial administrators, Western feminists, and states; as well as movements and individuals within the Muslim world. Cross-list: RELI 315, SWGS 315.

ASIA 316 - RELIGION AND MODERNITY: BUDDHISM IN BRITISH COLONIAL SOUTH AND SOUTHEAST ASIA
Short Title: BUDDHISM IN BRITISH COLONIES
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Concentrating on Buddhism in colonial India, Burma/Myanmar and Ceylon/Sri Lanka, this course examines the dynamic interactions between religion and modernity. It lays out the pressures of modernity and the ways in which Buddhism responded to them. Three broader themes of the course are the East-West contact, the modern-premodern negotiation and the local-global evolution.
ASIA 317 - ENVIRONMENT AND SOCIETY IN CHINA: SEARCHING FOR ECOLOGICAL CIVILIZATION
Short Title: ENVIRONMENT & SOCIETY IN CHINA
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Environmental issues in China dominate news headlines, though may are unfamiliar with the on-the-ground situation in China. This course will examine the current state of the environment in China from a variety of perspectives including those of the state, local communities, and new campaigns to create an “ecological civilization.”

ASIA 318 - ASIA-PACIFIC: NATURE, CULTURE AND POWER FROM COLONIALISM TO 21ST CENTURY CAPITALISM
Short Title: ASIA: NATURE, CULTURE, & POWER
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: In Asia-Pacific, colonialism decimated the environment, yet under national independence many countries now experience even worse environmental degradation. What then does the future hold? This seminar seeks to answer this question by providing a critical examination of environment and capitalism in the Asia-Pacific region.

ASIA 322 - INTRODUCTION TO BUDDHISM: ARTS FOR LIFE
Short Title: INTRODUCTION TO BUDDHISM
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Buddhist ideas, art, and meditation. Exploration of the Buddhism in India, China, and Japan and their impact in the USA today. Readings include Buddhists classics and contemporary responses from mediators and scientists. Cross-list: REI 322.

ASIA 323 - BUDDHIST AND DAOIST VISUAL CULTURES IN TRADITIONAL CHINA
Short Title: BUDDHIST AND DAOIST ART
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar explores the visual materials and their context that shed light on pre-modern China’s Buddhist, Daoist, funeral and other diverse religious and ritual practices. Topics of discussion include methodologies, Dunhuang Buddhist grottoes and “library caves”, Daoist body and cosmos, images of heaven, hell and rebirth, art and ritual, multi-cultural aspects, patronage, tombs, printing, women, and so on. Through careful examinations of the proposed topics and assigned readings, students will develop analytical skills, critical thinking, and holistic views regarding the meaning, function, and style of the arts of diverse religious traditions, as well as people from different social and ethnic backgrounds who participated in the making, spreading, and use of religious visual culture in traditional China. Students should have some background in Chinese art, history, or religions. Cross-list: HART 323, MDEM 323. Recommended Pre requisite(s): HART372/ASIA372, ASIA211, HART371/ASIA371

ASIA 324 - SOUTHEAST ASIA UNDER JAPAN: MOTIVES, MEMOIRS, AND MEDIA
Short Title: SE ASIA UNDER JAPAN: 1941-45
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The brief Japanese occupation of Southeast Asia (1941-45) was a complex phenomenon involving the complicity of many Asian nationalist leaders. It contributed to the unraveling of western colonial rule but at a brutal human cost. Through texts, memoirs, fiction and propaganda films, we will explore those tumultuous years in Burma, Indochina, Malaya, Indonesia, and the Philippines.

ASIA 327 - CINEMA AND MOBILITY IN 20TH CENTURY EAST ASIA
Short Title: CINEMA & MOBILITY: EAST ASIA
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines the ensemble of modern transportation systems and cinema as a junction point that allows a comprehensive theoretical model of modernity in East Asia, by applying theories of visuality and mobilities.
ASIA 328 - MODERN GIRL AND ASIA IN THE WORLD
Short Title: MOD GIRL & ASIA IN THE WORLD
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Using the textbook 'The Modern Girl Around the World,' this course examines the phenomenon of the so-called modern girl in Asia and the world, 1890-1949. Topics include: modernity, consumer culture, sexuality, and liberation. Cross-list: HIST 384, SWGS 384.

ASIA 330 - INTRODUCTION TO TRADITIONAL CHINESE POETRY
Short Title: INTRO TO TRAD CHINESE POETRY
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course seeks to decode enchanting features of traditional Chinese poetry through examining the transformation of poetic genres, the interaction between poetic creation and political, social and cultural changes, and the close association of poetry with art. Thus, this course also serves to understand Chinese culture and history through poetic perspectives. All readings in English translation. Cross-list: CHIN 330, MDEM 370.

ASIA 332 - CHINESE LITERATURE AND ITS MOVIE ADAPTATIONS
Short Title: FILM & CHINESE LITERATURE
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Exploration of modern Chinese literature through the visual imagery of Chinese films to show how and why different time periods and different media affect the theme of a story. One third covers movie adaptations of classical Chinese literature. Films subtitled in English, shown outside of class. All readings in English translation. Cross-list: CHIN 332.

ASIA 334 - TRADITIONAL CHINESE TALES AND SHORT STORIES
Short Title: TRADITIONAL CHINESE TALES
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Learning Chinese literature and culture through reading vernacular stories, fantastic tales, biographies, and philosophical parables. Discussion topics: literature and Confucianism, Taoism and Buddhism; literature and history; self and other; fantastic world and reality; women as domestic aliens and aliens portrayed as women, etc. Readings are in English translation. Cross-list: CHIN 334.

ASIA 335 - INTRODUCTION TO CLASSICAL CHINESE NOVELS
Short Title: CLASSICAL CHINESE NOVELS
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Examination of the basic characteristics of classical Chinese novels, primarily through six important works from the 16th to 18th centuries: Water Margin, Monkey, Golden Lotus, Scholars, Romance of the Three Kingdoms, and Dream of the Red Chamber. Cross-list: CHIN 335, MDEM 375.

ASIA 337 - GEOGRAPHIES OF RELIGION IN SOUTH ASIA
Short Title: GEOGRAPHIES OF RELI IN S ASIA
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines fundamental concepts of South Asian religious geography in a variety of historical periods and from diverse theoretical approaches. Using early texts, contemporary ethnographies, and numerous objects of visual and material culture, we explore diverse religious experiences of landscape in Buddhism, Hinduism, and Jainism. Graduate/Undergraduate Equivalency: ASIA 537. Mutually Exclusive: Cannot register for ASIA 337 if student has credit for ASIA 537.

ASIA 338 - BIOETHICS AND INDIAN TRADITIONS
Short Title: BIOETHICS & INDIAN TRADITIONS
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: We will examine western normative ethical theories alongside key concepts in Hinduism, Buddhism, and Jainism regarding definitions of life, death, consciousness, autonomy, disability, pain/pleasure, and how to make decisions in issues such as animal research, disorders of consciousness, abortion, and assisted suicide, among others.
ASIA 339 - CONSCIOUSNESS FROM INDIAN TRADITIONS TO MODERN SCIENCE  
Short Title: CONSCIOUSNESS, INDIA, SCIENCE  
Department: Asian Studies  
Grade Mode: Standard Letter  
Course Type: Seminar  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This course explores consciousness from ancient Indian philosophies (Jain, Buddhist, and Samkhya-Yoga), alongside western concepts of consciousness from Pythagoras to modern neuroscience and animal consciousness, touching briefly upon Judeo-Christian and Taoist concepts. 2-3 guest speakers will aid our investigation.

ASIA 349 - URBAN LAB ISTANBUL  
Short Title: URBAN LAB ISTANBUL  
Department: Asian Studies  
Grade Mode: Standard Letter  
Course Type: Laboratory  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): POLI 355 (may be taken concurrently) or POLI 362 (may be taken concurrently) or POLI 464 (may be taken concurrently) or POLI 562 (may be taken concurrently)  
Description: This class explores representations of the city in 20th and 21st century world cinema. Central concerns will include the city as cinematic protagonist, parallels between urban and cinematic space and the intertwined histories of both film and urban design over the last century. Cross-list: FILM 336, HART 336.

ASIA 353 - EAST ASIAN DEMOCRACIES  
Short Title: EAST ASIAN DEMOCRACIES  
Department: Asian Studies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group II  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This course examines the functioning of the political system in the three principal East Asian democracies: Japan, South Korea, and Taiwan. Particular focus is paid to each country’s democratic institutions, electoral politics, and political party system. Cross-list: POLI 353.

ASIA 355 - CINEMA AND THE CITY  
Short Title: CINEMA AND THE CITY  
Department: Asian Studies  
Grade Mode: Standard Letter  
Course Type: Seminar  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This course examines the dynamics of urban politics and policy in an emerging global city - Istanbul. In addition to social, political and economic issues, we will also focus on history, culture, language, architecture and the arts. Weekly class sessions will include lectures, case studies, guest lecturers, and group work on research projects. The lab also features an 8-day field research trip to Istanbul. Prerequisites may be taken the same semester as POLI 349/ASIA 349. Instructor Permission Required. Cross-list: POLI 349.

ASIA 357 - ALGORITHMIC CULTURES IN ASIA  
Short Title: ALGORITHMIC CULTURES IN ASIA  
Department: Asian Studies  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Algorithms are a series of step-by-step instructions in a procedure that finishes and which is shown to work in all cases. This course addresses the formation of algorithmic cultures through the domains of digitality and ontology in South Asia and the Middle East. It introduces students to the concepts of algorithmic neutrality, discrimination, management and governance. The course explores how deep-learning algorithms may undergird an intensification of surveillance and securitization technologies with profound effects on human and post-human futures. Graduate/Undergraduate Equivalency: ASIA 557.

ASIA 360 - TRANSNATIONAL CHINA: CHINA AND THE CHINESE DIASPORA  
Short Title: CHINA AND THE CHINESE DIASPORA  
Department: Asian Studies  
Grade Mode: Standard Letter  
Course Type: Seminar  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Exploration of the political, economic, and social forces changing the lives of nearly a quarter of humanity, the 1.4 billion people of Mainland China, Taiwan, Hong Kong, Singapore and the diasporic Chinese communities of East and Southeast Asia. Topics include political and economic liberalization, nationalism and urban identity, privatization and consumerism, environmentalism and public goods, and the globalization of communication technologies and Chinese cultural media.  
Course URL: www.owlnet.rice.edu/~swlewis/asia360/ (http://www.owlnet.rice.edu/~swlewis/asia360/)

ASIA 367 - DIASPORA  
Short Title: DIASPORA  
Department: Asian Studies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This course examines the functioning of the political system in the three principal East Asian democracies: Japan, South Korea, and Taiwan. Particular focus is paid to each country’s democratic institutions, electoral politics, and political party system. Cross-list: POLI 353.
ASIA 371 - CHINESE PAINTING
Short Title: CHINESE PAINTING
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines Chinese painting from ancient times to the early twentieth century. Issues of examination include themes, styles, and functions of Chinese painting; the interrelationship between paintings and the intended viewers; regionalism; images and words; foreign elements in Chinese painting. Cross-list: HART 371.

ASIA 372 - CHINESE ART AND VISUAL CULTURE
Short Title: CHINESE ART AND VISUAL CULTURE
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Chinese Art and Visual Culture is an introductory seminar studying the history of traditional Chinese art and visual culture from ancient times to the nineteenth century. This course draws upon masterpieces and monuments from both archaeological finds and museum collections, including bronze vessels, funeral objects, painting, calligraphy, sculptures, architecture, ceramics, and so on. Designed for students who have no background in Chinese art, Chinese history, or art history, the seminar uses diverse teaching materials in multiple media beyond traditional textbook-based readings to achieve four main goals: 1) Develop visual literacy through a direct encounter with objects. The development of specialized vocabulary to describe, analyze, and communicate function, composition, and meaning in art. 2) Understand major artistic movements of art and architecture within historical, social, political contexts. 3) Develop specialized knowledge in art from specific geographical locations (e.g. China), time periods, artists or artistic movements. 4) Evaluate and use primary and secondary source materials. Cross-list: HART 372, MDEM 373.

ASIA 376 - EAST & WEST: MEDIEVAL VISUAL CULTURE IN CHINA AND NORTHERN EUROPE
Short Title: EAST AND WEST
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores a series of issues that are critically important for the medieval art of both China and northern Europe. Topics include materials and techniques; public and private art: commerce, technology and prints; art and motion; archaeology; paradise and hell; maps and space; the gaze; erotica; patronage; and multiculturalism. . Cross-list: HART 376, MDEM 376.

ASIA 378 - CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC
Short Title: CROSS-CULTURAL ASIAN MUSIC
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will focus on traditional and contemporary art music from Asia. The classroom lectures are designed to introduce and accompany one or two events which will include live performances, workshops, lectures by invited performers and scholars. This course may be repeated since each year the countries and invited guest performers/scholars will represent different geographical areas. Cross-list: MUSI 378. Repeatable for Credit.

ASIA 387 - ASIAN AMERICAN CONTEMPORARY COMMUNITIES
Short Title: ASIAN AMERICAN COMMUNITIES
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This interdisciplinary course will investigate the diverse cultural traditions and shared experiences of Asian Americans in the United States. By analyzing historical works, literary texts, and films, we will explore a range of topics including Asian immigration, gender roles, identity formation, and ethnic media. Cross-list: ANTH 387.

ASIA 389 - INDIAN OCEAN WORLD HISTORY
Short Title: INDIAN OCEAN WORLD HISTORY
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The Indian Ocean World presents an enormously varied arena of cultural exchange and interaction spanning coastal regions of Africa, the Middle East, South and Southeast Asia and Australia. Course introduces the region by examining societies and empires shaped by voyages of exploration, religious pilgrimages, trading diasporas and forced migration. Cross-list: HIST 389.
ASIA 390 - THE LANGUAGES OF ASIA
Short Title: THE LANGUAGES OF ASIA
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 200 or ANTH 200
Description: This course surveys the remarkable linguistic diversity of the Pacific Rim Asia covering important grammatical features, including word origins, tones and sounds, writing systems, characteristic syntactic patterns, language families, cultural keywords and communicative styles of the major, as well as some minority languages of the region. Cross-list: LING 390. Recommended Prerequisite(s): Prerequisites as listed or 3 courses in Chinese, Japanese or Korean with special permission.

ASIA 399 - WOMEN IN CHINESE LITERATURE
Short Title: WOMEN IN CHINESE LITERATURE
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines women's roles in Chinese literature as writers, readers, and characters, focusing particularly on the tension between women's lived bodily experiences and the cultural experiences inscribed on the female body and how, in the process, women have contrarily gendered patriarchal culture into their own. It will also touch on Chinese women's incorporation of the Western Tradition. Cross-list: MDEM 379, SWGS 399.

ASIA 401 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-15
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Reading or research project to be determined by discussions between student(s) and faculty member(s). Department Permission Required.

ASIA 402 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-15
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Reading or research project to be determined by discussions between student(s) and faculty member(s). Department Permission Required.

ASIA 422 - THE ORIGINAL BEAUTY OF CHINESE LITERATURE
Short Title: ORIGINAL BEAUTY OF CHINESE LIT
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The course will expose students to the best literary works created in the Chinese tradition, both classical and modern, and give them a general introduction to different genres, including poetry, fiction, drama, and philosophical essays. It will improve their language proficiency through reading original texts of Chinese literature. Cross-list: CHIN 422.

ASIA 441 - MAGIC AND POPULAR RELIGION
Short Title: MAGIC & POPULAR RELIGION
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will examine the popular religion in the Middle East from Late Antiquity until the 19th century, focusing on healing practices, astrology, protection, amulets, seasoned/life-cycle rituals, and other popular beliefs common to Islam, Judaism, and Christianity. Cross-list: RELI 441.

ASIA 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

ASIA 488 - ASIA AND ENERGY
Short Title: ASIA AND ENERGY
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Multi-disciplinary study of Asian countries and cultures as to a way to explain production, exchange, consumption and influence of energy on political, economic and social/cultural institutions, including energy security and energy policy formation and resource use theories. Assumes basic knowledge of history and politics of Asian societies and economies.
ASIA 489 - CHINESE POLITICS IN COMPARATIVE PERSPECTIVE
Short Title: CHINESE POLITICS
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores the range of theories and empirical research methodologies from comparative political science, political-economy and Asian studies commonly applied to understanding Chinese politics: political participation, political organizations, collective action and popular protest, political culture and political institutional change. This course will be a seminar requiring weekly presentations extensive readings at the graduate level in social science, and an original research paper. There is no prerequisite for this course but participants are assumed to already possess extensive knowledge of Chinese history, culture and society. Cross-list: POLI 489.

ASIA 494 - SPECIAL TOPICS IN ASIAN STUDIES
Short Title: SPECIAL TOPICS ASIAN STUDIES
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar course explores various cultural topics, not covered in other Asia courses, in Asian studies. The fields may include history, film, linguistics, sociology as well as other fields in the humanities and social sciences. Department Permission Required. Repeatable for Credit.

ASIA 495 - ASIAN STUDIES RESEARCH SEMINAR
Short Title: ASIAN STUDIES RESEARCH SEM
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course is designed to elevate the knowledge on Asia acquired by Asian Studies majors in their first two years of study to a higher level and to train them in executing their original research an producing a substantial research paper. Department Permission Required. Graduate/Undergraduate Equivalency: ASIA 695. Mutually Exclusive: Cannot register for ASIA 495 if student has credit for ASIA 695. Repeatable for Credit.

ASIA 501 - ASIAN STUDIES ADVANCED FIELD RESEARCH
Short Title: ADVANCED FIELD RESEARCH
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this course, students will learn to gather data first hand either by ethnographic fieldwork or by primary archival source research. Department Permission Required.

ASIA 511 - PRO-SEMINAR ON ADVANCED TRANSTHETNAL ASIAN STUDIES
Short Title: PROSEMINAR ASIAN STUDIES
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Targeted to be the MA gateway course. This course covers a broad range of topics and debates which have marked the tradition of Asian Studies as well as contemporary scholarship. As the course will cover areas and topics beyond students’ immediate thesis subjects, it will equip students with the breath of reference points befitting a graduate degree holder in Asian Studies. Instructor Permission Required. Repeatable for Credit.

ASIA 521 - ADVANCED READING AND WRITING IN ASIAN STUDIES
Short Title: ADV ASIAN READING & WRITING
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course requires students to closely read and thoroughly comprehend a substantial amount of text written in Asian language(s). By so doing, the course will help students to: 1) refine translation and comprehension skills and 2) understand how to select and logically reference Asian-language texts for their research. Instructor Permission Required. Repeatable for Credit.

ASIA 531 - ASIAN STUDIES METHODOLOGY SEMINAR I
Short Title: METHODOLOGY SEMINAR I
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The purpose of this course is to 1) introduce students to a wide range of humanistic and social scientific research methods and their theoretical implications, and 2) offer students practice in a method of their own choice on a mini-research practicum. Department Permission Required. Repeatable for Credit.

ASIA 532 - ASIAN STUDIES METHODOLOGY SEMINAR II
Short Title: METHODOLOGY SEMINAR II
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The purpose of this course is to 1) introduce students to a wide range of humanistic and social scientific research methods and their theoretical implications, and 2) offer students practice in a method of their own choice on a mini-research practicum. Department Permission Required. Repeatable for Credit.
ASIA 537 - GEOGRAPHIES OF RELIGION IN SOUTH ASIA
Short Title: GEOGRAPHIES OF RELIGION IN S ASIA
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines fundamental concepts of South Asian religious geography in a variety of historical periods and from diverse theoretical approaches. Using early texts, contemporary ethnographies, and numerous objects of visual and material culture, we explore diverse religious experiences of landscape in Buddhism, Hinduism, and Jainism. The graduate course requires the final research paper to be about twice as long as the final research paper in the undergraduate course (5,000 vs. 2,100-2,700 words). Graduate/Undergraduate Equivalency: ASIA 337. Mutually Exclusive: Cannot register for ASIA 537 if student has credit for ASIA 337.

ASIA 541 - THESIS RESEARCH IN ASIAN STUDIES
Short Title: THESIS RESEARCH: ASIAN STUDIES
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is designed to guide students to identify the most optimal topic of research/thesis proportionate to their interest as well as ability. Department Permission Required. Repeatable for Credit.

ASIA 551 - ASIAN STUDIES GRADUATE SEMINAR
Short Title: ASIAN STUDIES GRADUATE SEMINAR
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this course, students will learn to present their research in an exciting broadly persuasive manner to a mixed audience. Department Permission Required. Repeatable for Credit.

ASIA 557 - ALGORITHMIC CULTURES IN ASIA
Short Title: ALGORITHMIC CULTURES IN ASIA
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Algorithms are a series of step by step instructions in a procedure that finishes and which is shown to work in all cases. This course addresses the formation of algorithmic cultures through the domains of digitality and ontology in South Asia and the Middle East. It introduces students to the concepts of algorithmic neutrality, discrimination, management and governance. The course explores how deep-learning algorithms may undergird an intensification of surveillance and securitization technologies with profound effects on human and post-human futures. The graduate course requires the final research paper to be about twice as long as the final research paper in the undergraduate course (10,000 vs. 5,000 words). Graduate/Undergraduate Equivalency: ASIA 357.

ASIA 561 - THESIS WRITING: INDEPENDENT STUDY IN ASIAN STUDIES
Short Title: THESIS WRITINGS: IND STUDY
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A continuation of ASIA 541, this course is designed to guide students in writing a complete thesis on their chosen topic proportionate to their interest as well as ability. Department Permission Required. Repeatable for Credit.

ASIA 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

ASIA 695 - ASIAN STUDIES RESEARCH SEM
Short Title: ASIAN STUDIES RESEARCH SEM
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: To elevate the knowledge on Asia acquired by AS majors in their undergraduate years to a graduate level with more depth and focus, and to train AS majors in designing and executing their original research and offer them an opportunity to produce a substantial research paper based on bibliographic research and other forms of data-gathering. In 695 (vs. 495), students will be assigned one additional reading per week throughout the semester. Department Permission Required. Graduate/Undergraduate Equivalency: ASIA 495. Mutually Exclusive: Cannot register for ASIA 695 if student has credit for ASIA 495. Repeatable for Credit.

Astronomy (ASTR)

ASTR 100 - EXPLORING THE COSMOS
Short Title: EXPLORING THE COSMOS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction to concepts, methods and discoveries of astronomy and astrophysics, with a theme to be chosen from the frontier topics of modern astrophysics. Will emphasize student presentations. Designed for first year students interested in science or engineering, but other majors are welcome.
ASTR 201 - STARS, GALAXIES, AND THE UNIVERSE
Short Title: STARS, GALAXIES & THE UNIVERSE
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An introductory course for students in academic programs. The formation, evolution, and death of stars; the composition and evolution of galaxies; the structure and evolution of the universe.

ASTR 202 - EXPLORATION OF THE SOLAR SYSTEM
Short Title: EXPLORATN OF THE SOLAR SYSTEM
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The physical processes governing the nature and behavior of the various Solar System bodies are discussed with a focus on the origins, evolution and fate of the Solar System and its parts. This broader context leads to a deeper understanding of the Earth as a life-supporting planet.

ASTR 221 - OBSERVING THE NIGHT SKY
Short Title: OBSERVING THE NIGHT SKY
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An introduction to celestial mechanics, radiative transfer, stellar structure, and stellar remnants (including black holes and neutron stars). Aspects of stellar atmospheres may also be explored. Together, ASTR 350 and ASTR 360 provide a comprehensive survey of modern astrophysics needed for senior research and graduate study in astronomy. Either ASTR 350 or 360 may be taken first. Recommended Prerequisite(s): MATH 211 and PHYS 202

ASTR 230 - ASTRONOMY LAB
Short Title: ASTRONOMY LAB
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A hands-on introduction to modern techniques of observational astronomy. Students use telescopes, CCDs, and computers to obtain and analyze their own images and spectra of solar system, galactic, and extragalactic objects. The course employs the campus observatory, dark sky observing sites, and state of the art data analysis software. Instructor Permission Required.

ASTR 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.
ASTR 360 - INTRODUCTION TO ASTROPHYSICS-GALAXY AND COSMO
Short Title: INTRO ASTROPHYSIC-GALAXY&COSMO
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 211 and PHYS 202 (may be taken concurrently)
Description: Morphology, kinematics, and dynamics of the Milky Way and external galaxies, including interstellar matter and evidence for dark matter. Peculiar and active galaxies, including interacting systems and evidence for super massive black holes in active galactic nuclei such as quasars. Large-scale structure and expansion of the universe, including various cosmologies ranging from the inflationary big bang theory to steady state and anthropic concepts. Either ASTR 350 or 360 may be taken first. PHYS 202 may be taken as a prereq or concurrently with ASTR 360.

ASTR 400 - UNDERGRADUATE RESEARCH SEMINAR
Short Title: UNDERGRADUATE RESEARCH SEMINAR
Department: Physics and Astronomy
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Seminar on current research topics in astronomy, astrophysics, and space physics for juniors and seniors. Students will be expected to give one oral presentation each semester. Graduate/Undergraduate Equivalency: ASTR 500. Repeatable for Credit.

ASTR 408 - STATISTICAL METHODS IN PHYSICS AND ASTRONOMY
Short Title: STATISTICS IN PHYS AND ASTR
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (PHYS 101 or PHYS 111) and (PHYS 102 or PHYS 112) and MATH 212
Description: Statistical methods commonly used in the analysis of astronomical, laboratory, and survey data. Topics include curve fitting, parametric and non-parametric hypothesis testing, cluster analysis, principal component analysis, time-series data, and truncated data. Fundamentals of statistics, including probability distributions, means, variances, the Central Limit Theorem, hypothesis testing, error propagation, Bayesian analysis, jackknife, and bootstrap are covered. The class introduces students to the R programming language. Graduate/Undergraduate Equivalency: ASTR 508. Mutually Exclusive: Cannot register for ASTR 408 if student has credit for ASTR 508.

ASTR 451 - ASTROPHYSICS I: SUN AND STARS
Short Title: ASTROPHYSICS I: SUN AND STARS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ASTR 350 or ASTR 360) and (PHYS 301 and PHYS 302)
Description: Physics of stellar atmospheres, interiors and evolution. Polytopes, nucleosynthesis, radiative transfer, convection, oscillations, opacities, curves of growth, spectral line theory and observation.

ASTR 452 - ASTROPHYSICS II: GALAXIES AND COSMOLOGY
Short Title: ASTROPHYS II:GALAXY&COSMOLOGY
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ASTR 350 or ASTR 360) and (PHYS 301 and PHYS 302)
Description: Study of physical cosmology models. Description of the evolution of the universe, including nucleosynthesis, cosmic background radiation, large-scale structure, galaxy formation and evolution, and high redshift phenomena.

ASTR 470 - SOLAR SYSTEM PHYSICS
Short Title: SOLAR SYSTEM PHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PHYS 301 and PHYS 302
Description: The Sun, solar-terrestrial relationships, solar wind; planetary atmospheres, ionospheres and magnetospheres. Graduate/Undergraduate Equivalency: ASTR 570. Mutually Exclusive: Cannot register for ASTR 470 if student has credit for ASTR 570.

ASTR 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.
### ASTR 500 - GRADUATE RESEARCH SEMINAR
**Short Title:** GRADUATE RESEARCH SEMINAR  
**Department:** Physics and Astronomy  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Seminar  
**Credit Hours:** 1  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** A presentation of current research programs in the department. Graduate/Undergraduate Equivalency: ASTR 400. Repeatable for Credit.

### ASTR 502 - TEACHING EARTH AND SPACE SCIENCE
**Short Title:** TEACHING EARTH & SPACE SCIENCE  
**Department:** Physics and Astronomy  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Overview of the Earth and the solar system: structure, evolution, and dynamics. Includes non-calculus mathematics: algebra, logarithms and simple trigonometry, including Kepler's laws. Observing sessions at campus observatory and George Observatory TBD. Designed for inservice and preservice science teachers (grades 4-12), but open to undergraduates considering a teaching career. Mutually Exclusive: Cannot register for ASTR 502 if student has credit for ASTR 402.

### ASTR 503 - ASTRONOMY FOR TEACHERS
**Short Title:** ASTRONOMY FOR TEACHERS  
**Department:** Physics and Astronomy  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Overview of the Sun, stars, galaxies, and the Universe at a non-calculus level. Methods to help students master content, including lab activities suitable for K-12. Observing sessions at Rice campus observatory and George Observatory TBD. Designed for inservice and preservice teachers (grades 5-12), but open to undergraduates considering a teaching career.

### ASTR 505 - PROCESSES IN COSMIC PLASMAS
**Short Title:** PROCESSES IN COSMIC PLASMAS  
**Department:** Physics and Astronomy  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Prerequisite(s):** ASTR 470 and PHYS 480  
**Description:** Study of plasma phenomena that occur widely in nature. May include quasi-static equilibrium, magnetic equilibrium, magnetic reconnection, particle acceleration, plasma winds and jets, and interchange instabilities.

### ASTR 508 - STATISTICAL METHODS IN PHYSICS AND ASTRONOMY
**Short Title:** STATISTICS IN PHYS AND ASTR  
**Department:** Physics and Astronomy  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Statistical methods commonly used in the analysis of astronomical, laboratory, and survey data. Topics include curve fitting, parametric and non-parametric hypothesis testing, cluster analysis, principal component analysis, time-series data, and truncated data. Fundamentals of statistics, including probability distributions, means, variances, the Central Limit Theorem, hypothesis testing, error propagation, Bayesian analysis, jackknife, and bootstrap are covered. The class introduces students to the R programming language. Graduate/Undergraduate Equivalency: ASTR 408. Mutually Exclusive: Cannot register for ASTR 508 if student has credit for ASTR 408.  
**Course URL:** [www.sparky.rice.edu/~hartigan/astr600/astr600.html](http://www.sparky.rice.edu/~hartigan/astr600/astr600.html)

### ASTR 530 - TEACHING ASTRONOMY LABORATORY
**Short Title:** TEACHING ASTRONOMY LABORATORY  
**Department:** Physics and Astronomy  
**Grade Mode:** Standard Letter  
**Course Type:** Laboratory  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Prerequisite(s):** ASTR 230 or ASTR 350 or ASTR 360 or ASTR 402 or ASTR 403 or ASTR 502 or ASTR 503  
**Description:** Methods of observational astronomy for public education: telescopes, astronomical binoculars, portable planetariums, digital cameras, and photography (still, 3D, and time lapse). Students will train beginners in the use of telescopes and carry out a modest observational program. The course requires one public presentation. Topics vary with each offering. Mutually Exclusive: Cannot register for ASTR 530 if student has credit for ASTR 430.

### ASTR 542 - NEBULAR ASTROPHYSICS
**Short Title:** NEBULAR ASTROPHYSICS  
**Department:** Physics and Astronomy  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Prerequisite(s):** ASTR 451  
**Description:** The physics of emission nebulae, including radiative transfer, photo ionization and thermal equilibria, and internal gaseous dynamics. Physical processes in the interstellar medium. Recommended Prerequisite(s): PHYS 541.
ASTR 554 - ASTROPHYSICS OF THE SUN
Short Title: ASTROPHYSICS OF THE SUN
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: Analysis of physical processes at work in the sun, such as helioseismology, solar variability, solar activity, magnetic reconnection, heliosphere interactions and modern observational techniques.

ASTR 555 - PROTOSTARS AND PLANETS
Short Title: PROTOSTARS AND PLANETS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: The Sun, solar-terrestrial relationships, solar wind; planetary atmospheres, ionospheres and magnetospheres. Includes a research paper and presentation on a physical process in the solar system, e.g., pulsars, supernova remnants, and accretion disks.

ASTR 565 - COMPACT OBJECTS
Short Title: COMPACT OBJECTS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: Selected topics involving white dwarfs, neutron stars, black holes and their environments, e.g., pulsars, supernova remnants, and accretion disks.

ASTR 570 - SOLAR SYSTEM PHYSICS
Short Title: SOLAR SYSTEM PHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: The Sun, solar-terrestrial relationships, solar wind; planetary atmospheres, ionospheres and magnetospheres. Includes a research paper and presentation on a physical process in the solar system. Graduate/Undergraduate Equivalency: ASTR 470. Mutually Exclusive: Cannot register for ASTR 570 if student has credit for ASTR 470.

ASTR 600 - ADVANCED TOPICS IN ASTROPHYSICS
Short Title: ADV TOPICS IN ASTROPHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: Lecture/seminars which treat topics of departmental interest. Not offered every year. Repeatable for Credit.

ASTR 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

Biochemistry & Cell Biology (BIOC)

BIOC 110 - INTRODUCTION TO RESEARCH
Short Title: INTRODUCTION TO RESEARCH
Department: Biosciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-5
Restrictions: Enrollment is limited to Undergraduate or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is only for visiting high school juniors and seniors and undergraduates conducting research for the first time. The students will conduct scientific research in the laboratories of the Rice faculty in the areas of Biochemistry & Cell Biology and Ecology & Evolutionary Biology. During the five-week course, students will engage in full time research and will be mentored by experienced researchers under the supervision of Rice faculty. Participating students will also receive formal instruction on the basics of scientific research and innovation. Visiting high school students and undergraduates must complete visiting student application process. Instructions to do this can be found in the Application Checklist at summer.rice.edu. Instructor Permission Required. Repeatable for Credit.

BIOC 112 - INTRODUCTORY BIOLOGICAL RESEARCH CHALLENGES
Short Title: INTRO BIOL RESEARCH CHALLENGES
Department: Biosciences
Grade Mode: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Teams of students work on investigative, client-based projects with opportunities to design experiments, analyze data, and communicate their findings. This course is recommended for students interested in the Biosciences major who have very limited practical laboratory experience. Only first year students may enroll. Mutually Exclusive: Cannot register for BIOC 112 if student has credit for BIOC 111/NSCI 120.
**BIOC 118 - FRESHMAN SEMINAR IN LOCAL BIOLOGY RESEARCH (BCB)**

**Short Title:** FRESHMAN BIOLOGY SEMINAR (BCB)

**Department:** Biosciences

**Grade Mode:** Standard Letter

**Course Type:** Lecture

**Credit Hours:** 1

**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

**Course Level:** Undergraduate Lower-Level

**Description:** A 7-week seminar course to introduce freshmen prospective biologists to the excitement of research at Rice and the Medical Center and to provide context with which to think about facts presented in biosciences textbooks. Small groups will meet weekly with a graduate student or postdoctoral researcher to explore a published research article by a local lab, gaining background information about the subject and exposure to the research techniques. In the final session, the group will tour the lab that produced the featured article. Additional tours and activities TBA. All first-year non-transfer students are eligible to enroll in BIOC 118 regardless of AP credit. This course meets the second half of the semester and features research in the Program of Biochemistry and Cell Biology. Mutually Exclusive: Cannot register for BIOC 118 if student has credit for BIOC 115/FSEM 115.

**Course URL:** [www.bioc.rice.edu/bioc115/](http://www.bioc.rice.edu/bioc115/)

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**BIOC 122 - BIOLOGY FOR VOTERS**

**Short Title:** BIOLOGY FOR VOTERS

**Department:** Biosciences

**Grade Mode:** Standard Letter

**Course Type:** Lecture

**Credit Hours:** 2

**Restrictions:** Students cannot enroll who have a major in Biochemistry and Cell Biology, Biological Sciences or Ecology & Evolutionary Biology. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

**Course Level:** Undergraduate Lower-Level

**Description:** Designer babies, climate change, the anti-vaccine movement, gender identity, evolution... exploring these and other socially relevant topics will provide a context for learning essential concepts in biology and ways to distinguish science truth from science fiction.

**Course URL:** [www.ruf.rice.edu/~bioslabs/bioc122/](http://www.ruf.rice.edu/~bioslabs/bioc122/)

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**BIOC 129 - BRAINSTEM - TEACHING STEM THROUGH NEUROSCIENCE**

**Short Title:** BRAINSTEM

**Department:** Biosciences

**Grade Mode:** Satisfactory/Unsatisfactory

**Course Type:** Internship/Practicum

**Credit Hour:** 1

**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

**Course Level:** Undergraduate Lower-Level

**Description:** BrainSTEM is a service organization that teaches STEM subjects through the lens of neuroscience. We perform hands-on, small-group activities with ~45 students per week. This course will prepare you to communicate science in a both effective and entertaining manner, as well as build your skills in managing small groups. More information can be found at 'www.brainstem.club.' Repeatable for Credit.

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**BIOC 201 - INTRODUCTORY BIOLOGY I**

**Short Title:** INTRODUCTORY BIOLOGY I

**Department:** Biosciences

**Grade Mode:** Standard Letter

**Course Type:** Lecture

**Credit Hours:** 3

**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

**Course Level:** Undergraduate Lower-Level

**Description:** Chemistry and energetics, cell physiology, cell biology, Mendelian genetics, molecular genetics, developmental biology, and plant physiology.

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**BIOC 205 - MICROBE HUNTERS REVISITED**

**Short Title:** MICROBE HUNTERS REVISITED

**Department:** Biosciences

**Grade Mode:** Standard Letter

**Course Type:** Seminar

**Credit Hours:** 2

**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

**Course Level:** Undergraduate Lower-Level

**Description:** This seminar will review important microbiologists and their discoveries of infectious agents. From Pasteur to Prusiner, we will review the infectious agents they described, as well as the methods used for their discovery. The classic text by Paul de Kruif entitled 'Microbe Hunters' will be the basis for half of the course material.

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**BIOC 210 - INTRODUCTION TO RESEARCH**

**Short Title:** INTRODUCTION TO RESEARCH

**Department:** Biosciences

**Grade Mode:** Satisfactory/Unsatisfactory

**Course Type:** Research

**Credit Hours:** 1-5

**Restrictions:** Enrollment is limited to Undergraduate level students.

**Course Level:** Undergraduate Lower-Level

**Description:** This course is only for Rice students conducting research for the first time. The students will conduct scientific research in the laboratories of the Rice faculty in the areas of Biochemistry & Cell Biology and Ecology & Evolutionary Biology. During the five-week course, students will engage in full time research and will be mentored by experienced researchers under the supervision of Rice faculty. Participating students will also receive formal instruction on the basics of scientific research and innovation. Rice students will need a special registration from or ask the faculty member for permission to register. Instructor Permission Required. Cross-list: EBI 210. Repeatable for Credit.
BIOC 211 - INTERMEDIATE EXPERIMENTAL BIOSCIENCES
Short Title: EXPERIMENTAL BIOSCIENCES
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): BIOC 201 (may be taken concurrently) and
Description: Introduction to scientific method, principles of experimental design, selected research strategies, record keeping, and technical communication as related to biological science. The prerequisite for BIOC 201 may be taken concurrently with BIOC 211. Registration for Fall 2019 new matriculants requires instructor permission. Only BioSciences majors and minors (BCB, BIOS, EEB) can register for sections 001, 002, 003, 004, and 005. Non-BioSciences majors can register for sections 007, 008, 009, 010, and 011. Mutually Exclusive: Cannot register for BIOC 211 if student has credit for BIOC 212.

BIOC 212 - INTERMEDIATE EXPERIMENTAL CELLULAR AND MOLECULAR NEUROSCIENCE
Short Title: EXPERIMENTAL NEUROSCIENCE
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to students with a major in Neuroscience. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): BIOC 201 (may be taken concurrently) and
Description: Introduction to the scientific method, principles of experimental design, selected research strategies, record keeping, and technical communication as related to neuroscience. This course is restricted to Neuroscience majors. Instructor permission is required if students have not yet declared. The prerequisite BIOC 201 may be taken concurrently with BIOC 212. Mutually Exclusive: Cannot register for BIOC 212 if student has credit for BIOC 211.

BIOC 215 - BIOSCIENCES LAB TEACHING
Short Title: BIOC LAB TEACHING
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Undergraduate teaching in a biosciences laboratory. Provide group and individual instruction and feedback to undergraduates during and outside of laboratory classes. Instructor Permission Required. Repeatable for Credit.

BIOC 216 - DISCUSSION SECTION TEACHING
Short Title: DISCUSSION SECTION TEACHING
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: In this course, undergraduates who have previously excelled in a BIOC course, as approved by the Department Chair for the activity, will develop teaching skills by leading discussion sections or serving as writing mentors. These activities are designed to benefit students presently taking the relevant BIOC course and will be performed under the guidance of the professor teaching the course. Instructor Permission Required. Repeatable for Credit.

BIOC 220 - FORENSIC BIOLOGY AND CRIMINALISTICS
Short Title: FORENSIC BIOL & CRIMINALISTICS
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): BIOC 201
Description: This course will introduce students to certain areas of forensic science including - crime scene analysis, forensic serology, molecular genetics (DNA), forensic toxicology; drugs, and the identification of biological fluids such as blood, saliva, and semen, with case studies and a potential field trip. The course is designed for biology and chemistry students, for students interested in the application of biosciences in DNA and crime scene analysis.

BIOC 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.
BIOC 299 - EXPERIENTIAL EDUCATION IN BIOSCIENCES
Short Title: EXPERIENTIAL EDUC IN BIOSCI
Department: Biosciences
Grade Mode: Satisfactory/ Unsatisfactory
Course Type: Internship/ Practicum
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Lower-Level
Description: This experiential education course credits a student’s experience in an approved internship/practicum with the goal of further developing their professional skills. Hour and activity requirements are flexible to accommodate a variety of experiential activities in biology-related professional contexts. There are no prerequisites. To receive approval to enroll, students must arrange their own internship, apply to the course instructor (https://forms.gle/NGruMJZiYRRNN5CL8), and produce an offer letter from their internship provider containing, start and end dates, a description of their intended internship activities and expectations. Additional requirements are available on the course syllabus. Repeatable for credit. Instructor Permission Required. Repeatable for Credit.

BIOC 300 - PARADIGMS IN BIOCHEMISTRY AND CELL BIOLOGY
Short Title: PARADIGMS IN BIOCHM & CELL BIO
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level
Description: Examination of paradigms in Biochemistry and Cell Biology with a focus on the 'central dogma' of molecular biology. Recommended strongly for students with Advanced Placement in Biology and designed for prospective BIOC majors. This course is strongly recommended as preparation for BIOC 341 (Cell Biology). Enrollment is restricted to students who have not yet taken BIOC 301 or BIOC 341. Recommended Prerequisite(s): Recommended strongly for students with Advanced Placement in Biology and designed for prospective BIOC majors. For students with AP credit for BIOS/BIOC 201, this course is strongly recommended as preparation for BIOC 341 (Cell Biology).

BIOC 301 - BIOCHEMISTRY I
Short Title: BIOCHEMISTRY I
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level
Prerequisite(s): CHEM 211 and BIOC 201
Description: The second in an integrated sequence of three courses (BIOC 201, 301, 302). Structure and function of proteins, enzymes, and nucleic acids; enzyme kinetics; glycolysis, aerobic metabolism, and energy coupling. Recommended Prerequisite(s): CHEM 212.

BIOC 302 - BIOCHEMISTRY II
Short Title: BIOCHEMISTRY II
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 301
Description: The final in an integrated sequence of three courses (BIOC 201, 301, 302). In depth study of carbohydrate, amino acid, and lipid metabolic pathways, hormone regulation of metabolic pathways, key cell signaling mechanisms, and the structural biology of DNA replication, transcription, and translation into proteins. Course also involves analysis of primary scientific literature. Recommended Prerequisite(s): CHEM 212 or CHEM 320.

BIOC 310 - INDEPENDENT RESEARCH FOR BIOCHEMISTRY AND CELL BIOLOGY UNDERGRADUATES
Short Title: IND RES FOR BIOC UNDERGRADS
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 111 or BIOC 211 or BIOC 212 or BIOC 112 or NSCI 120
Description: Independent research in Rice BCB faculty laboratories (sections 2 and above) or other Texas Medical Center laboratories (sections 1). Students spend at least 3 hours per week in the laboratory for each semester hour of credit. If taken for 3 or more hours, counts as one required 300+ level lab course (not BIOC 311). Requires a proposal abstract, weekly reports, and a research paper (fall semester) or a proposal abstract, weekly reports, and a poster presentation (spring semester). Students wishing to perform their research in an off-campus lab must apply online (www.bioc.rice.edu/bioc310/) at least 3 weeks prior to the start of classes and may not register for fewer than 3 credit hours. Students taking BIOC 310 in the full summer semester must be available to do full-time research for a minimum of 6 weeks or part-time equivalent which should equal to a total of 126 hours working in the lab. Instructor Permission Required. Recommended Prerequisite(s): Students are strongly advised to secure research advisors and register for the class well in advance of the start of classes. Repeatable for Credit.

Course URL: www.bioc.rice.edu/bioc310/ (http://www.bioc.rice.edu/bioc310/)
BIOC 311 - ADVANCED EXPERIMENTAL BIOSCIENCES
Short Title: ADV EXPERIMENTAL BIOSCIENCES
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Students with a class of Freshman may not enroll. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (BIOC 211 or BIOC 212) and BIOC 301 (may be taken concurrently)
Description: Advancement of biochemical laboratory methods, record keeping, technical communication skills, and research strategies. Students will maintain a research quality laboratory notebook and will submit a paper in the style of a journal article. Pre-req BIOC 301 may be taken concurrently with BIOC 311.

BIOC 313 - EXPERIMENTAL SYNTHETIC BIOLOGY
Short Title: EXPERIMENTAL SYNTHETIC BIOL
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 211 or BIOC 212
Description: Students learn molecular biological procedures commonly used to build and characterize synthetic genetic circuits. Teams of students work on a research project in the interdisciplinary field of synthetic biology. Students continue to develop technical communication skills.

BIOC 318 - MICROBIOLOGY LABORATORY
Short Title: MICROBIOLOGY LABORATORY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 211 or BIOC 212
Description: In teams, students will participate in ongoing faculty research by isolating and characterizing bacterial species from environmental samples. Offered in the second half of each semester.
Course URL: www.ruf.rice.edu/~bioslabs/bios318/ (http://www.ruf.rice.edu/~bioslabs/bios318/)

BIOC 320 - LABORATORY IN TISSUE CULTURE
Short Title: LABORATORY IN TISSUE CULTURE
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 440 or STAT 440 or BIOC 311
Description: Introduction to tissue culture techniques, including cell passage, cell viability, and cell attachment and proliferation assays. Students complete quantitative analysis of their data. Engineering design and applications are featured in graded work. Sections 1 and 2 are taught during the first half of the semester. Sections 3 and 4 are taught during the second half of the semester. Students may be required to attend lab on a university holiday. Instructor Permission Required. Cross-list: BIOE 342.

BIOC 329 - ANIMAL BIOLOGY AND PHYSIOLOGY
Short Title: ANIMAL BIOLOGY AND PHYSIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 201 or EBIO 202
Description: The evolution and systematics of the animal kingdom with consideration of functional anatomy, comparative physiology, behavior, medical implications and resource management. Cross-list: EBIO 329. Mutually Exclusive: Cannot register for BIOC 329 if student has credit for EBIO 529.

BIOC 331 - BIOLOGY OF INFECTIOUS DISEASES
Short Title: BIOLOGY OF INFECTIOUS DISEASES
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): EBIO 213
Description: This course gives a broad overview of the biology of infectious diseases using examples from humans, plants, and animals. Topics include diversity of diseases, mechanisms of disease transmission, epidemiology, population regulation, evolution of virulence, disease dynamics in natural communities and disease invasion and conservation biology. Cross-list: EBIO 331.
BIOC 332 - SYSTEMS PHYSIOLOGY
Short Title: SYSTEMS PHYSIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 201 and (PHYS 101 and PHYS 102) or (PHYS 125 and PHYS 126)
Description: This course will teach the fundamentals of human physiology with a specific focus on the nervous, cardiovascular, respiratory, and urinary systems. Basic introductory engineering principles will be applied to the study of physiological systems. The course is aimed to be accessible to students with non-engineering backgrounds. Students may receive credit for only one of BIOE 302, BIOE 322, and BIOC 332. Cross-list: BIOE 302. Mutually Exclusive: Cannot register for BIOC 332 if student has credit for BIOE 332.

BIOC 333 - BIONNOVATION STUDIO: FROM BASIC RESEARCH AND IDEATION TO TECHNOLOGY DEVELOPMENT
Short Title: BIOINNOVATION STUDIO
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 211 or BIOC 212
Description: In this lab, students will explore the relationship between curiosity-driven science and the steps of biological ideation that lead to technology creation. While the course focuses centrally on a semester long lab project, there will be informal discussions of articles and books with technology translation experts, visiting biology entrepreneurs, and commercialization experts.

BIOC 334 - EVOLUTION
Short Title: EVOLUTION
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): EBIO 202
Description: Principles of biological evolution. Topics include natural selection, adaptation, molecular evolution, formation of new species, the fossil record, biogeography, and principles of classification. Cross-list: EBIO 334. Graduate/Undergraduate Equivalency. BIOC 534. Mutually Exclusive: Cannot register for BIOC 334 if student has credit for BIOC 534.
Course URL: www.ruf.rice.edu/~queller/Bios334/ (http://www.ruf.rice.edu/~queller/Bios334/)

BIOC 335 - CELLULAR AND MOLECULAR ANIMAL PHYSIOLOGY
Short Title: CELL & MOL ANIMAL PHYSIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 201
Description: This course takes a functional approach to investigate animal physiology from a cellular and molecular perspective. Using an integrated and comparative approach, students learn how animals maintain homeostasis, including how they meet their energy needs, take up and transport oxygen, and maintain hydration and salt balance. Students will read primary literature to explore physiological adaptations for survival in extreme environments. Graduate/Undergraduate Equivalency: BIOC 536. Mutually Exclusive: Cannot register for BIOC 335 if student has credit for BIOC 536.

BIOC 341 - CELL BIOLOGY
Short Title: CELL BIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 201
Description: Molecular mechanisms of eukaryotic cell function. Structure, function, and biogenesis of all subcellular organelles. Cell-cell communication, cytoskeleton assembly and function, cell cycle control, and cell-cell adhesions. Emphasis will be on cytoplasmic events; molecular studies of transcription are taught in BIOC 302 and BIOC 344. RECOMMENDATION: BIOC 300 is recommended for students using advanced placement credit for BIOC 201 and students preferring additional foundational background prior to enrollment in BIOC 341.

BIOC 344 - MOLECULAR BIOLOGY & GENETICS
Short Title: MOLECULAR BIOLOGY & GENETICS
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Mendelian genetics, population genetics, mapping, gene expression and regulation, genetic engineering, DNA replication and recombination, human genetics, genetic disease and gene therapy. Recommended Prerequisite(s): BIOC 201.
BIOC 350 - INTRODUCTION TO MATHEMATICAL BIOLOGY
Short Title: INTRODUCTION TO MATH BIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (PHYS 126 or PHYS 102 or PHYS 112) and MATH 211 and (BIOC 201 or EBIO 202)
Description: This class provides an introduction to mathematical concepts in biology and medicine. Students will learn to derive and manipulate mathematical equations describing concepts at all levels of biological organization, from biochemical reactions to population dynamics and epidemiology.

BIOC 352 - PHYSICAL CHEMISTRY FOR THE BIOSCIENCES
Short Title: PHYS CHEM FOR BIOSCIENCES
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (PHYS 126 or PHYS 102 or PHYS 112 or PHYS 142) and BIOC 301
Description: Study of selected aspects of physical chemistry as it relates to the biosciences. Includes thermodynamics, reaction rate theory, quantum mechanics, and atomic and molecular structure.

BIOC 351 - INTRODUCTION TO MATHEMATICAL BIOLOGY
Short Title: INTRODUCTION TO MATH BIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (PHYS 126 or PHYS 102 or PHYS 112 or PHYS 142) and MATH 211 and (BIOC 201 or EBIO 202)
Description: This class provides an introduction to mathematical concepts in biology and medicine. Students will learn to derive and manipulate mathematical equations describing concepts at all levels of biological organization, from biochemical reactions to population dynamics and epidemiology.

BIOC 350 - INTRODUCTION TO MATHEMATICAL BIOLOGY
Short Title: INTRODUCTION TO MATH BIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (PHYS 126 or PHYS 102 or PHYS 112) and MATH 211 and (BIOC 201 or EBIO 202)
Description: This class provides an introduction to mathematical concepts in biology and medicine. Students will learn to derive and manipulate mathematical equations describing concepts at all levels of biological organization, from biochemical reactions to population dynamics and epidemiology.

BIOC 352 - PHYSICAL CHEMISTRY FOR THE BIOSCIENCES
Short Title: PHYS CHEM FOR BIOSCIENCES
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (PHYS 126 or PHYS 102 or PHYS 112 or PHYS 142) and BIOC 301
Description: Study of selected aspects of physical chemistry as it relates to the biosciences. Includes thermodynamics, reaction rate theory, quantum mechanics, and atomic and molecular structure.

BIOC 351 - INTRODUCTION TO MATHEMATICAL BIOLOGY
Short Title: INTRODUCTION TO MATH BIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (PHYS 126 or PHYS 102 or PHYS 112 or PHYS 142) and MATH 211 and (BIOC 201 or EBIO 202)
Description: This class provides an introduction to mathematical concepts in biology and medicine. Students will learn to derive and manipulate mathematical equations describing concepts at all levels of biological organization, from biochemical reactions to population dynamics and epidemiology.

BIOC 352 - PHYSICAL CHEMISTRY FOR THE BIOSCIENCES
Short Title: PHYS CHEM FOR BIOSCIENCES
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (PHYS 126 or PHYS 102 or PHYS 112 or PHYS 142) and BIOC 301
Description: Study of selected aspects of physical chemistry as it relates to the biosciences. Includes thermodynamics, reaction rate theory, quantum mechanics, and atomic and molecular structure.

BIOC 351 - INTRODUCTION TO MATHEMATICAL BIOLOGY
Short Title: INTRODUCTION TO MATH BIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (PHYS 126 or PHYS 102 or PHYS 112 or PHYS 142) and MATH 211 and (BIOC 201 or EBIO 202)
Description: This class provides an introduction to mathematical concepts in biology and medicine. Students will learn to derive and manipulate mathematical equations describing concepts at all levels of biological organization, from biochemical reactions to population dynamics and epidemiology.

BIOC 352 - PHYSICAL CHEMISTRY FOR THE BIOSCIENCES
Short Title: PHYS CHEM FOR BIOSCIENCES
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (PHYS 126 or PHYS 102 or PHYS 112 or PHYS 142) and BIOC 301
Description: Study of selected aspects of physical chemistry as it relates to the biosciences. Includes thermodynamics, reaction rate theory, quantum mechanics, and atomic and molecular structure.

BIOC 351 - INTRODUCTION TO MATHEMATICAL BIOLOGY
Short Title: INTRODUCTION TO MATH BIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (PHYS 126 or PHYS 102 or PHYS 112 or PHYS 142) and MATH 211 and (BIOC 201 or EBIO 202)
Description: This class provides an introduction to mathematical concepts in biology and medicine. Students will learn to derive and manipulate mathematical equations describing concepts at all levels of biological organization, from biochemical reactions to population dynamics and epidemiology.

BIOC 352 - PHYSICAL CHEMISTRY FOR THE BIOSCIENCES
Short Title: PHYS CHEM FOR BIOSCIENCES
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (PHYS 126 or PHYS 102 or PHYS 112 or PHYS 142) and BIOC 301
Description: Study of selected aspects of physical chemistry as it relates to the biosciences. Includes thermodynamics, reaction rate theory, quantum mechanics, and atomic and molecular structure.

BIOC 351 - INTRODUCTION TO MATHEMATICAL BIOLOGY
Short Title: INTRODUCTION TO MATH BIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (PHYS 126 or PHYS 102 or PHYS 112 or PHYS 142) and MATH 211 and (BIOC 201 or EBIO 202)
Description: This class provides an introduction to mathematical concepts in biology and medicine. Students will learn to derive and manipulate mathematical equations describing concepts at all levels of biological organization, from biochemical reactions to population dynamics and epidemiology.

BIOC 352 - PHYSICAL CHEMISTRY FOR THE BIOSCIENCES
Short Title: PHYS CHEM FOR BIOSCIENCES
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (PHYS 126 or PHYS 102 or PHYS 112 or PHYS 142) and BIOC 301
Description: Study of selected aspects of physical chemistry as it relates to the biosciences. Includes thermodynamics, reaction rate theory, quantum mechanics, and atomic and molecular structure.

BIOC 351 - INTRODUCTION TO MATHEMATICAL BIOLOGY
Short Title: INTRODUCTION TO MATH BIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (PHYS 126 or PHYS 102 or PHYS 112 or PHYS 142) and MATH 211 and (BIOC 201 or EBIO 202)
Description: This class provides an introduction to mathematical concepts in biology and medicine. Students will learn to derive and manipulate mathematical equations describing concepts at all levels of biological organization, from biochemical reactions to population dynamics and epidemiology.
BIOC 380 - FUNDAMENTAL NEUROSCIENCE SYSTEMS
Short Title: NEUROSYSTEMS
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will provide a broad overview of the brain's neural systems that subserve perception, learning, and behavior. The course will be highly integrative with thematic content including functional organization of the nervous system, neural encoding and decoding, sensory systems, motor systems, and high-level concept processing. Cross-list: NEUR 380, PSYC 380. Recommended Prerequisite(s): PSYC 101.

BIOC 385 - FUNDAMENTALS OF CELLULAR AND MOLECULAR NEUROSCIENCE
Short Title: FUNDAMENTALS OF NEUROSCIENCE
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 201
Description: Cellular, molecular, and integrative mechanisms of neural function, including membrane and axon physiology, synaptic transmission and plasticity, sensory transduction and processing. Cross-list: NEUR 385. Graduate/Undergraduate Equivalency: BIOC 585. Mutually Exclusive: Cannot register for BIOC 385 if student has credit for BIOC 585.

BIOC 390 - TRANSFER CREDIT IN BIOCHEMISTRY AND CELL BIOLOGY
Short Title: TRAN CREDIT BIOCHEM&CELL BIO
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Transfer
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Description: For transfer of courses which have no current equivalent in the Rice curriculum, but which can be counted as 300 level BIOC lecture courses, in satisfying requirements for majors in Biosciences. Repeatable for Credit.

BIOC 393 - LABORATORY TRANSFER CREDIT IN BIOCHEMISTRY AND CELL BIOLOGY
Short Title: LAB TRANSFER CREDIT
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Transfer
Credit Hours: 1
Course Level: Undergraduate Upper-Level
Description: For transfer of an advanced laboratory course in the Biochemistry and Cell Biology that has no current equivalent in the Rice curriculum. Any student may receive a maximum of one credit of BIOC 393.

BIOC 401 - UNDERGRADUATE HONORS RESEARCH
Short Title: UNDERGRADUATE HONORS RESEARCH
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 5
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The Biochemistry and Cell Biology Honors Research Program is a suite of courses offering our seniors and advanced juniors the opportunity to perform a two-semester, individual research project in a research laboratory in Biochemistry & Cell Biology. Students having performed BIOS/BIOC 310 research in an off-campus laboratory in the Texas Medical Center will also be eligible to apply to perform honors research in that laboratory. The Honors Research Program courses function as a set and must all be taken in the same academic year. Registration for any of the courses requires a commitment to register for all three. Requires at least 15 hours of laboratory research per week, a proposal (revised from application), monthly reports, and a formal progress report (abstract, aims, progress toward aims, discussion of results, plans for the spring semester). Prerequisites: strong performance in (BIOC 310, or HONS 470/471) and BIOC 211 and either BIOC 301 or BIOC 341. Research professor recommendation required. Application for admission required (BCB Honors Program OwlSpace Resources). Department Permission Required. Repeatable for Credit.

BIOC 402 - UNDERGRADUATE HONORS RESEARCH
Short Title: UNDERGRADUATE HONORS RESEARCH
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 5
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 401
Corequisite: BIOC 412
Description: The Biochemistry and Cell Biology Honors Research Program is a suite of courses offering our seniors and advanced juniors the opportunity to perform a two-semester, individual research project in a research laboratory in Biochemistry & Cell Biology. Students having performed BIOS/BIOC 310 research in an off-campus laboratory in the Texas Medical Center will also be eligible to apply to perform honors research in that laboratory. Registration for any of the courses requires a commitment to register for all three. Requires at least 15 hours of laboratory research per week, monthly reports, a thesis (substantial research paper) and a poster presentation at the Rice Undergraduate Research Symposium. Repeatable for Credit.
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>BIOC 403</td>
<td>PHYSICAL BIOLOGY</td>
<td>PHYSICAL BIOLOGY</td>
<td>Biosciences</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Upper-Level</td>
<td>BIOC 352 and MATH 211</td>
<td>This course provides a biophysical view of living systems, from the subcellular to the multicellular scales. Topics include: biomolecular dynamics, cellular biomechanics, cell motility and cell division, calcium signaling, action potential propagation, and tissue organization. Graduate/Undergraduate Equivalency: BIOC 501.</td>
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<td>BIOC 412</td>
<td>UNDERGRADUATE RESEARCH SEMINAR</td>
<td>UNDERGRADUATE RESEARCH SEMINAR</td>
<td>Biosciences</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>1</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Upper-Level</td>
<td>BIOC 401</td>
<td>This companion seminar requires attendance at course meetings and a formal scientific presentation of research performed while enrolled in the Honors Research Program. Repeatable for Credit.</td>
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<tr>
<td>BIOC 415</td>
<td>EXPERIMENTAL PHYSIOLOGY</td>
<td>EXPERIMENTAL PHYSIOLOGY</td>
<td>Biosciences</td>
<td>Standard Letter</td>
<td>Laboratory</td>
<td>1</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Upper-Level</td>
<td>(BIOC 311 or BIOC 385 (may be taken concurrently) or NEUR 385 (may be taken concurrently)) and (BIOC 211 or BIOC 212)</td>
<td>Laboratory studies in membrane, nerve, and muscle physiology, with emphasis on experimental design, data analysis, and data interpretation. BIOC/NEUR 385 may be taken concurrently with BIOC 415.</td>
</tr>
<tr>
<td>BIOC 417</td>
<td>EXPERIMENTAL CELL AND MOLECULAR NEUROSCIENCE</td>
<td>ADV EXPERIMENTAL NEUROSCIENCE</td>
<td>Biosciences</td>
<td>Standard Letter</td>
<td>Laboratory</td>
<td>1</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Upper-Level</td>
<td>BIOC 212 and CAAM 210 and (STAT 305 or STAT 310 or ECON 307 or STAT 312) and (BIOC 385 or NEUR 385)</td>
<td>Students will explore the molecular properties of neurons and related cells using standard techniques in the field. Experiments will include manipulating exocytosis, examining protein expression levels in different brain regions of mice, and culturing primary neurons. Lessons will also include a brief lecture/discussion on fundamental principles within cellular and molecular neuroscience.</td>
</tr>
<tr>
<td>BIOC 424</td>
<td>MICROBIOLOGY AND BIOTECHNOLOGY</td>
<td>MICROBIOLOGY &amp; BIOTECHNOLOGY</td>
<td>Biosciences</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Upper-Level</td>
<td>BIOC 201</td>
<td>Structure and functions of microorganisms with emphasis on their environmental, industrial and medical importance. Graduate/Undergraduate Equivalency: BIOC 524. Recommended Prerequisite(s): BIOC 301 or Instructor Permission. Mutually Exclusive: Cannot register for BIOC 424 if student has credit for BIOC 524.</td>
</tr>
<tr>
<td>BIOC 425</td>
<td>PLANT MOLECULAR GENETICS AND DEVELOPMENT</td>
<td>PLANT MOLECULAR GENETICS</td>
<td>Biosciences</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Upper-Level</td>
<td>BIOC 301 or BIOC 341</td>
<td>Novel aspects of plant biology and development with emphasis on molecular and genetic mechanisms. Plant responses to the environment and the use of bioengineering and other means to develop new plant products will also be covered. Graduate/Undergraduate Equivalency: BIOC 525. Mutually Exclusive: Cannot register for BIOC 425 if student has credit for BIOC 525.</td>
</tr>
</tbody>
</table>
BIOC 442 - MOLECULES, MEMORY AND MODEL ANIMALS: METHODS IN BEHAVIORAL NEUROSCIENCE
Short Title: BEHAVIORAL NEUROSCIENCE
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (BIOC 380 or NEUR 380 or PSYC 380 or BIOC 385 or NEUR 385) and (PSYC 203 or EBIOL 321) and (STAT 305 or STAT 310 or ECON 307 or STAT 312)
Description: This will be a combined lecture/discussion course on historical and current methods in behavioral neuroscience using primary literature. Topics will include the molecular basis of memory, genetic impacts on cognition, and possible epigenetic influences on behavior. Special emphasis will be placed on discussing different model organism and their benefits/drawbacks in neuroscience research.

BIOC 443 - DEVELOPMENTAL NEUROBIOLOGY
Short Title: NEURODEVELOPMENT
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 341 or BIOC 301 or BIOC 344
Description: An advanced undergraduate and graduate level course, dedicated to analysis and evaluation of scientific inquiry into animal development and neurodevelopment. Textbook based lectures and discussions based on primary scientific literature are used to exemplify and evaluate concepts and methodology. Writing assignments, quizzes, midterm and final exam will be used to evaluate performance. Graduate/Undergraduate Equivalency: BIOC 544. Mutually Exclusive: Cannot register for BIOC 443 if student has credit for BIOC 544.

BIOC 445 - ADVANCED MOLECULAR BIOLOGY AND GENETICS
Short Title: ADV MOLECULAR BIOL & GENETICS
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 301 or BIOC 344
Description: Molecular and genetic aspects of the regulation of gene expression as seen in simple prokaryotic systems and the model eukaryotic systems used for studies of development. Graduate/Undergraduate Equivalency: BIOC 545. Mutually Exclusive: Cannot register for BIOC 445 if student has credit for BIOC 545.

BIOC 447 - EXPERIMENTAL BIOLOGY AND THE FUTURE OF MEDICINE
Short Title: BIOLOGY AND MEDICINE
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 301 or BIOC 341 or BIOC 344
Description: Current biological methods offer the potential to transform health care. We will examine the biology and methodology of emergent health care technologies such as stem cell therapy and personal genome sequencing to understand their potential to impact human health. Graduate/Undergraduate Equivalency: BIOC 547.

BIOC 449 - ADVANCED CELL AND MOLECULAR NEUROSCIENCE
Short Title: ADV CELL AND MOLECULAR NEURO
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (BIOC 385 or NEUR 385) and BIOC 201 and BIOC 212 and (MATH 102 or MATH 106) and (STAT 305 or STAT 310 or ECON 307 or STAT 312)
Description: This course will be an overview of advanced principles and techniques in cell and molecular neuroscience; subjects will include bioelectricity, cellular signaling, and the molecular mechanics of neuronal plasticity. The class will primarily be lecture driven. However, there will be seminar component – students will review primary scientific literature, discuss it in small groups, and present their findings. Graduate/Undergraduate Equivalency: BIOC 549. Recommended Prerequisite(s): NEUR 380 or BIOC 380 or PSYC 380. Mutually Exclusive: Cannot register for BIOC 449 if student has credit for BIOC 549.

BIOC 450 - VIRUSES AND INFECTIOUS DISEASES
Short Title: VIRUSES & INFECTIOUS DISEASES
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 301 or BIOC 341
Description: Animal viruses, especially those relevant to human health, will be discussed. Topics primarily focus on virus structure and the molecular biology of the virus life cycle. Practical issues such as the history of viral diseases, clinical manifestations, laboratory diagnosis, management and prevention will also be discussed. Graduate/Undergraduate Equivalency: BIOC 550. Mutually Exclusive: Cannot register for BIOC 450 if student has credit for BIOC 550.
BIOC 455 - COMPUTATIONAL SYNTHETIC BIOLOGY
Short Title: COMP SYNTHETIC BIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 211
Description: Mathematical and computational techniques of cell biology and synthetic biology. Topics include deriving and implementing mathematical and computational models of cellular growth and division, evolution, gene regulation, synthetic gene circuits, enzymatic processing, and stochastic processes in biology. Graduate/Undergraduate Equivalency: BIOC 555. Recommended Prerequisite(s): CAAM 210

BIOC 460 - CANCER BIOLOGY
Short Title: CANCER BIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 301 and BIOC 341
Description: Provides an integrated lecture series summarizing current knowledge in cancer biology and integrating current literature with basic concepts. Topics include: statistics of incidence/survival, types of cancer, pathology, the process of carcinogenesis and sources of carcinogens, genetic and epigenetic mechanisms and consequences, cancer progression, metastasis and current treatment options. Students will learn to use online databases to develop independent strategies for analyzing datasets. There will be several writing assignments and in class oral presentations of research articles. Graduate/Undergraduate Equivalency: BIOC 560. Mutually Exclusive: Cannot register for BIOC 460 if student has credit for BIOC 560.

BIOC 464 - EXTRACELLULAR MATRIX
Short Title: EXTRACELLULAR MATRIX
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOS 341 or BIOC 341
Description: This course will address the biology, organization, mechanics, and turnover of extracellular matrix. There will be an emphasis on cells and cell-matrix interactions, matrix distribution within and design of connective tissues and organs techniques for quantitative analysis of matrix, techniques for measurement and modeling of connective tissue biomechanics, changes with growth and aging and tissue/matrix degradation. Cross-list: BIOE 464. Graduate/Undergraduate Equivalency: BIOC 523. Recommended Prerequisite(s): BIOE 372, BIOC 341. Mutually Exclusive: Cannot register for BIOC 464 if student has credit for BIOC 523.

BIOC 467 - COMPUTATION WITH BIOLOGICAL DATA
Short Title: COMPUTATION WITH BIOL DATA
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (BIOC 301 or BIOC 341 or BIOC 344) and (MATH 102 or MATH 106)
Description: This course will teach programming and analysis techniques essential for modern research in the biological sciences. Students will learn the basics of programming in the MATLAB or Python scripting languages and applications to analyzing biological data. There will be a particular focus on quantitative image and sequence analysis. Graduate/Undergraduate Equivalency: BIOC 570. Mutually Exclusive: Cannot register for BIOC 470 if student has credit for BIOC 570.

BIOC 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Laboratory, Lecture, Seminar, Independent Study, Lecture/Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

BIOC 481 - MOLECULAR BIOPHYSICS I
Short Title: MOLECULAR BIOPHYSICS I
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 301 or BIOC 352
Description: Focus on principles of common biophysical methods used for study of conformations and dynamics of biological macromolecules and assemblies. Topics cover spectroscopic methods (absorption, fluorescence, circular dichroism, epr, NMR), transport processes, sedimentation, calorimetry, mass spectrometry, crystallography, cryoelectron microscopy, atomic force microscopy, ligand-protein interactions, protein folding, single molecule detection, computer simulations, functional genomics and laboratory evolution. Biological examples will be used to demonstrate merits and complementarity in each of the biophysical methods. Graduate/Undergraduate Equivalency: BIOC 551.
BIOC 482 - STRUCTURAL BIOLOGY
Short Title: STRUCTURAL BIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 301 and (PHYS 101 or PHYS 125) and (PHYS 102 or PHYS 126)
Description: Structural biology plays an important role in defining atomic structures of biomolecules and understanding relationships between structure, dynamics and function in living systems. This course will give an introduction to techniques of determining biomolecular structures, X-ray crystallography, NMR, and cryoelectron microscopy and discuss striking examples of the power of structural biology. Graduate/Undergraduate Equivalency: BIOC 552. Mutually Exclusive: Cannot register for BIOC 482 if student has credit for BIOC 552.

BIOC 501 - PHYSICAL BIOLOGY
Short Title: PHYSICAL BIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Basic introduction to a biophysical view of living systems, from the subcellular to the multicellular scales. Topics include: biomolecular dynamics, cellular biomechanics, cell motility and cell division, calcium signaling, action potential propagation, and tissue organization. Cross-list: BIOE 502, SSPB 501. Graduate/Undergraduate Equivalency: BIOC 403.

BIOC 524 - MICROBIOLOGY & BIOTECHNOLOGY
Short Title: MICROBIOLOGY & BIOTECHNOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Structure and functions of microorganisms with emphasis on their environmental, industrial and medical importance. Graduate/Undergraduate Equivalency: BIOC 424. Mutually Exclusive: Cannot register for BIOC 524 if student has credit for BIOC 424.

BIOC 525 - PLANT MOLECULAR GENETICS AND DEVELOPMENT
Short Title: PLANT MOLECULAR GENETICS
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Novel aspects of plant biology and development with emphasis on molecular and genetic mechanisms. Plant responses to the environment and the use of bioengineering and other means to develop new plant products will also be covered Graduate/Undergraduate Equivalency: BIOC 425. Mutually Exclusive: Cannot register for BIOC 525 if student has credit for BIOC 425.

BIOC 530 - LAB MODULE IN NMR SPECTROSCOPY AND MOLECULAR MODELING
Short Title: LAB MOD NMR SPECTROSCOPY & MOLECULAR MODELING
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): BIOC 481 or BIOC 482 (may be taken concurrently) or BIOC 552 (may be taken concurrently) or BIOC 551
Description: The students will learn to set up, acquire, and process one-dimensional and basic two-dimensional NMR experiments. Spectral interpretation (3D molecular modeling of proteins and nucleic acids) for nucleic acids and proteins using homonuclear and heteronuclear data. Enrollment limited to 12, with priority to graduate students. Offered first half of the semester. BIOC 482/552 may be taken concurrently with BIOC 530.

BIOC 532 - LABORATORY MODULE IN OPTICAL SPECTROSCOPY AND KINETICS
Short Title: LAB MOD OPTICAL SPECTROSCOPY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students learn the principles behind fluorescence, circular dichroism, analytical ultracentrifugation, spectroscopy and rapid kinetics by carrying out experiments with genetically engineered proteins and state-of-the-art equipment. Data will be interpreted and manipulated using curve-fitting and graphics software. Offered second half of the semester. Recommended Prerequisite(s): BIOC 352 or equivalent. Concurrent or previous enrollment in BIOC 481 or BIOC 551.
BIOC 533 - BIOINFORMATICS & COMPUTATIONAL BIOLOGY  
Short Title: BIOINFORMATICS  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 2  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: An introduction to the emerging field of bioinformatics. A series of lectures, combined with hands-on exercises. The topics to be discussed include sequence comparison, structure analysis, phylogenetics, database searching, microarrays and proteomics. Recommended prerequisite(s): BIOC 301 or permission of instructor.

BIOC 534 - EVOLUTION  
Short Title: EVOLUTION  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Principles of biological evolution. Topics include natural selection, adaptation, molecular evolution, formation of new species, the fossil record, biogeography, and principles of classification. Instructor Permission Required. Cross-list: EBIO 534. Graduate/Undergraduate Equivalency: BIOC 334. Mutually Exclusive: Cannot register for BIOC 534 if student has credit for BIOC 334.

BIOC 535 - PRACTICAL X-RAY CRYSTALLOGRAPHY  
Short Title: PRACT X-RAY CRYSTALLOGRAPHY  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Laboratory  
Credit Hours: 2  
Restrictions: Enrollment is limited to Graduate level students.  
Prerequisite(s): Graduate  
Description: This is an introduction to macromolecular crystallography with emphasis on crystallization methods, data acquisition, processing and molecular model-building. Approaches to solving structures will be discussed, as well as refinement of molecular models. Offered second half of the semester. Prerequisites are concurrent and may be taken the same semester.

BIOC 536 - CELLULAR AND MOLECULAR ANIMAL PHYSIOLOGY  
Short Title: CELL & MOL ANIMAL PHYSIOLOGY  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course investigates animal physiology from a cellular and molecular perspective. Using an integrated and comparative approach, students learn how animals maintain homeostasis. Students will read primary literature to explore physiological adaptations for survival in extreme conditions. Graduate/Undergraduate Equivalency: BIOC 335. Mutually Exclusive: Cannot register for BIOC 536 if student has credit for BIOC 335.

BIOC 537 - ADVANCED STRUCTURAL BIOLOGY SEMINAR  
Short Title: ADV STRUCTURAL BIOLOGY SEMINAR  
Department: Biosciences  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Seminar  
Credit Hour: 1  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: One hour seminar course in theoretical and practical aspects of crystallography, primarily as it applies to macromolecular crystallography. Presentations will be given by instructors and students on advanced topics based on published works or original research. Repeatable for Credit.

BIOC 540 - METABOLIC ENGINEERING  
Short Title: METABOLIC ENGINEERING  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  

BIOC 544 - DEVELOPMENTAL NEUROBIOLOGY  
Short Title: NEURODEVELOPMENT  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): BIOC 341 or BIOC 301 or BIOC 344  
Description: An advanced undergraduate and graduate level course, dedicated to analysis and evaluation of scientific inquiry into animal development. Textbook based lectures and discussions based on primary scientific literature are used to exemplify and evaluate concepts and methodology. Writing assignments, quizzes, midterm and final exam will be used to evaluate performance. Graduate/Undergraduate Equivalency: BIOC 443. Mutually Exclusive: Cannot register for BIOC 544 if student has credit for BIOC 443.

BIOC 545 - ADVANCED MOLECULAR BIOLOGY AND GENETICS  
Short Title: ADV MOLECULAR BIOL & GENETICS  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Molecular and genetic aspects of the regulation of gene expression as seen in simple prokaryotic systems and the model eukaryotic systems used for studies of development. Graduate/Undergraduate Equivalency: BIOC 445. Mutually Exclusive: Cannot register for BIOC 545 if student has credit for BIOC 445.
BIOC 547 - EXPERIMENTAL BIOLOGY AND THE FUTURE OF MEDICINE
Short Title: BIOLOGY AND MEDICINE
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Current biological methods offer the potential to transform health care. We will examine the biology and methodology of emergent health care technologies such as stem cell therapy and personal genome sequencing to understand their potential to impact human health. Graduate/Undergraduate Equivalency: BIOC 447. Recommended Prerequisite(s): BIOC 301 or BIOC 341 or BIOC 344.

BIOC 549 - ADVANCED CELL AND MOLECULAR NEUROSCIENCE
Short Title: ADV CELL AND MOLECULAR NEURO
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): BIOC 301 or BIOC 341 or BIOC 344.
Description: This course will be an overview of advanced principles and techniques in cell and molecular neuroscience; subjects will include bioelectricity, cellular signaling, and the molecular mechanics of neuronal plasticity. The class will primarily be lecture driven. However, there will be seminar component – students will review primary scientific literature, discuss it in small groups, and present their findings. Graduate/Undergraduate Equivalency: BIOC 447. Recommended Prerequisite(s): BIOC 301. Mutually Exclusive: Cannot register for BIOC 549 if student has credit for BIOC 449.

BIOC 550 - VIRUSES AND INFECTIOUS DISEASES
Short Title: VIRUSES & INFECTIOUS DISEASES
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): BIOC 301 or BIOC 341
Description: Animal viruses, especially those relevant to human health, will be discussed. Topics primarily focus on virus structure and the molecular biology of the virus life cycle. Practical issues such as the history of viral diseases, clinical manifestations, laboratory diagnosis, management and prevention will also be discussed. Graduate/Undergraduate Equivalency: BIOC 450. Mutually Exclusive: Cannot register for BIOC 550 if student has credit for BIOC 450.

BIOC 551 - MOLECULAR BIOPHYSICS
Short Title: MOLECULAR BIOPHYSICS I
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): BIOC 301 or BIOC 352
Description: Focus on principles of common biophysical methods used for study of conformations and dynamics of biological macromolecules and assemblies. Topics cover spectroscopic methods (absorption, fluorescence, circular dichroism, epr, NMR), transport processes, sedimentation, calorimetry, mass spectrometry, crystallography, cryo-electron microscopy, atomic force microscopy, ligand-protein interactions, protein folding, single molecule detection, computer simulations, functional genomics and laboratory evolution. Biological examples will be used to demonstrate merits and complementarity in each of the biophysical methods. Graduate/Undergraduate Equivalency: BIOC 481.

BIOC 552 - STRUCTURAL BIOLOGY
Short Title: STRUCTURAL BIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): BIOC 301. Mutually Exclusive: Cannot register for BIOC 552 if student has credit for BIOC 482.

BIOC 555 - COMPUTATIONAL SYNTHETIC BIOLOGY
Short Title: COMP SYNTH BIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Mathematical and computational techniques of cell biology and synthetic biology. Topics include deriving and implementing mathematical and computational models of cellular growth and division, evolution, gene regulation, synthetic gene circuits, enzymatic processing, and stochastic processes in biology. Graduate/Undergraduate Equivalency: BIOC 485.
BIOC 558 - INTRODUCTION TO GENOME EDITING AND ENGINEERING

Short Title: GENOME EDITING AND ENGINEERING

Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course provides an introduction to the recent advances in the genome editing and engineering field. Past and current stages of genome-editing technologies, the fundamental mechanisms of different classes of genome-editing proteins, and cutting-edge strategies for engineering novel genome-editing agents and their applications in synthetic biology and therapeutics. Cross-list: CHBE 558.

BIOC 560 - CANCER BIOLOGY

Short Title: CANCER BIOLOGY

Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will teach programming and analysis techniques essential for modern research in the biological sciences. Students will learn the basics of programming in the MATLAB or Python scripting languages and applications to analyzing biological data. There will be a particular focus on quantitative image and sequence analysis. Instructor Permission Required. Graduate/Undergraduate Equivalency: BIOC 460. Mutually Exclusive: Cannot register for BIOC 560 if student has credit for BIOC 460.

BIOC 561 - CANCER BIOLOGY

Short Title: CANCER BIOLOGY

Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Provides an integrated lecture series summarizing current knowledge in cancer biology and integrating current literature with basic concepts. Topics include: statistics of incidence/survival, types of cancer, pathology, the process of carcinogenesis and sources of carcinogens, genetic and epigenetic mechanisms and consequences, cancer progression, metastasis and current treatment options. Students will learn to use online databases to develop independent strategies for analyzing datasets. There will be several writing assignments and in class oral presentations of research articles. This course requires instructor permission to enroll. Please fill out the special registration form from https://registrar.rice.edu/student/special_registration. All requests will be reviewed and you will be notified of an enrollment decision. Instructor Permission Required. Cross-list: BIOC 560. Graduate/Undergraduate Equivalency: BIOC 460. Mutually Exclusive: Cannot register for BIOC 560 if student has credit for BIOC 460.

BIOC 563 - INTRODUCTION TO RESEARCH

Short Title: INTRODUCTION TO RESEARCH

Department: Biosciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction of first-year graduate students to the research programs and laboratories of individual faculty members. Open only to BCB graduate students.

BIOC 571 - BIOINFORMATICS: SEQUENCE ANALYSIS

Short Title: BIOINFORMATICS: SEQUENCE ANALYSIS

Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Provides an integrated lecture series summarizing current knowledge in cancer biology and integrating current literature with basic concepts. Topics include: statistics of incidence/survival, types of cancer, pathology, the process of carcinogenesis and sources of carcinogens, genetic and epigenetic mechanisms and consequences, cancer progression, metastasis and current treatment options. Students will learn to use online databases to develop independent strategies for analyzing datasets. There will be several writing assignments and in class oral presentations of research articles. This course requires instructor permission to enroll. Please fill out the special registration form from https://registrar.rice.edu/student/special_registration. All requests will be reviewed and you will be notified of an enrollment decision. Instructor Permission Required. Cross-list: BIOC 560. Graduate/Undergraduate Equivalency: BIOC 460. Mutually Exclusive: Cannot register for BIOC 560 if student has credit for BIOC 460.

BIOC 572 - BIOINFORMATICS: NETWORK ANALYSIS

Short Title: BIOINFORMATICS: NETWORK ANALYSIS

Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Provides an integrated lecture series summarizing current knowledge in cancer biology and integrating current literature with basic concepts. Topics include: statistics of incidence/survival, types of cancer, pathology, the process of carcinogenesis and sources of carcinogens, genetic and epigenetic mechanisms and consequences, cancer progression, metastasis and current treatment options. Students will learn to use online databases to develop independent strategies for analyzing datasets. There will be several writing assignments and in class oral presentations of research articles. This course requires instructor permission to enroll. Please fill out the special registration form from https://registrar.rice.edu/student/special_registration. All requests will be reviewed and you will be notified of an enrollment decision. Instructor Permission Required. Cross-list: BIOC 560. Graduate/Undergraduate Equivalency: BIOC 460. Mutually Exclusive: Cannot register for BIOC 560 if student has credit for BIOC 460.

BIOC 573 - IMMUNOLOGY

Short Title: IMMUNOLOGY

Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): BIOC 201
Description: Provides an integrated lecture series summarizing current knowledge in cancer biology and integrating current literature with basic concepts. Topics include: statistics of incidence/survival, types of cancer, pathology, the process of carcinogenesis and sources of carcinogens, genetic and epigenetic mechanisms and consequences, cancer progression, metastasis and current treatment options. Students will learn to use online databases to develop independent strategies for analyzing datasets. There will be several writing assignments and in class oral presentations of research articles. This course requires instructor permission to enroll. Please fill out the special registration form from https://registrar.rice.edu/student/special_registration. All requests will be reviewed and you will be notified of an enrollment decision. Instructor Permission Required. Cross-list: BIOC 560. Graduate/Undergraduate Equivalency: BIOC 460. Mutually Exclusive: Cannot register for BIOC 560 if student has credit for BIOC 460.

BIOC 574 - INTRODUCTION TO RESEARCH

Short Title: INTRODUCTION TO RESEARCH

Department: Biosciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Provides an integrated lecture series summarizing current knowledge in cancer biology and integrating current literature with basic concepts. Topics include: statistics of incidence/survival, types of cancer, pathology, the process of carcinogenesis and sources of carcinogens, genetic and epigenetic mechanisms and consequences, cancer progression, metastasis and current treatment options. Students will learn to use online databases to develop independent strategies for analyzing datasets. There will be several writing assignments and in class oral presentations of research articles. This course requires instructor permission to enroll. Please fill out the special registration form from https://registrar.rice.edu/student/special_registration. All requests will be reviewed and you will be notified of an enrollment decision. Instructor Permission Required. Cross-list: BIOC 560. Graduate/Undergraduate Equivalency: BIOC 460. Mutually Exclusive: Cannot register for BIOC 560 if student has credit for BIOC 460.

BIOC 575 - INTRODUCTION TO RESEARCH

Short Title: INTRODUCTION TO RESEARCH

Department: Biosciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Provides an integrated lecture series summarizing current knowledge in cancer biology and integrating current literature with basic concepts. Topics include: statistics of incidence/survival, types of cancer, pathology, the process of carcinogenesis and sources of carcinogens, genetic and epigenetic mechanisms and consequences, cancer progression, metastasis and current treatment options. Students will learn to use online databases to develop independent strategies for analyzing datasets. There will be several writing assignments and in class oral presentations of research articles. This course requires instructor permission to enroll. Please fill out the special registration form from https://registrar.rice.edu/student/special_registration. All requests will be reviewed and you will be notified of an enrollment decision. Instructor Permission Required. Cross-list: BIOC 560. Graduate/Undergraduate Equivalency: BIOC 460. Mutually Exclusive: Cannot register for BIOC 560 if student has credit for BIOC 460.

BIOC 576 - INTRODUCTION TO RESEARCH

Short Title: INTRODUCTION TO RESEARCH

Department: Biosciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Provides an integrated lecture series summarizing current knowledge in cancer biology and integrating current literature with basic concepts. Topics include: statistics of incidence/survival, types of cancer, pathology, the process of carcinogenesis and sources of carcinogens, genetic and epigenetic mechanisms and consequences, cancer progression, metastasis and current treatment options. Students will learn to use online databases to develop independent strategies for analyzing datasets. There will be several writing assignments and in class oral presentations of research articles. This course requires instructor permission to enroll. Please fill out the special registration form from https://registrar.rice.edu/student/special_registration. All requests will be reviewed and you will be notified of an enrollment decision. Instructor Permission Required. Cross-list: BIOC 560. Graduate/Undergraduate Equivalency: BIOC 460. Mutually Exclusive: Cannot register for BIOC 560 if student has credit for BIOC 460.
BIOC 578 - BIOTECHNOLOGY PRACTICUM
Short Title: BIOTECHNOLOGY PRACTICUM
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is part of the NIH Biotechnology Training Program and is limited to program participants. Students will receive exposure and training in cutting edge concepts and technologies. Cross-list: BIOC 578.

BIOC 580 - PROTEIN ENGINEERING
Short Title: PROTEIN ENGINEERING
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Manipulation of gene expression in prokaryotic and eukaryotic cells. Rational design and directed solutions for cell and protein engineering. Selection and screening technologies and process optimization. Synthetic Biology: engineering and application of gene circuits. Molecular biotechnology applications: Diagnosis, Therapeutics and Vaccines. Cross-list: BIOC 580, CHBE 580. Recommended Prerequisite(s): CHBE 310/510 or equivalent is highly recommended.

BIOC 581 - GRADUATE SEMINAR IN BIOCHEMISTRY AND CELL BIOLOGY
Short Title: GRAD SEM BIOCHEM & CELL BIOL
Department: Biosciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A discussion of selected research topics. Required of all Biochemistry and Cell Biology graduate students. Open only to BCB graduate students. Repeatable for Credit.

BIOC 582 - GRADUATE SEMINAR IN BIOCHEMISTRY AND CELL BIOLOGY
Short Title: GRAD SEM/BIOCHEM & CELL BIOL
Department: Biosciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A discussion of selected research topics. Required of all Biochemistry and Cell Biology graduate students. Open only to BCB graduate students. Repeatable for Credit.

BIOC 583 - MOLECULAR INTERACTIONS
Short Title: MOLECULAR INTERACTIONS
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to students with a major in Biochemistry and Cell Biology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: First of two integrated classes taken by first-year graduate students in BCB (to be followed by BIOC 588, Cellular Interactions). Covers advanced topics in biochemistry, ranging from protein and nucleic acid synthesis, folding, function, and engineering to allostery, dynamics, and degradation with an emphasis on fundamental principles, research methodologies, problem solving, and critical analysis of primary literature. Enrollment limited to BCB graduate students.

BIOC 585 - FUNDAMENTALS OF CELLULAR AND MOLECULAR NEUROSCIENCE
Short Title: FUNDAMENTALS OF NEUROSCIENCE
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Cellular, molecular, and integrative mechanisms of neural function, including membrane and axon physiology, synaptic transmission and plasticity, sensory transduction and processing. Graduate/Undergraduate Equivalency: BIOC 385. Mutually Exclusive: Cannot register for BIOC 585 if student has credit for BIOC 385.

BIOC 587 - RESEARCH DESIGN, PROPOSAL WRITING, AND PROFESSIONAL DEVELOPMENT
Short Title: PROPOSAL WRITING
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Preparation for professional scientific communication with an emphasis on writing research proposals, describing work in progress, and presenting data in context of research goals.

BIOC 588 - CELLULAR INTERACTIONS
Short Title: CELLULAR INTERACTIONS
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to students with a major in Biochemistry and Cell Biology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Second of two integrated classes taken by first-year graduate students in BCB (following BIOC 583, Molecular Interactions). Covers advanced topics in genetics, cell biology, and developmental biology, focusing on cellular, tissue, and organismal structure and function with an emphasis on fundamental principles, research methodologies, and critical analysis of primary literature.
BIOSC 589 - COMPUTATIONAL MOLECULAR BIOENGINEERING/BIOPHYSICS
Short Title: COMP MOLECULAR BIOENG/BIOPHYS
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is a course designed for students in computationally-oriented biomedical and bioengineering majors to introduce the principles and methods used for the simulations and modeling of macromolecules of biological interest. Protein conformation and dynamics are emphasized. Empirical energy function and molecular dynamics calculations, as well as other approaches, are described. Specific biological problems are discussed to illustrate the methodology. Cross-list: BIOE 589. Recommended Prerequisite(s): MATH 212, BIOC 301, BIOE 332.

BIOSC 590 - SPECIAL TOPICS IN BIOCHEMISTRY AND CELL BIOLOGY
Short Title: SPEC TOPCS BIOCHEM&CELL BIO
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Development of specific topic areas at the graduate level. Instructor Permission Required.

BIOSC 592 - TOPICS IN QUANTITATIVE BIOLOGY AND BIOMEDICAL INFORMATICS (KECK SEMINAR)
Short Title: TOPICS QUANT BIO & BIOMED INFO
Department: Biosciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A discussion of selected research topics in quantitative biology and biomedical informatics. Cross-list: KECK 592. Repeatable for Credit.

BIOSC 593 - CURRENT TOPICS IN PLANT BIOLOGY
Short Title: TOPICS IN PLANT BIOLOGY
Department: Biosciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to students with a major in Biochemistry and Cell Biology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Discussion of selected research topics in current plant biology literature. Repeatable for Credit.

BIOSC 599 - GRADUATE TEACHING IN BIOCHEMISTRY AND CELL BIOLOGY
Short Title: GRADUATE TEACHING IN BIOCHEM
Department: Biosciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Independent Study
Credit Hour: 1
Restrictions: Enrollment is limited to students with a major in Biochemistry and Cell Biology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Supervised instruction in teaching biochemistry and cell biology. Repeatable for Credit.

BIOSC 611 - RESEARCH SEMINAR IN BIOCHEMISTRY AND CELL BIOLOGY
Short Title: RESEARCH SEMINAR
Department: Biosciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Discussion of individual research or current topics in particular areas. Intended for students conducting research projects in the lab of the instructor. Repeatable for Credit.

BIOSC 643 - CELL MECHANICS, MECHANOTRANSDUCTION AND THE CELL MICROENVIRONMENT
Short Title: MECHANOTRANSDUCTION
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Mechatransduction is a fundamental process essential for living systems and plays a fundamental role in cell signaling, cancer metastasis and stem cell differentiation. Additionally, fundamental biological processes such as endocytosis cell fusion and cell migration are driven by a coordinated interplay of molecular interactions that drive membrane deformation. This course will survey the current understanding of mechatransduction and the mechanical properties of cells and their microenvironment, including membrane and cytoskeletal mechanics. Experimental approaches for measuring and manipulating the material properties of cells and their environment; including optical, electrical and magnetic techniques will be covered. A variety of application will be covered, including manipulation in engineering of mechatransduction pathways to drive cell migration and stem cell differentiation. Instructor Permission Required. Cross-list: BIOE 643, PHYS 643.

BIOSC 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.
Biochemistry (BIOC)

BIOC 701 - GRADUATE LAB RESEARCH I
Short Title: GRADUATE LAB RESEARCH I
Department: Biosciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 2-4
Restrictions: Enrollment is limited to Graduate level students.
Description: Graduate research in Biochemistry and Cell Biology. Designed for short term laboratory projects for first year graduate students. Recommended prerequisite(s): Graduate standing in Biochemistry and Cell Biology. Repeatable for Credit.

BIOC 702 - GRADUATE LAB RESEARCH II
Short Title: GRADUATE LAB RESEARCH II
Department: Biosciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 2-4
Restrictions: Enrollment is limited to Graduate level students.
Description: Graduate research in Biochemistry and Cell Biology. Designed for short term laboratory projects for first year graduate students. Recommended prerequisite(s): Graduate standing in Biochemistry and Cell Biology. Repeatable for Credit.

BIOC 800 - BIOCHEMISTRY & CELL BIOLOGY GRADUATE RESEARCH
Short Title: BCB GRADUATE RESEARCH
Department: Biosciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to students with a major in Biochemistry and Cell Biology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

Bioengineering (BIOE)

BIOE 202 - CAREERS IN BIOENGINEERING
Short Title: CAREERS IN BIOENGINEERING
Department: Bioengineering
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This seminar is suitable for freshman, sophomores, and non-majors. A series of guest lectures will introduce students to a variety of career options in bioengineering. Students will participate in at least one field trip to an industry partner or hospital to learn more about careers in bioengineering.

BIOE 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

BIOE 252 - BIOENGINEERING FUNDAMENTALS
Short Title: BIOENGINEERING FUNDAMENTALS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): (MATH 101 or MATH 105) and (MATH 102 or MATH 106) and MATH 211 (may be taken concurrently) and (CHEM 112 or CHEM 122) and CAAM 210 and (PHYS 101 or PHYS 125 or PHYS 111) and (PHYS 102 or PHYS 126 or PHYS 112)
Description: Introduction to material, energy, charge, and momentum balances in biological systems. Steady state and transient conservation equations for mass, energy, charge and momentum will be derived and applied using basic mathematical principles, physical laws, stoichiometry, and thermodynamic properties. Problem based learning groups will solve open-ended problems. Required for students intending to major in bioengineering. MATH 211 is a concurrent prerequisite and may be taken the same semester.

BIOE 302 - SYSTEMS PHYSIOLOGY
Short Title: SYSTEMS PHYSIOLOGY
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 201 and (PHYS 101 and PHYS 102) or (PHYS 125 and PHYS 126)
Description: This course will teach the fundamentals of human physiology with a specific focus on the nervous, cardiovascular, respiratory, and urinary systems. Basic introductory engineering principles will be applied to the study of physiological systems. The course is aimed to be accessible to students with non-engineering backgrounds. Students may receive credit for only one of BIOE 302, BIOE 322, and BIOE 332. Cross-list: BIOE 332. Mutually Exclusive: Cannot register for BIOE 302 if student has credit for BIOE 322.
BIOE 320 - SYSTEMS PHYSIOLOGY LAB MODULE
Short Title: SYSTEMS PHYSIOLOGY LAB MODULE
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 252 and (BIOC 332 or BIOE 322 (may be taken concurrently) or BIOC 332 (may be taken concurrently))
Description: Exploration of physiologic systems through measurement of biologic signals. EEG, ECG, EMG pulmonary function tests, etc. are performed and analyzed. Students will explore physiologic concepts through computer simulations, data collection, and analysis. Enrollment in or completion of BIOE 322/BIOC 332 is expected and maybe taken the same semester as BIOE 320. For students intending to major in Bioengineering. Instructor Permission Required.

BIOE 321 - CELLULAR ENGINEERING
Short Title: CELLULAR ENGINEERING
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 252
Description: Introduction to engineering principles and modeling regulation and circuitry at the cellular level. Topics include genetic metabolic networks and cell surface interactions.

BIOE 322 - FUNDAMENTALS OF SYSTEMS PHYSIOLOGY
Short Title: FUND OF SYSTEMS PHYSIOLOGY
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 252 and MATH 211
Description: This course will teach the fundamentals of human physiology from an engineering perspective, with specific focus on the nervous, cardiovascular, respiratory and urinary systems. Lectures, assignments and exams will be quantitative and will introduce engineering principles, such as conservation of mass and energy, controls and system analysis, thermodynamics and mass transport, and apply them to the study of physiologic systems. This course is limited to undergraduates. Students may receive credit for only one of BIOE 302, BIOE 322, and BIOC 332 Mutually Exclusive: Cannot register for BIOE 322 if student has credit for BIOC 332/BIOE 302.

BIOE 330 - BIOREACTION ENGINEERING
Short Title: BIOREACTION ENGINEERING
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 252 and (BIOC 201 or BIOS 201)
Description: Application of engineering principles to biological processes. Mathematical and experimental techniques for quantitative descriptions of enzyme kinetics, metabolic and genetic networks, cell growth kinetics, bioreactor design and operation.

BIOE 332 - BIOENGINEERING THERMODYNAMICS
Short Title: BIOENGINEERING THERMODYNAMICS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 252 and MATH 212
Description: This course provides a mathematically rigorous and quantitative coverage of the fundamentals of thermodynamics with applications drawn from contemporary bioengineering problems. Fundamental topics will include the Zeroth, First and Second Law, Entropy Inequality, Gibbs and Helmholtz Free Energies, The Third Law, Maxwell Relations, chemical potential, equilibrium, phase transitions, solution thermodynamics, protein-ligand binding and statistical mechanics. Advanced topics will include transcription factor-DNA binding, nucleic acid hybridization, translation initiation and genetic circuits. The course will cover the role that thermodynamics plays in molecular engineering and synthetic biology.

BIOE 333 - MOLECULAR BIOTECHNOLOGY
Short Title: MOLECULAR BIOTECHNOLOGY
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 252 and MATH 211
Description: This course will introduce the students to modern biotechnology. The course will cover fundamental technologies with emphasis on modern genome engineering, sequencing and bioinformatics, molecular diagnostics, design of therapeutics, and recombinant microorganisms for industrial and environmental applications. The course includes discussion of bioethical issues, societal impact, and intellectual properties.
BIOE 341 - CELL AND MOLECULAR BIOLOGY FOR ENGINEERS
Short Title: CELL & MOL BIOL FOR ENGINEERS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 252 and BIOC 201
Description: Understanding the behaviors of cells and biomolecules in health and disease is a prerequisite to appropriately applying modern bioengineering principles. In this course, students will learn the fundamentals of cell and molecular biology and how transformative new technologies permit measuring and engineering these alterations to improve human health and uncover biological insights.

BIO 342 - LABORATORY IN TISSUE CULTURE
Short Title: LABORATORY IN TISSUE CULTURE
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 440 or STAT 440 or BIOC 311
Description: Introduction to tissue culture techniques, including cell passage, cell viability, and cell attachment and proliferation assays. Students complete quantitative analysis of their data. Engineering design and applications are featured in graded work. Sections 1 and 2 are taught during the first half of the semester. Sections 3 and 4 are taught during the second half of the semester. Students may be required to attend lab on a university holiday. Instructor Permission Required. Cross-list: BIOC 320.

BIOE 348 - MOLECULAR TECHNIQUES IN BIOENGINEERING
Short Title: MOLECULAR TECHNIQUES IN BIOE
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 341 and (BIOE 342 (may be taken concurrently) or BIOC 320 (may be taken concurrently))
Description: Introduction to the fundamental physical principles of light interaction with matter, separation (by charge, size, confirmation) and detection techniques utilized in the field of bioengineering. These include absorbance and fluorescence spectroscopy, light and fluorescence microscopy, flow cytometry, electrophoresis, PCR, Blotting, and ELISA.
BIOE 342/BIOC 320 may be taken concurrently with BIOE 348. Graduate/Undergraduate Equivalency: BIOE 648. Mutually Exclusive: Cannot register for BIOE 348 if student has credit for BIOE 648.

BIOE 360 - APPROPRIATE DESIGN FOR GLOBAL HEALTH
Short Title: APPRO DESIGN FOR GLOBAL HEALTH
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): GLHT 201
Description: Seminar-style introductory design course covering epidemiology, pathophysiology, health systems, health economics, medical ethics, humanitarian emergencies, scientific and engineering design methods, and appropriate health technology case studies.
To register, you must be enrolled in the GLHT minor and submit a 250 statement to beyondtraditionalborders@rice.edu by Monday of preregistration. The minor and course prerequisite is waived for students majoring in Bioengineering. Instructor Permission Required. Cross-list: GLHT 360.

BIOE 361 - METABOLIC ENGINEERING FOR GLOBAL HEALTH ENVIRONMENTS
Short Title: METAB ENG GLOBAL HEALTH ENVMNT
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (BIOE 362 or GLHT 362) and (PHYS 126 or PHYS 102 or PHYS 112 or PHYS 142) and (MATH 102 or MATH 106)
Description: Importance of nutritional and pharmaceutical compounds, impact of cost of compounds on global health; Overview of biochemical pathways; metabolite analysis; Genetic engineering and molecular biology tools for ME; Pharmaceuticals and drug discovery approaches (antibiotics, antivirals; anti-parasite compounds); anti-diarrhea treatments; vaccines. Cross-list: BIOE 361, GLHT 361.
Course URL: www.btb.rice.edu (http://www.btb.rice.edu)

BIOE 365 - SUSTAINABLE WATER PURIFICATION FOR THE DEVELOPING WORLD
Short Title: SUST WTR PURIF FOR DEV WORLD
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course is an overview of sustainable strategies for safe water supply in off-the-grid, low-income regions. Topics covered include water quality and treatment, sustainability and WASH (water, sanitation and hygiene). A major element of the course is a project to solve a water-related issue in a real-world context. Cross-list: CEVE 314, GLHT 314. Repeatable for Credit.
BIOE 370 - BIOMATERIALS
Short Title: BIOMATERIALS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 252 and CHEM 211 and (MECH 211 (may be taken concurrently) or CEVE 211 (may be taken concurrently))
Description: This course will introduce both basic materials science and biological concepts with an emphasis on application of basic quantitative engineering principles to understanding the interactions between materials and biological systems. Topics covered include chemical structure of biomaterials, physical, mechanical, and surface properties of biomaterials, biomaterial degradation, and biomaterial processing. Additional topics include protein and cell interactions with biomaterials, biomaterial implantation, and acute inflammation, wound healing and the presence of biomaterials immune responses to biomaterials, biomaterials, immune responses to biomaterials, biomaterials and thrombosis, as well as infection, tumorigenesis, and calcification of biomaterials that can collectively apply to design of biomaterials for myriad applications. MECH 211 or CEVE 211 may be taken concurrently with BIOE 370.

BIOE 372 - BIOMECHANICS
Short Title: BIOMECHANICS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 252 and MATH 212 and (MECH 202 or MECH 211 or CEVE 211)
Description: This course introduces the fundamental principles of mechanics applied to the analysis and characterization of biological systems. Topics covered include normal and shear stresses, normal and shear strains, mechanical properties of materials, load, deformation, elasticity and elastoplastic behavior. Quantitative analysis of statically determinate and indeterminate structures subjected to tension, compression, torsion and bending will be covered. Additionally, aspects of blood rheology, viscoelasticity, and musculoskeletal mechanics will be addressed.

BIOE 380 - INTRODUCTION TO NEUROENGINEERING: MEASURING AND MANIPULATING NEURAL ACTIVITY
Short Title: INTRO TO NEUROENGINEERING
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (PHYS 101 or PHYS 111 or PHYS 125 or PHYS 141) and (PHYS 102 or PHYS 112 or PHYS 126 or PHYS 142)
Description: This course will serve as an introduction to quantitative modeling of neural activity and the methods used to stimulate and record brain activity. Cross-list: ELEC 380, NEUR 383.

BIOE 381 - FUNDAMENTALS OF NERVE AND MUSCLE ELECTROPHYSIOLOGY
Short Title: FUND OF ELECTROPHYSIOLOGY
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An introduction to cellular electrophysiology. Includes development of whole-cell models for neurons and muscle (cardiac and skeletal muscle) cells, based on ion channel currents obtained from whole-cell voltage-clamp experiments. Material balance equations are developed for various ions and chemical signaling agents (e.g., second messengers). Numerical methods are introduced for solving the ordinary and partial differential equations associated with these models. Several types of cell models are discussed ranging from neurons and muscle cells to sensory cells of mechanoreceptors, auditory hair cells and photoreceptor cells. Volume conductor boundary-value problems frequently encountered in electrophysiology are posed. Course provides a cellular basis for the interpretation of macroscopic bioelectric signals such as the electrocardiogram (ECG), electromyogram (EMG), electoretinogram (ERG) and electroencephalogram. Cross-list: ELEC 381.

BIOE 383 - BIOMEDICAL ENGINEERING INSTRUMENTATION LAB
Short Title: BIOMED ENGINEER INSTRUMENTTION LAB
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Corequisite: BIOE 385
Description: This is an introductory level course on fundamentals of biomedical engineering instrumentation and analysis. Topics include measurement principles; fundamental concepts in electronics including circuit analysis, data acquisition, amplifiers, filters and A/D converters; Fourier analysis; temperature, pressure, and flow measurements in biological systems.

BIOE 385 - BIOMEDICAL INSTRUMENTATION LAB
Short Title: BIOMEDICAL INSTRUMENTATION LAB
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Corequisite: BIOE 383
Description: Students will gain hands on experience with building biomedical instrumentation circuits and systems. Students will learn the basics of lab view programming and signal analysis. Instructor Permission Required.
BIOE 391 - NUMERICAL METHODS
Short Title: NUMERICAL METHODS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 252 and CAAM 210 and MATH 211 and MATH 212 (may be taken concurrently)
Description: Introduction to numerical approximation techniques with bioengineering applications. Topics include error propagation, Taylor's Series expansions curre fitting, roots of equations, optimization numerical differentiation and integration, ordinary differential equations, and partial differential equations. Matlab and other software will be used for solving equations. Math 212 may be taken concurrently with BIOE 391.

BIOE 392 - NEEDS FINDING AND DEVELOPMENT IN BIOENGINEERING
Short Title: NEEDS FINDING & DEV IN BIOE
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Students in this course will learn and develop the engineering skill of needs finding in the field of bioengineering focused on designing for disabilities. Students will work in groups with patients with disabilities to identify daily needs and develop design criteria to meet those needs including preliminary prototype development. Instructor Permission Required. Cross-list: GLHT 392.

BIOE 400 - ENGINEERING UNDERGRADUATE RESEARCH
Short Title: ENGINEERING UG RESEARCH
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Independent investigation of a specific topic or problem in modern bioengineering research under the direction of a selected faculty member. Research project has a strong engineering component. Repeatable for Credit.

BIOE 401 - UNDERGRADUATE RESEARCH
Short Title: UNDERGRADUATE RESEARCH
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Independent investigation of a specific topic or problem in modern bioengineering research under the direction of a selected faculty member. Department Permission Required. Repeatable for Credit.

BIOE 403 - ADVANCES IN BIONANOTECHNOLOGY
Short Title: ADVANCES IN BIONANOTECHNOLOGY
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 370 (may be taken concurrently)
Description: This course covers nanotechnology applications in bioengineering. Students learn about cutting edge research that uses the tools of nanotechnology to tackle medical problems. Topics include bionanotechnology - related research for diagnosis, detection, and treatment of disease; cell targeting; drug design and delivery; gene therapy; prostheses and implants and tissue regeneration. (REGISTRATION NOTE: The prerequisite BIOE 370 can also be taken concurrently with BIOE 403)

BIOE 408 - SYNTHETIC BIOLOGY
Short Title: SYNTHETIC BIOLOGY
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 332
Description: Design of biology at scales from molecules to multicellular organisms will be covered by lecture, primary literature, and student presentations. Students will execute a team based design challenge. Graduate/Undergraduate Equivalency: BIOE 508. Mutually Exclusive: Cannot register for BIOE 408 if student has credit for BIOE 508.

BIOE 419 - INNOVATION LAB FOR MOBILE HEALTH
Short Title: INNOVATION LAB - MOBILE HEALTH
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Students with a class of Freshman may not enroll. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will be an innovation lab for mobile health products. The students will organize themselves in groups with complementary skills and work on a single project for the whole semester. The aim will be to develop a product prototype which can then be demonstrated to both medical practitioners and potential investors. For successful projects with an operational prototype, the next steps could be applying for OWLspark (Rice accelerator program) or crowd sourcing (like Kickstarter) and/or work in Scalable Health Labs over summer. ELEC Juniors can also continue the project outcomes as a starting point for their senior design. Cross-list: ELEC 419. Graduate/Undergraduate Equivalency: BIOE 534. Mutually Exclusive: Cannot register for BIOE 419 if student has credit for BIOE 534. Repeatable for Credit.
Course URL: www.ece.rice.edu/~ashu/ELEC419.html (http://www.ece.rice.edu/~ashu/ELEC419.html)
BIOE 420 - TRANSPORT PHENOMENA IN BIOENGINEERING  
Short Title: TRANSPORT PHENOMENA IN BIOE  
Department: Bioengineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): MATH 211 and MATH 212 and (BIOE 332 or CHBE 411) and BIOE 391  
Description: BIOE/CHBE 420 covers transport phenomena as applied to biological systems and biomedical devices. Conservation of momentum and mass equations are first derived and then used to analyze transport of momentum and mass in biology, physiology, and in biomedical devices. This course is designed for senior bioengineering students. Cross-list: CHBE 420.

BIOE 421 - MICROCONTROLLER APPLICATIONS  
Short Title: MICROCONTROLLER APPLICATIONS  
Department: Bioengineering  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): BIOE 385  
Description: This class covers the usage of microcontrollers in a laboratory setting. We will start with basic electronics and, in the lab component, design, program, and build systems utilizing widely-available microcontrollers (e.g. Arduino, Raspberry Pi). Units in motion control, sensors (light, temperature, humidity, UV/Vis absorbance), and actuation (pneumatics, gears, and motors) will provide students with functional knowledge to design and prototype their own experimental systems for laboratory-scale automation. Instructor Permission Required. Graduate/Undergraduate Equivalency: BIOE 521. Mutually Exclusive: Cannot register for BIOE 421 if student has credit for BIOE 521.

BIOE 422 - GENE THERAPY  
Short Title: GENE THERAPY  
Department: Bioengineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment limited to students with a class of Senior.  
Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): CHEM 211 and (BIOS 201 or BIOC 201)  
Description: This course will examine the gene therapy field, with topics ranging from gene delivery to vectors to ethics of gene therapy. The design principles for engineering improved gene delivery vectors, both viral and nonviral, will be discussed. The course will culminate in a design project focused on engineering a gene delivery device for a specific therapeutic application. Graduate/Undergraduate Equivalency: BIOE 522. Mutually Exclusive: Cannot register for BIOE 422 if student has credit for BIOE 522.

BIOE 431 - BIOMATERIALS APPLICATIONS  
Short Title: BIOMATERIALS APPLICATIONS  
Department: Bioengineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): (CHEM 211 or CHEM 251) and BIOE 370  
Description: Emphasis will be placed on issues regarding the design, synthesis, evaluation, regulation and clinical translation of biomaterials for specific applications. An overview of significant biomaterials engineering applications will be given, including topics such as ophthalmologic, orthopedic, cardiovascular and drug delivery applications, with attention to specific case studies. Regulatory issues concerning biomaterial will also be addressed. Assignments for this class will include frequent readings of the scientific literature with occasional homework questions, one midterm and cumulative final, a group project, a seminar report and individual presentations. Graduate/Undergraduate Equivalency: BIOE 631. Mutually Exclusive: Cannot register for BIOE 431 if student has credit for BIOE 631.

BIOE 439 - APPLIED STATISTICS FOR BIOENGINEERING AND BIOTECHNOLOGY  
Short Title: APPLIED STAT FOR BIOE BIOTECH  
Department: Bioengineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): BIOE 252 (may be taken concurrently)  
Description: Course will cover fundamentals of probability and statistics with emphasis on application to biomedical problems and experimental design. Recommended for students pursuing careers in medicine or biotechnology. BIOE 439 and BIOE 440/STAT 440 cannot both be taken for credit. Prerequisite BIOE 252 may be taken concurrently. Graduate/Undergraduate Equivalency: BIOE 539. Mutually Exclusive: Cannot register for BIOE 439 if student has credit for BIOE 440/BIOE 539/STAT 440.

BIOE 440 - STATISTICS FOR BIOENGINEERING  
Short Title: STATISTICS FOR BIOENGINEERING  
Department: Bioengineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): BIOE 252 (may be taken concurrently)  
Description: Course covers application of statistics to bioengineering. Topics include descriptive statistics, estimation, hypothesis testing, ANOVA, and regression. Offered first five weeks of the semester. BIOE 252 may be taken concurrently with BIOE 440. BIOE 440/STAT 440 and BIOE 439 cannot both be taken for credit. Cross-list: STAT 440. Mutually Exclusive: Cannot register for BIOE 440 if student has credit for BIOE 439.
BIOE 442 - TISSUE ENGINEERING LAB MODULE
Short Title: TISSUE ENGINEERING LAB MODULE
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (BIOE 342 or BIOC 320 or BIOS 320) and (BIOE 440 or STAT 440)
Description: Students design and conduct a series of tests to synthesize PLLA, characterize PLLA and PLGA, monitor PLLA and PLGA degradation, and assess the viability, attachment, and proliferation of HDF cells on PLLA films. The experiments include many of the basic types of experiments that would be required to do a preliminary investigation of a tissue engineered product. Sections 1 and 2 will be taught during the first half of the semester and sections 3 and 4 will be taught during the second half of the semester. In addition sections 1 and 3 will need to come into lab on 2-3 Fridays and sections 2 and 4 will need to come into lab on 2-3 Saturdays. Section sign-up is required by the instructor in Keck 108 during preregistration week.

BIOE 443 - BIOPROCESSING LAB MODULE
Short Title: BIOPROCESSING LAB MODULE
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (BIOE 342 or BIOC 320 or BIOS 320) and (BIOE 440 or STAT 440)
Description: Students design and conduct a series of experiments to observe the growth of E. coli under different conditions, including agar plates, shake flasks, and a small-scale bioreactor. The E. coli has been transformed with a plasmid that produces beta-galactosidase. Engineering applications are emphasized. Some work 'off hours' (early evening) is required. Sections 1 and 2 are taught in the first half of the semester and Sections 3 and 4 are taught in the second half of the semester. Section sign-up is required by the instructor in Keck 108 during preregistration week.

BIOE 444 - MECHANICAL TESTING LAB MODULE
Short Title: MECHANICAL TESTING LAB MODULE
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 372 (may be taken concurrently) and (BIOE 440 or STAT 440)
Description: Students design and conduct a series of tests to elucidate the mechanical and material properties of animal tissue using the Instron. BIOE 372 may be taken concurrently with BIOE 444.

BIOE 445 - ADVANCED INSTRUMENTATION LAB MODULE
Short Title: ADVANCED INSTRUMENTATION LAB MODULE
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 383 and BIOE 385 and (BIOE 440 or STAT 440)
Description: Students design and build a biomedical instrumentation device. Sign up is required in Keck 108 during preregistration week.

BIOE 446 - COMPUTATIONAL MODELING LAB
Short Title: COMPUTATIONAL MODELING LAB
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 391
Description: This course offers a hands-on application to systems biology modeling. Students will learn a range of modeling methods, and apply them directly in class to current bioengineering problems. Weekly tutorials will be offered, and a laptop is required (or can be loaned). Topics covered include in silico drug delivery and design studies, integrating multiscale models with high-resolution imaging, experimental design via computer modeling, and patient-specific simulations. Modeling methods include protein-protein interaction networks, biocircuits, stochastic differential equations, agent-based modeling, computational fluid dynamics, and finite element modeling.

BIOE 447 - DIGITAL DESIGN & VISUALIZATION
Short Title: DIG DES & VIS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Students will acquire basic to intermediate-level digital design proficiency for bioengineering-related applications. Programs for the design of patient-specific therapies including image reconstruction, computer aided design, and parameter modeling will be used to create models. Section sign up is required during pre-registration week.
BIOE 449 - TROUBLESHOOTING WORKSHOP FOR CLINICALLY-RELEVANT BIOMEDICAL EQUIPMENT
Short Title: MED BIOENGINEERING WORKSHOP
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 243
Description: Bioengineering course in the troubleshooting, repair, and maintenance of standard biomedical equipment used in hospitals in the developed and developing worlds. Cross-list: GLHT 449. Repeatable for Credit.

BIOE 451 - BIOENGINEERING DESIGN I
Short Title: BIOENGINEERING DESIGN I
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 383 and BIOE 385 and (BIOE 332 or BIOE 372)
Description: Senior Bioengineering students will design devices in biotechnology or biomedicine. This project-based course covers systematic design processes, engineering economics, FDA requirements, safety, engineering ethics, design failures, research design, intellectual property rights, environmental impact, business planning and marketing. Students will be expected to compile documentation and present orally progress of their teams. BIOE 451 and 452 must be taken the same academic year. Instructor Permission Required.

BIOE 452 - BIOENGINEERING DESIGN II
Short Title: BIOENGINEERING DESIGN II
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 451
Description: Senior Bioengineering students will design devices in biotechnology or biomedicine. This project-based course covers systematic design processes, engineering economics, FDA requirements, safety, engineering ethics, design failures, research design, intellectual property rights, environmental impact, business planning and marketing. Students will be expected to compile documentation and present orally progress of their teams. BIOE 451 and 452 must be taken the same academic year. Instructor Permission Required.

BIOE 454 - COMPUTATIONAL FLUID MECHANICS
Short Title: COMPUTATIONAL FLUID MECHANICS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MECH 371 (may be taken concurrently) or CEVE 363 (may be taken concurrently) or CHBE 401 (may be taken concurrently) or BIOE 420 (may be taken concurrently) or CHBE 420 (may be taken concurrently)
Description: Fundamental concepts of finite element methods in fluid mechanics, including spatial discretization and numerical integration in multidimensions, time-integration, and solution of nonlinear ordinary differential equation systems. Advanced numerical stabilization techniques designed for fluid mechanics problems. Strategies for solution of complex, real-world problems. Topics in large-scale computing, parallel processing, and visualization. Prerequisites may be taken concurrently. Cross-list: CEVE 454, MECH 454. Graduate/Undergraduate Equivalency: BIOE 554. Mutually Exclusive: Cannot register for BIOE 454 if student has credit for BIOE 554.

BIOE 464 - EXTRACELLULAR MATRIX
Short Title: EXTRACELLULAR MATRIX
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 341 or BIOE 341
Description: This course will address the biology, organization, mechanics, and turnover of extracellular matrix. There will be an emphasis on cells and cell-matrix interactions, matrix distribution within and design of connective tissues and organs techniques for quantitative analysis of matrix, techniques for measurement and modeling of connective tissue biomechanics, changes with growth and aging and tissue/matrix degradation. Cross-list: BIOE 464. Graduate/Undergraduate Equivalency: BIOE 524. Recommended Prerequisite(s): BIOE 372, BIOE/BIOE 341. Mutually Exclusive: Cannot register for BIOE 464 if student has credit for BIOE 524.

BIOE 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.
BIOE 481 - COMPUTATIONAL NEUROSCIENCE AND NEURAL ENGINEERING
Short Title: COMP/NEUROSCIENCE/NEURAL ENGNR
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An introduction to the anatomy and physiology of the brain. Includes basic electrophysiology of nerve and muscle. Develops mathematical models of neurons, synaptic transmission and natural neural networks. Leads to a discussion of neuromorphic circuits which can represent neuron and neural network behavior in silicon. Recommendation: Knowledge of electrical circuits, operational amplifier circuits and ordinary differential equations. Involves programming Matlab. Cross-list: ELEC 481, NEUR 481. Graduate/Undergraduate Equivalency: BIOE 583. Recommended Prerequisite(s): Knowledge of basic electrical and operational amplifier circuits; and ordinary differential equations. Mutually Exclusive: Cannot register for BIOE 481 if student has credit for BIOE 583.

BIOE 482 - PHYSIOLOGICAL CONTROL SYSTEMS
Short Title: PHYSIOLOGICAL CONTROL SYSTEMS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A study of the somatic and autonomic nervous system control of biological systems. Simulation methods, as well as, techniques common to linear and nonlinear control theory are used. Also included is an introduction to sensors and instrumentation techniques. Examples are taken from the cardiovascular, respiratory, and visual systems. Cross-list: ELEC 482. Graduate/Undergraduate Equivalency: BIOE 582. Recommended Prerequisite(s): Knowledge of basic electrical and operational amplifier circuits; and ordinary differential equations. MutuallyExclusive: Cannot register for BIOE 482 if student has credit for BIOE 582.

BIOE 484 - BIOPHOTONICS INSTRUMENTATION AND APPLICATIONS
Short Title: BIOPHOTONICS INSTRUMENTATION
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 383
Description: This course is an introduction to the fundamentals of Biophotonics instrumentation related to coherent light generation, transmission by optical components such as lenses and fibers, and modulation and detection. Interference and polarization concepts and light theories including ray and wave optics will be covered. A broad variety of optical imaging and detection techniques including numerous microscopy techniques, spectral imaging, polarimetry, OCT and others will be covered. The course will guide through the principles and concepts used in a variety of optical instruments and point to special requirements for Biomedical applications with emphasis on principles and concepts used in a variety of optical instruments and point to special requirements for Biomedical applications with emphasis on principles and concepts used in a variety of optical instruments and point out special requirements for bio-medical applications in optical sensing, diagnosis, and biomedical applications. Graduate/Undergraduate Equivalency: BIOE 512. Mutually Exclusive: Cannot register for BIOE 484 if student has credit for BIOE 512.

BIOE 485 - FUNDAMENTALS OF MEDICAL IMAGING I
Short Title: FUND MEDICAL IMAGING I
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will introduce basic principles of image acquisition, formation and processing of several medical imaging modalities such as X-Ray, CT, MRI, and US that are used to evaluate the human anatomy. The course also includes visits to a clinical site to gain experience with the various imaging modalities covered in class. Cross-list: COMP 485, ELEC 485. Graduate/Undergraduate Equivalency: BIOE 591. Recommended Prerequisite(s): MATH 211 and MATH 212. Mutually Exclusive: Cannot register for BIOE 485 if student has credit for BIOE 591.
BIOE 486 - FUNDAMENTALS OF MEDICAL IMAGING II
Short Title: FUND MEDICAL IMAGING II
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 485 or BIOE 485 or COMP 485
Description: This course focuses on functional imaging methodologies used specifically in nuclear medicine such as Gamma cameras, SPECT, and PET imaging. The course will introduce the basic principles of image acquisition, formation, processing and the clinical applications of these imaging modalities and lays the foundations for understanding the principles of radiotracer kinetic modeling. A trip to a clinical site in also planned to gain experience with nuclear medicine imaging. Cross-list: COMP 486, ELEC 486. Graduate/Undergraduate Equivalency: BIOE 596. Mutually Exclusive: Cannot register for BIOE 486 if student has credit for BIOE 596.

BIOE 490 - INTRO COMPUTATIONAL SYSTEMS BIOLOGY: MODELING & DESIGN PRINCIPLES OF BIOCHEM NETWORKS
Short Title: INTRO SYSTEMS BIOLOGY MODELING
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (MATH 212 or MATH 213) and (BIOE 252 or CHBE 310) and BIOC 341 and CAAM 210
Description: The course summarizes techniques for quantitative analysis and simulations of basic circuits in genetic regulation, signal transduction and metabolism. We discuss engineering approaches adapted to computational systems biology and aim to formulate evolutionary design principles explaining organization of networks in terms of their physiological demands. We discuss biochemical simulation methodology and software as well as recent advances in the field. Topics include end-product inhibition in biosynthesis, optimality and robustness of the signaling networks and kinetic proofreading. Graduate/Undergraduate Equivalency: BIOE 552. Mutually Exclusive: Cannot register for BIOE 490 if student has credit for BIOE 552.

BIOE 492 - SENSORY NEUROENGINEERING
Short Title: SENSORY NEUROENGINEERING
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 332
Description: This course will explore how bioengineering techniques and principles are applied to understand and model sensory systems, with a focus on the auditory, vestibular, and visual systems. The interaction between the electrical, mechanical and optical aspects of these systems, and ways to modulate these interactions, will be explored. The course will also cover the design of current auditory, visual and somato-sensory neuroprosthetics (i.e. cochlear implants, retinal implants and brain-machine interfaces), as well as emerging technologies for neural stimulation. Graduate/Undergraduate Equivalency: BIOE 592. Mutually Exclusive: Cannot register for BIOE 492 if student has credit for BIOE 592.

BIOE 493 - BUILDING LIFE SCIENCES, BIOMEDICAL AND BIOTECHNOLOGY STARTUPS
Short Title: BIOTECH STARTUP
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This semester-long course aims to provide entrepreneurial students with a hands-on experience in building a high-tech company based on novel biomedical technologies being developed at Rice University and in the Texas Medical Center. Students will form teams of 2-4, and identify a promising biomedical technology, perform intellectual property landscape analysis, identify a minimum viable product, build a business plan, construct 1 year and 5 year financial projections, conduct voice of customer interviews, and present a fundraising “pitch.” Students are expected to spend 8-10 hours per week outside the classroom to complete tasks assigned during lectures, and will summarize their findings every 2 weeks in a 7-minute presentation. Graduate/Undergraduate Equivalency: BIOE 593. Mutually Exclusive: Cannot register for BIOE 493 if student has credit for BIOE 593.

BIOE 500 - GRADUATE RESEARCH
Short Title: GRADUATE RESEARCH
Department: Bioengineering
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.
BIOE 502 - PHYSICAL BIOLOGY
Short Title: PHYSICAL BIOLOGY
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Basic introduction to a biophysical view of living systems, from the subcellular to the multicellular scales. Topics include: biomolecular dynamics, cellular biomechanics, cell motility and cell division, calcium signaling, action potential propagation, and tissue organization. Cross-list: BIOC 501, SSPB 501.

BIOE 504 - FIRST YEAR GRADUATE STUDENT LAB ROTATION
Short Title: GRADUATE LAB ROTATION
Department: Bioengineering
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course provides students the opportunity to experience different research projects and assists first-year students in choosing an advisor and a lab for conduction thesis research. Students must successfully complete rotations in three labs to receive a satisfactory grade. All new BIOE PhD students must take this course during their first semester.

BIOE 505 - MACROMOLECULAR ASSEMBLIES
Short Title: MACROMOLECULAR ASSEMBLIES
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Course Level: Graduate
Description: There is increasing attention on the biological phenomena and engineering opportunities at the mesoscopic scale, which is between the size of a single protein and that of the large organelles. This course will cover a range of these phenomena, such as viral particles, ribosomes, bacterial microcompartments, amyloid fibrils, gas vesicles, and membraneless condensates. Additionally, the course will aim to formulate physical principles behind these phenomena, describe the experimental and computational approaches to study them, and discuss how to engineer these assemblies.

BIOE 506 - GRADUATE INDEPENDENT STUDY
Short Title: GRADUATE INDEPENDENT STUDY
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Independent investigation of a specific topic in modern bioengineering research under the direction of a faculty member. Department Permission Required. Repeatable for Credit.

BIOE 508 - SYNTHETIC BIOLOGY
Short Title: SYNTHETIC BIOLOGY
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Design of biology at scales from molecules to multicellular organisms will be covered by lecture, primary literature, and student presentations. Students will write a research proposal at the end of the course. Cross-list: SSPB 503. Graduate/Undergraduate Equivalency: BIOE 408. Mutually Exclusive: Cannot register for BIOE 508 if student has credit for BIOE 408.

BIOE 509 - POINT-OF-CARE DIAGNOSTICS
Short Title: POINT-OF-CARE DIAGNOSTICS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course provides an overview of diagnostic technologies that can be used at the point-of-care, including lateral flow assays, 2- and 3-D paper-based assays, and imaging based assays. Topics include the principles of assay design, validation and commercial development, with a focus on diagnostics for low-resource settings. The course includes a lecture and laboratory component, along with a team-based design project. Only graduate students may register for this course.

BIOE 510 - SEMINAR IN TROPICAL MEDICINE
Short Title: SEMINAR IN TROPICAL MEDICINE
Department: Bioengineering
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: 8 week lecture series on topics in global health. The theme for this offering is one health; integrating efforts to obtain optimal health for humans, animals, and the environment. Offered in conjunction with the new National School of Tropical Medicine, the course will feature lectures by various experts on the public health issues most pressing in poor populations in the world today. Course open to all undergraduates and graduate students. Cross-list: GLHT 510. Repeatable for Credit.
BIOE 512 - BIOPHOTONICS INSTRUMENTATION AND APPLICATIONS
Short Title: BIOPHOTONICS INSTRUMENTATION
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is an introduction to the fundamentals of Biophotonics instrumentation related to coherent light generation, transmission by optical components such as lenses and fibers, and modulation and detection. Interference and polarization concepts and light theories including ray and wave optics will be covered. A broad variety of optical imaging and detection techniques including numerous microscopy techniques, spectral imaging, polarimetry, OCT and others will be covered. The course will guide through the principles and concepts used in a variety of optical instruments and point to special requirements for Biomedical applications with emphasis on principles and concepts used in a variety of optical instruments and point to special requirements for Biomedical applications with emphasis on principles and concepts used in a variety of optical instruments and point out special requirements for bio-medical applications in optical sensing, diagnosis, and biomedical applications. In addition to the undergraduate requirements in BIOE 484, graduate students will be required to complete more complex problems on both homework and tests. Graduate students will also be required to submit a research paper with oral presentations. Graduate/Undergraduate Equivalency: BIOE 484. Mutually Exclusive: Cannot register for BIOE 512 if student has credit for BIOE 484.

BIOE 513 - STRATEGIC CAREER PREPAREDNESS FOR INDUSTRY JOBS
Short Title: CAREER PREP FOR INDUSTRY
Department: Bioengineering
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is designed for MBE candidates and PhD students planning to graduate within the year who are interested in industry careers. The course will help students design a resume, cover letter, and other career development tools to strategically identify and market their skills to bioengineering industry partners.

BIOE 514 - INTRODUCTION TO BIOSTATISTICS
Short Title: INTRODUCTION TO BIOSTATISTICS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Bioengineering. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Presents basic and advanced methods of statistics as applied to problems in bioengineering. Demonstrates techniques for data organization, exploration, and presentation. Foundations of statistical estimation, inference, and testing are reviewed. Optimal planning of experiments is explored. Advanced techniques include multiple regression, variable selection, logistic regression, analysis of variance, survival analysis, multiple measurements and measurements over time. Additional topics, such as Bayesian methods, will be discussed as time allows. Labs will use the statistical software JMP and/or R. Cross-list: STAT 514.

BIOE 515 - ENGINEERING DRUG DELIVERY SYSTEMS
Short Title: ENGINEERING DRUG DELIVERY SYS.
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will focus on the application of innovative engineering approaches to enhance drug efficacy and/or reduce toxicity. Topics of emphasis include, but are not limited to, routes of administration, bioavailability, biodistribution, pharmacokinetics, pharmacodynamics, therapeutic drug windows, patient compliance, immunogenicity, the foreign body reaction, and solubility enhancement. A wide array of device types will be discussed, such as biodegradable microspheres, self-assembled lipid nanoparticles, microneedles, and osmotic pumps. Students will be expected to quantitatively evaluate drug release from complex devices and determine drug distribution and clearance using multi-compartment models. An additional project will be required of graduate level students.

BIOE 516 - MECHANICS, TRANSPORT, AND CELLULAR SIGNALING
Short Title: MECHANICS/TRANSPORT/SIGNALING
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will cover the fundamental principles of mechanics, thermodynamics, and transport in the context of classical and contemporary bioengineering problems. An overall goal will be to expose students to the integrated approaches that are necessary to solve complex research problems. Topics covered will include membrane transport, cell signaling, and mechanotransduction. This course is intended for first year BIOE PhD students only.

BIOE 517 - INSTRUMENTATION AND MOLECULAR ANALYSIS
Short Title: INSTRUMENT/MOLECULAR ANALYSIS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will cover the basic principles of optics, optical instrumentation, microscopy and molecular detection technologies. Emphasis will be placed on the application of advanced microscopy techniques to imaging problems in biology and medicine. This course is intended for first year BIOE PhD students only.
BIOE 518 - INTRODUCTION TO COMPUTATIONAL BIOLOGY
Short Title: INTRO TO COMPUTATIONAL BIOLOGY
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Provides students with the ability to use computational methods to understand and analyze biological data. This course will introduce students to advances in computational cell biology from an engineering perspective, and equip them with a suite of tools emerging from systems biology. Topics covered include computational cell engineering, high-throughput analysis, modeling of signaling pathways, network analysis, imaging coupled to modeling, and multi scale modeling. This course is intended for first year BIOE PhD students only.

BIOE 519 - BIOMATERIALS SYNTHESIS
Short Title: BIOMATERIALS SYNTHESIS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Biomaterials covers the design and synthesis of materials which interact with biologic phenomena such as cell-free, microbial, and mammalian systems. Topics covered include: surfaces and surface fractionalization, biomedical implants and them immune response, three dimensional cell culture systems, and regulatory hurdles (e.g., FDA clearance). The class will be rooted in a historical perspective, with a particular emphasis on the latest techniques in synthetic chemistry relating to biomaterials. This course is intended for first year BIOE PhD students only. Instructor Permission Required.

BIOE 521 - MICROCONTROLLER APPLICATIONS
Short Title: MICROCONTROLLER APPLICATIONS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): BIOE 385
Description: This class covers the usage of microcontrollers in a laboratory setting. We will start with basic electronics and, in the lab component, design, program, and build systems utilizing widely-available microcontrollers (e.g. Arduino, Raspberry Pi). Units in motion control, sensors (light, temperature, humidity, UV/Vis absorbance), and actuation (pneumatics, gears, and motors) will provide students with functional knowledge to design and prototype their own experimental systems for laboratory-scale automation. BIOE 521 students will be expected to complete a final research paper. Instructor Permission Required. Graduate/Undergraduate Equivalency: BIOE 421. Mutually Exclusive: Cannot register for BIOE 521 if student has credit for BIOE 421.

BIOE 522 - GENE THERAPY
Short Title: GENE THERAPY
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Gene therapy suffered from major clinical setbacks in the late 1990's, putting the entire field of genetic medicine at a standstill. However, through perseverance and strategic re-thinking of how viruses and cells could be used as therapeutics, the field is currently experiencing a biotechnological revolution. In December of 2017, a virus-based gene therapy drug was approved by the FDA, making it the first of its kind for the treatment of an inherited disease. This landmark achievement is just the beginning of a new era of human therapeutics. This class will discuss the gene therapy field – where it was and where it is now. Clinically important vectors currently under human testing, and opportunities for the next generation of improved gene delivery vectors will be presented. The biological and physiological barriers to efficient gene delivery will be investigated in order to spur new ideas for improving vector efficiency and specificity. Graduate/Undergraduate Equivalency: BIOE 422. Mutually Exclusive: Cannot register for BIOE 522 if student has credit for BIOE 422.

BIOE 523 - BIOENGINEERING SYSTEMS AND CONTROL
Short Title: BIOENG SYSTEMS & CONTROLS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to basic principles of control theory and applications of these methods and tools to analyze the dynamics of biological systems with examples from metabolic pathway control, synthetic biology and physiological systems. Cross-list: CHBE 523.

BIOE 524 - EXTRACELLULAR MATRIX
Short Title: EXTRACELLULAR MATRIX
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will address the biology, organization, mechanics, and turnover of extracellular matrix. There will be an emphasis on cells and cell-matrix interactions, matrix distribution within and design of connective tissues and organs techniques for quantitative analysis of matrix, techniques for measurement and modeling of connective tissue biomechanics, changes with growth and aging and tissue/matrix degradation. Additional projects will be required of graduate level students. Cross-list: BIO 523. Graduate/Undergraduate Equivalency: BIOE 464. Recommended Prerequisite(s): BIOE 372, BIOE 341. Mutually Exclusive: Cannot register for BIOE 524 if student has credit for BIOE 464.
BIOE 525 - NANOBIOENGINEERING AND NANOMEDICINE

Short Title: NANOBIOENG AND NANOMEDICINE

Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Covers broad range of topics in nanobioengineering and nanomedicine, including synthesis characterization and fractionalization of nanomaterials and nanostructures, nanoparticle-based molecular imaging probes, nanocarriers, for drug/gene delivery, and nanomachines for gene editing and regulation. Examples will be given to illustrate the applications of nanobioengineering and nanomedicine.

BIOE 526 - ADVANCES IN GENOME EDITING AND ENGINEERING

Short Title: ADVANCES IN GENOME EDITING

Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is a course for graduate students who are interested in learning the emerging field of precision genome editing and its applications in biology and medicine. This is a lecture course consisting of classes that meet weekly for 3 hours; instruction is delivered both in a lecture setting and through projects.

BIOE 527 - HEALTHCARE INNOVATION AND ENTREPRENEURSHIP

Short Title: HEALTHCARE INNOV & ENTREPREN

Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is designed for healthcare entrepreneurs who want to build innovative medical technologies. During the course, students will learn how to identify customers, key stakeholders, and the market opportunity for a clinical need; apply design thinking, including low-fidelity prototyping, to quickly test and iterate on a concept; assess regulatory, reimbursement, and clinical trial requirements; identify key assumptions and develop a business model; create a financial model based on business model assumptions; determine capital requirements and funding sources for their venture; understand and evaluate term sheets; create a pitch presentation for investors.

BIOE 528 - MEDICAL ENGINEERING AND DESIGN LAB

Short Title: MED ENGINEERING & DESIGN LAB

Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this studio-based lab, students apply technical engineering and prototyping skills to medical design projects. Participants are taught and apply a range of topics including engineering design processes, medical materials, biocompatibility, design for manufacturing, rapid prototyping, medical equipment, sterility, manufacturing techniques, and quality system implementation. This course is intended for only those students in Bioengineering.

BIOE 529 - HEALTHCARE INNOVATION AND ENTREPRENEURSHIP LAB

Short Title: INNOV & ENTREPRENEURSHIP LAB

Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this follow-on experiential Lab course, students work on refining and completing the plan for the venture they created in Health Innovation and Entrepreneurship. Teams receive guidance and Mentoring from faculty and mentors to develop the next steps of their business. The Lab takes place in the Liu Idea Lab for Innovation and Entrepreneurship, a purpose built state-of-the-art incubator and co-working space on the Rice campus.

BIOE 530 - MEDICAL ENGINEERING & DESIGN LAB 2

Short Title: MED ENGIN & DESIGN LAB 2

Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Bioengineering. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): BIOE 528
Description: In this studio-based lab, students apply technical engineering and prototyping skills to medical design projects. Participants are taught and apply a range of topics including engineering design processes, medical materials, biocompatibility, design for manufacturing, rapid prototyping, medical equipment, sterility, manufacturing techniques, and quality system implementation. This course is intended for only those students in Bioengineering.

BIOE 534 - INNOVATION LAB FOR MOBILE HEALTH

Short Title: INNOVATION LAB - MOBILE HEALTH

Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will be an innovation lab for mobile health products. The students will organize themselves in groups with complementary skills and work on a single project for the whole semester. The aim will be to develop a product prototype which can then be demonstrated to both medical practitioners and potential investors. For successful projects with an operational prototype, the next steps could be applying for OWLspark (Rice accelerator program) or crowd sourcing (like Kickstarter) and/or work in Scalable Health Labs over summer. ELEC Juniors can also continue the project outcomes as a starting point for their senior design. Additional course work required beyond the undergraduate course requirements. Cross-list: ELEC 559. Graduate/Undergraduate Equivalency: BIOE 419. Mutually Exclusive: Cannot register for BIOE 534 if student has credit for BIOE 419. Repeatable for Credit.
Course URL: www.ece.rice.edu/~ashu/ELEC419.html (http://www.ece.rice.edu/~ashu/ELEC419.html)
BIOE 535 - ENGINEERING CELL-BASED THERAPEUTICS FOR THE TREATMENT OF DISEASE
Short Title: CELL-BASED THERAPEUTICS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Course Level: Graduate
Description: Once the stuff of science fiction, there is increasing attention on using engineered living cells as therapeutic agents. We will discuss how application of synthetic biology, genetic engineering, and systems biology can endow cells with the ability to detect and treat disease, identifying breakthroughs, challenges, and long-term possibilities for this exciting new field. Recommended Prerequisite(s): BIOE 321.

BIOE 536 - FRONTIERS IN BIOENGINEERING
Short Title: IMMUNOENGINEERING
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Course Level: Graduate
Description: This course will introduce immunology concepts from an engineering perspective and covers various immune responses including to pathogens, self, allergens, cancer, and biomaterials. Using principles of engineering we will perform an in-depth analysis of these responses and the latest advances on the development of novel therapeutics. Topics include systems immunology, nanotechnology, hydrogels, biomaterials, vaccines, cancer immunotherapy, autoimmunity, tissue engineering, stem cells, viruses, and the microbiome.

BIOE 537 - GENETIC AND EPIGENETIC CONTROL
Short Title: GENETIC AND EPIGENETIC CONTROL
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: All human diseases are driven by alterations in genetic sequences, cellular transcription, and/or chromatin structure. In this course, students will learn how transformative new technologies permit measuring and manipulating these alterations, and how bioengineers can leverage these innovative tools to combat human diseases and catalyze advances in biotechnology.

BIOE 539 - APPLIED STATISTICS FOR BIOENGINEERING AND BIOTECHNOLOGY
Short Title: APPLIED STAT FOR BIOE BIOTECH
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Course will cover fundamentals of probability and statistics with emphasis on application to biomedical problems and experimental design. Recommended for students pursuing careers in medicine or biotechnology. Graduate/Undergraduate Equivalency: BIOE 439. Recommended Prerequisite(s): BIOE 252 Mutually Exclusive: Cannot register for BIOE 539 if student has credit for BIOE 439.

BIOE 543 - DNA BIOTECHNOLOGY, BIOPHYSICS, AND MODELING
Short Title: DNA BIOTECHNOLOGY
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Semester-long course on fundamental properties of DNA, and their role in DNA biotechnology. Students will develop, analyze, and simulate simple biophysical models of DNA reactions, as well as learn and model methods of modern DNA biotechnology. Proficiency with MATLAB required.

BIOE 548 - MACHINE LEARNING AND SIGNAL PROCESSING FOR NEURO ENGINEERING
Short Title: NEURAL SIGNAL PROCESSING
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The activity of a complex network of billions of interconnected neurons underlies our ability to sense, represent and store the details of experienced life, and enables us to interact with our environment and other organisms. Modern neuroscience techniques enable us to access this activity, and thus to begin to understand the processes whereby individual neurons enable complex behaviors. In order to increase this understanding and to design biomedical systems which might therapeutically interact with neural circuits, advanced statistical signal processing and machine learning approaches are required. This class will cover a range of techniques and their application to basic neuroscience and neural interfaces. Topics include latent variable models, point processes, Bayesian inference, dimensionality reduction, dynamical systems, and spectral analysis. Neuroscience applications include modeling neural firing rates, spike sorting, decoding, characterization of neural systems, and field potential analysis. Cross-list: ELEC 548.
BIOE 552 - INTRO COMPUTATIONAL SYSTEMS BIOLOGY: MODELING & DESIGN PRINCIPLES OF BIOCHEM NETWORKS  
Short Title: INTRO SYSTEMS BIOLOGY MODELING  
Department: Bioengineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: The course summarizes techniques for quantitative analysis and simulations of basic circuits in genetic regulation, signal transduction and metabolism. We discuss engineering approaches adapted to computational systems biology and aim to formulate evolutionary design principles explaining organization of networks in terms of their physiological demands. We discuss biochemical simulation methodology and software as well as recent advances in the field. Topics include end-product inhibition in biosynthesis, optimality and robustness of the signaling networks and kinetic proofreading. Same as 490 but with more emphasis on recent advances in the field - paper reading and presentations. Cross-list: SSPB 502. Graduate/Undergraduate Equivalency: BIOE 490. Recommended Prerequisite(s): Basic knowledge of biochemistry, cell biology, linear algebra, and ordinary differential equations is expected. Mutually Exclusive: Cannot register for BIOE 552 if student has credit for BIOE 490.

BIOE 553 - SYSTEMS BIOLOGY AND NEUROENGINEERING  
Short Title: SYS BIOLOGY & NEUROENGINEERING  
Department: Bioengineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course will introduce students to advances in computational biology relevant to neuroengineering, and equip them with a suite of tools emerging from systems biology to student neurological processes. Example class topics include: decoding multineuron activity, models for optogenetic control, and optimization of neuro-generative therapies.

BIOE 554 - COMPUTATIONAL FLUID MECHANICS  
Short Title: COMPUTATIONAL FLUID MECHANICS  
Department: Bioengineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): MECH 371 (may be taken concurrently) or CEVE 363 (may be taken concurrently) or CHBE 401 (may be taken concurrently) or BIOE 420 (may be taken concurrently) or CHBE 420 (may be taken concurrently)  
Description: Fundamental concepts of finite element methods in fluid mechanics, including spatial discretization and numerical integration in multidimensions, time-integration, and solution of nonlinear ordinary differential equation systems. Advanced numerical stabilization techniques designed for fluid mechanics problems. Strategies for solution of complex, real-world problems. Topics in large-scale computing, parallel processing, and visualization. Prerequisites may be taken concurrently. Additional work required. Cross-list: CEVE 554, MECH 554. Graduate/Undergraduate Equivalency: BIOE 454. Mutually Exclusive: Cannot register for BIOE 554 if student has credit for BIOE 454.

BIOE 560 - CANCER BIOLOGY  
Short Title: CANCER BIOLOGY  
Department: Bioengineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Provides an integrated lecture series summarizing current knowledge in cancer biology and integrating current literature with basic concepts. Topics include: statistics of incidence/survival, types of cancer, pathology, the process of carcinogenesis and sources of carcinogens, genetic and epigenetic mechanisms and consequences, cancer progression, metastasis and current treatment options. Students will learn to use online databases to develop independent strategies for analyzing datasets. There will be several writing assignments and in class oral presentations of research articles. This course requires instructor permission to enroll. Please fill out the special registration form from https://registrar.rice.edu/student/special_registration. All requests will be reviewed and you will be notified of an enrollment decision. Instructor Permission Required. Cross-list: BIOE 560.

BIOE 564 - BIOINFORMATICS: NETWORK ANALYSIS  
Short Title: BIOINFORMATICS: NETWORKS  
Department: Bioengineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course covers computational aspects of biological network analysis, a major theme in the area of systems biology. The course discusses protein-protein interaction, signaling, metabolic, and functional networks, and covers issues related to constructing, analyzing various types of networks, as well as how they can be used for downstream applications. Cross-list: BIO 572, COMP 572.

BIOE 574 - CONTINUUM BIOMECHANICS  
Short Title: CONTINUUM BIOMECHANICS  
Department: Bioengineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): BIOE 372  
Description: This course deals with elements of continuum mechanics relevant to bioengineering. The course covers important concepts in tensor calculus, kinematics, stress and strain, and constitutive theories of continua. Selected topics in bone, articular cartilage, blood and circulation, and cell biomechanics will be discussed to illustrate the application of continuum mechanism to bioengineering problems.
BIOE 578 - BIOTECHNOLOGY PRACTICUM
Short Title: BIOTECHNOLOGY PRACTICUM
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is part of the NIH Biotechnology Training Program and is limited to program participants. Students will receive exposure and training in cutting edge concepts and technologies. Cross-list: BIO 578.

BIOE 580 - PROTEIN ENGINEERING
Short Title: PROTEIN ENGINEERING
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Manipulation of gene expression in prokaryotic and eukaryotic cells. Rational design and directed evolution for cell and protein engineering. Selection and screening technologies and process optimization. Synthetic Biology: engineering and application of gene circuits. Molecular biotechnology applications: Diagnosis, Therapeutics and Vaccines. Cross-list: BIOE 580, CHBE 580. Recommended Prerequisite(s): CHBE 310/510 or equivalent is highly recommended.

BIOE 581 - CARDIOVASCULAR AND RESPIRATORY SYSTEM DYNAMICS
Short Title: CARDIO - RESP SYSTEM DYNAMICS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Autonomic nervous system control of the cardiovascular and respiratory systems. Development of models of neuron and cardiac cell activity; models of ventricular and vascular system mechanics; models of pulmonary mechanics and gas transport. Includes a study of instrumentation and techniques used in the cardiac catheterization laboratory. Discussions of different types of ventricular assist devices is also included. The course serves as an introduction to engineering in cardiovascular and respiratory system diagnosis and critical care medicine. Cross-list: ELEC 581. Recommended Prerequisite(s): Knowledge of ordinary differential equations; electricity and magnetism, and solid mechanics form elementary physics; linear control theory and elementary physiology of the cardiovascular and respiratory systems. Repeatable for Credit.

BIOE 582 - PHYSIOLOGICAL CONTROL SYSTEMS
Short Title: PHYSIOLOGICAL CONTROL SYSTEMS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A study of the somatic and autonomic nervous system control of biological systems. Simulation methods, as well as, techniques common to linear and nonlinear control theory are used. Also included is an introduction to sensors and instrumentation techniques. Examples are taken from the cardiovascular, respiratory, and visual systems. Additional coursework required beyond the undergraduate course requirements. Cross-list: ELEC 582. Graduate/Undergraduate Equivalency: BIOE 482. Mutually Exclusive: Cannot register for BIOE 582 if student has credit for BIOE 482.

BIOE 583 - COMPUTATIONAL NEUROSCIENCE AND NEURAL ENGINEERING
Short Title: COMP/NEUROSCIENCE/NEURAL ENGR
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An introduction to the anatomy and physiology of the brain. Includes basic electrophysiology of nerve and muscle. Develops mathematical models of neurons, synaptic transmission and natural neural networks. Leads to a discussion of neuromorphic circuits which can represent neuron and neural network behavior in silicon. Recommendation: Knowledge of electrical circuits, operational amplifier circuits and ordinary differential equations. Involves programming Matlab. Cross-list: ELEC 583, NEUR 583. Graduate/Undergraduate Equivalency: BIOE 481. Recommended Prerequisite(s): Knowledge of basic electrical and operational amplifier circuits; and ordinary differential equations. Mutually Exclusive: Cannot register for BIOE 583 if student has credit for BIOE 481.

BIOE 586 - RESPIRATORY SYSTEM MECHANICS
Short Title: RESPIRATORY SYSTEM MECHANICS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Mechanics of ventilation, respiratory muscle mechanics, rib cage mechanics, mechanical coupling between the respiratory muscles and the rib cage, and inferences on mechanics from respiratory muscle anatomy. The class will meet in the Pulmonary Division at Baylor College of Medicine in the Texas Medical Center. Cross-list: MECH 586.
BIOE 587 - OPTICAL IMAGING AND NANOBIOPHOTONICS
Short Title: OPTIC IMAGING/NANOBIOPHOTONICS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course focuses on diagnostic and therapeutic applications of photonics-based technologies with particular emphasis on nanotechnology enabled optical approaches. This course emphasizes biomedical applications of optics and complements BIOE 484 which introduces fundamental principles of optics to bioengineers.

BIOE 589 - COMPUTATIONAL MOLECULAR BIOENGINEERING/BIOPHYSICS
Short Title: COMP MOLECULAR BIOENG/BIOPHYS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is a course designed for students in computationally-oriented biomedical and bioengineering majors to introduce the principles and methods used for the simulations and modeling of macromolecules of biological interest. Protein conformation and dynamics are emphasized. Empirical energy function and molecular dynamics calculations are described. Specific biological problems are discussed to illustrate the methodology. Classic examples such as the cooperative mechanism of hemoglobin and more frontier topics such as the motional properties of molecular motors and ion channels as well as results derived from the current literature are covered. Cross-list: BIOC 589. Recommended Prerequisite(s): MATH 212, (BIOS 301 or BIOE 384, BIOE 332 and BIOE 384).

BIOE 591 - FUNDAMENTALS OF MEDICAL IMAGING I
Short Title: FUND MEDICAL IMAGING I
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will introduce basic principles of image acquisition, formation and processing of several medical imaging modalities such as X-Ray, CT, MRI, and US that are used to evaluate the human anatomy. The course also includes visits to a clinical site to gain experience with the various imaging modalities covered in class. Additional coursework required beyond the undergraduate course requirements. Cross-list: ELEC 585. Graduate/Undergraduate Equivalency: BIOE 485. Mutually Exclusive: Cannot register for BIOE 591 if student has credit for BIOE 485.

BIOE 592 - SENSORY NEUROENGINEERING
Short Title: SENSORY NEUROENGINEERING
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): BIOE 332 and BIOE 384
Description: This course will explore how bioengineering techniques and principles are applied to understand and model sensory systems, with a focus on the auditory, vestibular, and visual systems. The interaction between the electrical, mechanical and optical aspects of these systems, and ways to modulate these interactions, will be explored. The course will also cover the design of current auditory, visual and somato-sensory prosthetics (i.e. cochlear-implants, retinal implants and brain-machine interfaces), as well as emerging technologies for neural stimulation. Graduate/Undergraduate Equivalency: BIOE 492. Mutually Exclusive: Cannot register for BIOE 592 if student has credit for BIOE 492.

BIOE 593 - BUILDING LIFE SCIENCES, BIOMEDICAL, AND BIOTECHNOLOGY STARTUPS
Short Title: BIOTECH STARTUP
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will explore how bioengineering techniques and principles are applied to understand and model sensory systems, with a focus on the auditory, vestibular, and visual systems. The interaction between the electrical, mechanical and optical aspects of these systems, and ways to modulate these interactions, will be explored. The course will also cover the design of current auditory, visual and somato-sensory prosthetics (i.e. cochlear-implants, retinal implants and brain-machine interfaces), as well as emerging technologies for neural stimulation. Graduate/Undergraduate Equivalency: BIOE 492. Mutually Exclusive: Cannot register for BIOE 592 if student has credit for BIOE 492.

BIOE 595 - MODELING TISSUE MECHANICS
Short Title: MODELING TISSUE MECHANICS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will introduce basic principles of image acquisition, formation and processing of several medical imaging modalities such as X-Ray, CT, MRI, and US that are used to evaluate the human anatomy. The course also includes visits to a clinical site to gain experience with the various imaging modalities covered in class. Additional coursework required beyond the undergraduate course requirements. Cross-list: ELEC 585. Graduate/Undergraduate Equivalency: BIOE 485. Mutually Exclusive: Cannot register for BIOE 591 if student has credit for BIOE 485.
BIOE 596 - FUNDAMENTALS OF MEDICAL IMAGING II
Short Title: FUND MEDICAL IMAGING II
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course focuses on functional imaging modalities used specifically in nuclear medicine such as Gamma cameras, SPECT, and PET imaging. The course will introduce the basic principles of image acquisition, formation, processing and the clinical applications of these imaging modalities and lays the foundations for understanding the principles of radiotracer kinetic modeling. A trip to a clinical site is also planned to gain experience with nuclear medicine imaging. Additional coursework required beyond the undergraduate course requirements. Cross-list: ELEC 586. Graduate/Undergraduate Equivalency: BIOE 486. Mutually Exclusive: Cannot register for BIOE 596 if student has credit for BIOE 486.

BIOE 600 - GRADUATE BIOENGINEERING INDUSTRY INTERNSHIP
Short Title: GRAD BIOE INDUSTRY INTERNSHIP
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 6
Restrictions: Enrollment limited to students in the MBE-GMI program. Enrollment is limited to Graduate level students. Enrollment limited to students in a or Master of Bioengineering degrees.
Course Level: Graduate
Description: Students will participate in an industry internship or industry-sponsored project under the direction of Bioengineering faculty. This course is taken in the summer for six credits. Enrollment is limited to students in the Global Medical Innovation track of the MBE degree. Instructor permission is required. Instructor Permission Required.

BIOE 610 - METHODS OF MOLECULAR SIMULATION
Short Title: METHODS OF MOLECULAR SIMUL
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): CHBE 611 or BIOC 589 or BIOE 589 or BIOS 589 or CHEM 520 or PHYS 526
Description: Modern simulation techniques for classical atomistic systems. Review of statistical mechanical systems. Monte Carlo and molecular dynamics simulation techniques. Extensions of the basic methods to various ensembles. Applications to simulations of large molecules such as proteins. Advanced techniques for simulation of complex systems, including constraint satisfaction, cluster moves, biased sampling, and random energy models. Cross-list: PHYS 610.

BIOE 615 - BIOENGINEERING AND CARDIAC SURGERY
Short Title: BIOENGINEERING/CARDIAC SURGERY
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will address biomaterials and medical devices relevant to cardiac and vascular surgery and interventional cardiology in adult and pediatric patients. Mechanical and design considerations, notable successes and failures, and ethical issues will also be discussed, as will differences in cardiac disease and care due to health disparities.

BIOE 620 - TISSUE ENGINEERING
Short Title: TISSUE ENGINEERING
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of cell-cell interactions and the role of the extracellular matrix in the structure and function of normal and pathological tissues. Includes strategies to regenerate metabolic organs and repair structural tissues, as well as cell-based therapies to deliver proteins and other therapeutic drugs, with emphasis on issues related to cell and tissue transplantation such as substrate properties, angiogenesis, growth stimulation, cell differentiation, and immunoprotection. Cross-list: CHBE 620.

BIOE 621 - BIOVENTURES
Short Title: BIOVENTURES
Department: Bioengineering
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MGMT 633 or BIOE 633
Description: A hands-on immersion into life science entrepreneurship through practical lessons that are applied to students’ group projects throughout the course. This practical course will provide the skills and resources to facilitate scientist-driven entrepreneurship in conceiving new life science ventures and translating research ideas into commercial ventures. This course will be taught in conjunction w/UTMB faculty on the Rice campus (BRC) and will meet from Feb 26 - April 30, 2015. To apply for the course, Rice students should fill out the online application located on the URL site listed above. Instructor Permission Required. Repeatable for Credit.
Course URL: goo.gl/forms/pJ0UMeJiTo (http://goo.gl/forms/pJ0UMeJiTo/)
BIOE 627 - MEDICAL INNOVATION INDUSTRY SEMINAR
Short Title: MED. INNOVATION INDUSTRY SEM.
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course exposes participants to the wide variety of career paths in the medical technology industry including large to mid-sized companies, consulting, biotech, pharma, diagnostics, hospital administration and more through guest lectures, case studies, and informational interviews. Additional topics include: Resume and LinkedIn refinement, Job Application Process, Interview Skills, Delivering Oral Presentations

BIOE 628 - MEDICAL TECHNOLOGY DESIGN SEMINAR 2
Short Title: MED TECH DESIGN SEMINAR 2
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students will learn to address unmet clinical needs thru methodical design. Concept generation principles & proof-of-concept prototyping will be discussed. Screening techniques will be taught that not only weigh technical merit of a concept, but regulatory, reimbursement, IP & business strategies. Students will participate in industry case studies & guest lectures from industry professionals.

BIOE 631 - BIOMATERIALS APPLICATIONS
Short Title: BIOMATERIALS APPLICATIONS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Emphasis will be placed on issues regarding the design, synthesis, evaluation, regulation and clinical translation of biomaterials for specific applications. An overview of significant biomaterials engineering applications will be given, including topics such as ophthalmologic, orthopedic, cardiovascular and drug delivery applications, with attention to specific case studies. Regulatory issues concerning biomaterial will also be addressed. Assignments for this class will include frequent readings of the scientific literature with occasional homework questions, one midterm and cumulative final, a group project, a seminar report and individual presentations. In addition, graduate students in BIOE 631 will have additional exam problems and an additional research paper. Graduate/Undergraduate Equivalency: BIOE 431. Mutually Exclusive: Cannot register for BIOE 631 if student has credit for BIOE 431.

BIOE 633 - ROLES OF PHYSICIANS, SCIENTISTS, ENGINEERS AND MBA'S IN HIGH-TECH STARTUPS
Short Title: LIFE SCIENCE ENTREPRENEURSHIP
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This pragmatic course combines core lectures on entrepreneurship with special guest presentations by notable life science entrepreneurs. It explores the roles that physicians, scientists, engineers, and MBA's play in biotech, medical device, and healthcare companies, as well as major trends in Angel and Venture Capital Financings of Startups. Lectures on entrepreneurial team building, leadership and career planning are included. Cross-list: MGMT 633.

BIOE 643 - CELL MECHANICS, MECHANOTRANSDUCTION AND THE CELL MICROENVIRONMENT
Short Title: MECHANOTRANSDUCTION
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Mechanotransduction is a fundamental process essential for living systems and plays a fundamental role in cell signaling, cancer metastasis and stem cell differentiation. Additionally, fundamental biological processes such as endocytosis cell fusion and cell migration are driven by a coordinated interplay of molecular interactions that drive membrane deformation. This course will survey the current understanding of mechanotransduction and the mechanical properties of cells and their microenvironment, including membrane and cytoskeletal mechanics. Experimental approaches for measuring and manipulating the material properties of cells and their environment; including optical, electrical and magnetic techniques will be covered. A variety of application will be covered, including manipulation in engineering of mechanotransduction pathways to drive cell migration and stem cell differentiation. Instructor Permission Required. Cross-list: BIOC 643, PHYS 643.

BIOE 648 - MOLECULAR TECHNIQUES IN BIOENGINEERING
Short Title: MOLECULAR TECHNIQUES IN BIOENG
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the fundamental physical principles of light interaction with matter, separation (by charge, size, confirmation) and detection techniques utilized in the field of bioengineering. These include absorbance and fluorescence spectroscopy, light and fluorescence microscopy, flow cytometry, electrophoresis, PCR, Blotting, and ELISA. A research paper on new advancements on a technique/technology of their choice based on the ones covered. Graduate/Undergraduate Equivalency: BIOE 348. Mutually Exclusive: Cannot register for BIOE 648 if student has credit for BIOE 348.
BIOE 654 - ADVANCED COMPUTATIONAL MECHANICS
Short Title: ADV COMPUTATIONAL MECHANICS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): BIOE 554 or CEVE 554 or MECH 554 or BIOE 454 or CEVE 454 or MECH 454

BIOE 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Laboratory; Lecture; Seminar; Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

BIOE 680 - NANO-NEUROTECHNOLOGY
Short Title: NANO-NEUROTECHNOLOGY
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will review current nanofabricated technologies for measuring, manipulating, and controlling neural activity. The course will be based on reviewing current academic literature and topics will include nano-electronic, -photonic, -mechanical, and -fluidic neural devices. Cross-list: ELEC 680.

BIOE 682 - SYSTEMS BIOLOGY OF HUMAN DISEASES
Short Title: SYS BIO OF HUMAN DISEASES
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to concepts necessary for application of systems - biology approaches to human diseases. Topics include transcriptional and metabolic design principles, introduction to various regulatory network motifs in diseases and potential treatments using embryonic stem cells. Analysis of complex diseases using engineering concepts such as optimality, nonequilibrium thermodynamics, multiscale analysis and spatiotemporal transport. Cross-list: CHBE 682.

BIOE 690 - PROFESSIONAL DEVELOPMENT FOR BIOENGINEERS
Short Title: PROF DEVELOPMENT FOR BIOE
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): BIOE 517
Description: Professional development topics relevant to academic careers including applying for faculty positions, interviewing, negotiating offers, building a lab, obtaining funding and balancing professional obligations. Designed for graduate students planning academic careers in research-intensive bioengineering departments.

BIOE 698 - BIOENGINEERING COLLOQUIA
Short Title: BIOENGINEERING COLLOQUIA
Department: Bioengineering
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Recent research in bioengineering will be presented in this colloquium series. These colloquia provide an opportunity to learn about the research at other institutions, often times in an area outside students' specific dissertation specialty, and are an important part of graduate education. Graduate students in BIOE are expected to attend all regular Bioengineering colloquia. Repeatable for Credit.

BIOE 699 - BIOENGINEERING COLLOQUIA
Short Title: BIOENGINEERING COLLOQUIA
Department: Bioengineering
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Recent research in bioengineering will be presented in this colloquium series. These colloquia provide an opportunity to learn about the research at other institutions, often times in an area outside students' specific dissertation specialty, and are an important part of graduate education. Graduate students in BIOE are expected to attend all regular Bioengineering colloquia. Repeatable for Credit.
BUSI 220 - LILIE DESIGN THINKING
Short Title: LILIE DESIGN THINKING
Department: Business
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Design thinking is a problem-solving process that can be used to reduce risk when launching a new idea and increase your chances of developing an innovative solution that people want. At the center of the design thinking approach is building empathy with the people for which you are creating products, services, and processes. From that deep empathy, insights will emerge, with which we will apply an iterative prototyping and experimentation method to learn quickly and apply resources efficiently.

BUSI 221 - NEW ENTERPRISES
Short Title: NEW ENTERPRISES
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: In this course, students will learn and experience a process for innovation-based venture development. During the semester, students will form teams and create a plan for a new venture. Cross-list: ENGI 221. Mutually Exclusive: Cannot register for BUSI 221 if student has credit for BUSI 462.

BUSI 223 - BUSINESS MODELING FOR ENTREPRENEURS
Short Title: MODELING FOR ENTREPRENEURS
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The course teaches how to translate a startup business plan into a bottoms up quantitative model of the business and its underlying assumptions. Students will learn how to build a model of cash flows for a startup, how to use that model to track performance and identify errors in the underlying assumptions and adjust, and how to update the model based on realized performance.

BUSI 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Business
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

BUSI 296 - BUSINESS COMMUNICATION
Short Title: BUSINESS COMMUNICATION
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Provides an introduction to business, focusing on the strategy and practice of effective communications in business situations. The course includes individual communication skills assessment and development as well as team-based oral and written communication instruction.
Course URL: www.business.rice.edu/business_minor.aspx

BUSI 305 - FINANCIAL ACCOUNTING
Short Title: FINANCIAL ACCOUNTING
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Covers the preparation, analysis, and use of corporate financial statements; asset and liability valuation and income determination; receivables, inventories, present values, tangible and intangible fixed assets, bonds, leases, shareholder equity, intercorporate investments, consolidations, and cash flow accounting. Space is limited.
Course URL: www.business.rice.edu/LEADING IN ORGANIZATIONS

BUSI 310 - LEADING PEOPLE IN ORGANIZATIONS
Short Title: LEADING IN ORGANIZATIONS
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Introduces the psychological and sociological processes underlying human behavior in organizational settings (e.g., companies, schools, sports clubs). Topics include motivation, decision making, principles of fairness and justice, cross-cultural differences, working in teams, and tactics of influence.
Course URL: www.business.rice.edu/
BUSI 343 - FINANCIAL MANAGEMENT
Short Title: FINANCIAL MANAGEMENT
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (STAT 280 or STAT 305 or STAT 310 or STAT 312 or STAT 315 or DSCI 301 or ECON 307 or POLI 395 or PSYC 339) and (ECON 100 or ECON 200) and BUSI 305
Description: Develops the core concepts of corporate financial management and introduces a set of analytical tools to evaluate financial decisions. Employs concepts of time value of money, risk and return, and market efficiency are to examine how capital market investors value risky assets. Develops a framework for evaluating corporate investment and financing decisions. Mutually Exclusive: Cannot register for BUSI 343 if student has credit for ECON 343.
Course URL: www.business.rice.edu/ (http://www.business.rice.edu/)

BUSI 380 - MARKETING
Short Title: MARKETING
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (STAT 280 or STAT 305 or STAT 310 or STAT 312 or STAT 315 or DSCI 301 or ECON 307 or POLI 395 or PSYC 339) and (ECON 100 or ECON 200)
Description: Introduces the role of marketing in organizations and the principal marketing decisions facing management. Topics include marketing planning and strategy; segmentation and targeting; understanding customer buying behavior; behavioral economics; development and management of products and services; branding; channels of distribution; sales; digital marketing, advertising and promotional methods; pricing strategy; and the development of integrated marketing strategies.
Course URL: www.business.rice.edu/ (http://www.business.rice.edu/)

BUSI 390 - STRATEGIC MANAGEMENT
Short Title: STRATEGIC MANAGEMENT
Department: Business
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Students with a class of Freshman may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BUSI 305
Description: Examines the strategic management of businesses in market and non-market environments. Key topics include competitive and industry analysis, strategy formulation and implementation, and strategic planning. Case discussions of real companies are combined with readings. Recommended Prerequisite(s): ECON 100 or ECON 200
Mutually Exclusive: Cannot register for BUSI 390 if student has credit for BUSI 471.
Course URL: business.rice.edu/ (http://business.rice.edu/)

BUSI 405 - ISSUES IN FINANCIAL REPORTING I
Short Title: ISSUES IN FINANCIAL REPORTNG I
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BUSI 305
Description: Building on subject matter introduced in BUSI 305, this course provides students with a deeper knowledge of generally accepted accounting principles and procedures so that they properly account for and present information in financial statements prepared for external users. The student will acquire an understanding of the accounting issues relating to complex revenue recognition issues, inventory costing, long-lived tangible and intangible assets, and discontinued operations. The student should be able to evaluate alternative accounting methods and choose the methods which will best convey the financial information related to the above areas. The student should be able to demonstrate an understanding of the transaction analysis, recording, classification, summarization, and reporting procedures in the accounting cycle, and an understanding of the information contained in the financial statements. Finally, students should be able to demonstrate written communication skills required of accountants. BUSI 305 Financial Accounting is a prerequisite for this course.
BUSI 430 - MANAGERIAL ACCOUNTING
Short Title: MANAGERIAL ACCOUNTING
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course emphasizes the use of accounting information for internal purposes, as opposed to the external reporting focus of financial accounting. The course covers the design of management accounting systems for planning and controlling operations and for motivating personnel. The course integrates accounting with ideas from data analysis, decision analysis, finance, microeconomics, and operations management. Among the topics covered are the use of cost information for short- and long-term decision making, cost-volume-profit analysis, budgetary control, cost allocation, capital budgeting, and performance evaluation. It is suggested that students enrolled in this course have completed BUSI 305 or ECON 201.

BUSI 440 - AUDITING
Short Title: AUDITING
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BUSI 305
Description: The principles and procedures used by public accountants and internal auditors in examining financial statements and supporting data to verify the accuracy and fairness of the information presented. Specific topics covered include: financial statement, regulatory and contract compliance, internal and operational audits, professional standards and ethical conduct; statistical and judgmental sampling; the audit-impact of information technology; audit risk and internal control structure evaluation; application of procedures in transaction cycles; audit reporting; the importance of professional skepticism; role of the PCAOB in setting and enforcing auditing standards for U.S. publicly traded companies, as well as the issue of mandatory audit firm rotation; role of the International Auditing and Assurance Standards Board in setting International Standards of Auditing.

BUSI 460 - FOUNDATIONS OF ENTREPRENEURSHIP: STRATEGY AND FUNDING
Short Title: FOUNDATIONS OF ENT: STRATEGY
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Students with a class of Freshman may not enroll. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course provides an integrated strategy framework for entrepreneurs. The course is structured to provide a deep understanding of the core strategic challenges facing start-up innovators, and a synthetic framework for choosing and implementing entrepreneurial strategy in dynamic environments. A central theme of the course is that, to achieve competitive advantage, technology entrepreneurs must balance the process of experimentation and learning inherent to entrepreneurship with the selection and implementation of a strategy that establishes competitive advantage. The course identifies the types of choices that entrepreneurs must make to take advantage of a novel opportunity and the logic of particular strategic commitments and positions that allow entrepreneurs to establish competitive advantage. Course is taught either 1st or 2nd Half of Full Term. Repeatable for Credit.

BUSI 461 - FINANCING THE STARTUP VENTURE
Short Title: FINANCING THE STARTUP VENTURE
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The goal of this course is to provide students with an overview of financing options for startups. The course covers crowdfunding, angel investors, accelerators, and the venture capital industry; the organization and operation of venture capital funds; investment methodology; monitoring and portfolio liquidation.
BUSI 463 - ENTREPRENEURIAL STRATEGY
Short Title: ENTREPRENEURIAL STRATEGY
Department: Business
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The first half of this course provides an integrated strategy framework for entrepreneurs. The course is structured to provide a deep understanding of the core strategic challenges facing start-up innovators, and a synthetic framework for choosing and implementing entrepreneurial strategy in dynamic environments, as well as a general understanding of the financing options for early stage startups, including angel investment, accelerators, crowdfunding and the venture capital industry. The course identifies the types of choices that entrepreneurs must make to take advantage of a novel opportunity and the logic of particular strategic commitments and positions that allow entrepreneurs to establish competitive advantage. The second half of the course explores common dilemmas faced by founders surrounding team selection, contracting, equity compensation and incentives, communication in teams, and strategies for approaching each of these dilemmas. The course combines interactive lectures, speakers and case analyses. The cases and assignments offer an opportunity to integrate and apply the principles taught in the course in a practical way, and draws from a diverse range of industries and settings.

BUSI 464 - SOCIAL ENTREPRENEURSHIP
Short Title: SOCIAL ENTREPRENEURSHIP
Department: Business
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course introduces students to contemporary concepts, debates, and contexts necessary for analyzing and engaging in the sphere of social entrepreneurship. The course has four distinct parts: social context; organizational forms and collaborations; private sector roles; and measurement and impacts. Various aspects of social entrepreneurship, such as base of the pyramid/microenterprises, private-public partnerships, private-governmental partnerships, voluntary social codes, corporate social responsibility, and ethical consumerism will be covered. From this foundation, students will undertake a social entrepreneurship project about a contemporary social problem in Houston: food insecurity and food deserts. Cross-list: GLHT 464, SOSC 464.

BUSI 465 - STUDENT VENTURE FUND: EVALUATING STARTUP INVESTMENT OPPORTUNITIES
Short Title: STUDENT VENTURE FUND
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BUSI 461
Description: Students will identify, screen, and evaluate start-ups for investment by the Rice venture capital fund. Through this highly experiential course, students will learn tools for rigorously evaluating startup ventures for investment, valuing early stage companies, and structuring investments. Students will present their investment recommendations to an advisory committee. Graduate/Undergraduate Equivalency: MGMT 740. Mutually Exclusive: Cannot register for BUSI 465 if student has credit for MGMT 740.

BUSI 469 - LILIE NEW VENTURE CHALLENGE
Short Title: LILIE NEW VENTURE CHALLENGE
Department: Business
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: In this capstone project-based experiential learning course, students work on their own startup ideas in teams using the frameworks taught in the E&I framework courses (financing and strategy for startups, new enterprises, business modeling for entrepreneurs, human and social context in entrepreneurship). To apply for this course visit http://hpanahi.web.rice.edu/nvc/ Instructor Permission Required.

BUSI 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Business
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.
BUSI 491 - ACCOUNTING THEORY
Short Title: ACCOUNTING THEORY
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The aim of this seminar is to impart an understanding of the historical evolution of the literature on financial accounting theory and accounting principles, as well as emerging developments in accounting research. A companion objective is to come to understand the evolving dynamic of the standard-setting process for financial reporting in the United States and at the international level, including consideration of the “political” intrusions into this process. Readings will be drawn from the periodical literature, books and monographs, and reports. A term paper will be required. The prerequisite for undergraduates is BUSI 405, but the course will also be open also to a small number of other students who have taken just BUSI 305. MBA students: Prerequisite is MGMT 601. PhD students: no prerequisites. All students must obtain the prior permission of the instructor. Course may not be taken pass/fail and may not be audited. Enrollment will be limited. Mutually Exclusive: Cannot register for BUSI 491 if student has credit for MACC 591/MGMT 591.

BUSI 499 - UNDERGRADUATE BUSINESS INDEPENDENT STUDY
Short Title: UG BUSINESS INDEPENDENT STUDY
Department: Business
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

BUSI 500 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Business
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1.5-3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

BUSI 501 - DOCTORAL MARKETING RESEARCH SEMINAR
Short Title: DOCTORAL MARK. RES. SEMINAR
Department: Business
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

BUSI 503 - SEMINAR IN JUDGEMENT AND DECISION MAKING
Short Title: SEM IN JDGMT & DECISION MAKING
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The purpose of this seminar is to examine recent work in, or relevant to, consumer research. We will select a set of topics to be considered over the semester, often triggered by a new article of particular interest or student interests. For each topic considered, a few articles will be chosen, and we will read and discuss those. Our goals will be to gain exposure to the latest ideas in consumer research and to develop research ideas. In particular, each week we should generate in class the design/idea for at least one new study in the focal topic area. Repeatable for Credit.

BUSI 504 - GAME THEORY
Short Title: GAME THEORY
Department: Business
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Game theory is a discipline that provides a mathematical methodology for modeling and analyzing interactive decisions among multiple agents. Game theory has a wide range of applications in economics, political science, but most importantly (in my opinion) business. The approach of this course will be somewhere between that of a typical economics class (i.e. very mathematical) and that of a typical business seminar (applied and paper based.) Definitions will be stated formally, and arguments will be developed rigorously. At the same time, much of the course will be devoted to using game theory to understand applications in economics and business. Taking these applications as a starting point, we will develop an understanding of what constitutes a good mathematical model for addressing a business question. Repeatable for Credit.

BUSI 505 - SEMINAR IN CONSUMER BEHAVIOR
Short Title: SEMINAR IN CONSUMER BEHAVIOR
Department: Business
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

BUSI 506 - ADVANCED TOPICS IN MARKETING RESEARCH
Short Title: ADVANCED TOPICS IN MARKT. RES.
Department: Business
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The purpose of this seminar is to examine recent work in, or relevant to, consumer research. We will select a set of topics to be considered over the semester, often triggered by a new article of particular interest or student interests. For each topic considered, a few articles will be chosen, and we will read and discuss those. Our goals will be to gain exposure to the latest ideas in consumer research and to develop research ideas. In particular, each week we should generate in class the design/idea for at least one new study in the focal topic area. Repeatable for Credit.
BUSI 507 - BAYESIAN APPLICATIONS IN MARKETING LITERATURE
Short Title: BAYESIAN APPS IN MARKETING LIT
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course aims to develop an understanding of Bayesian empirical applications in the Marketing literature. The course starts with a brief theoretical foundation to Bayesian inference and subsequently focuses on empirical applications in the Marketing literature. The aim of this course is not to equip students with the methodological tools of Bayesian inference. It is assumed that students are familiar with these methodologies. Academic papers from the Marketing literature are assigned to the class and discussed in class. Repeatable for Credit.

BUSI 510 - ANALYTICAL MODELS IN MARKETING
Short Title: ANALYTICAL MODELS IN MARKETING
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

BUSI 511 - SELECTED TOPICS IN MARKETING
Short Title: SELECT TOPICS IN MARKETING
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate

BUSI 515 - MICRO FOUNDATIONS OF ORGANIZATION AND MANAGEMENT
Short Title: MICRO FOUNDATIONS - ORG & MGMT
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

BUSI 521 - FINANCIAL ECONOMICS I
Short Title: FINANCIAL ECONOMICS I
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ECON 501 and ECON 502
Description: Introduction at the graduate level to asset pricing and portfolio choice theory. Covers single-period and dynamic models, including pricing by arbitrage, mean-variance analysis, factor models, dynamic programming, recursive utility, and an introduction to continuous-time finance. Cross-list: ECON 505.

BUSI 522 - CORPORATE FINANCE
Short Title: CORPORATE FINANCE
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will prepare students for a career as a scholar in finance. To do so, we will read and discuss key scholarly papers in the field. Our focus will be on classic and recent research papers in the field of corporate finance. The course is structured to introduce students to selected areas of research and research methods, rather than to be encyclopedic in its coverage. Repeatable for Credit.

BUSI 523 - EMPIRICAL METHODS IN FINANCE
Short Title: EMPIRICAL METHODS IN FINANCE
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is intended to get students up to speed with a toolbox and working facility of methods commonly used in empirical finance research. For each method, we will follow a three-step learning process. We first cover the econometrics from a mathematical (but light and intuitive) approach. Then we will observe researchers using the method in the wild. Then you will use it yourself through exercises and problem sets. Repeatable for Credit.
BUSI 524 - FINANCE: SPECIAL TOPICS I
Short Title: FINANCE: SPECIAL TOPICS I
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course provides a brief review of the literature on derivative pricing and the term structure of interest rates. If we have time we may also read some papers on the financial crisis. The objective is to prepare students to critically think about the current research in each of these areas and, at the same time, give some basic knowledge about each of these research areas. The course is intended for Ph.D. students. This course is very quantitative and requires basic familiarity with asset pricing theory (BUSI 521). Even though, the course is very quantitative, emphasis is given to intuition instead to mathematical rigor. Repeatable for Credit.

BUSI 525 - FINANCE: SPECIAL TOPICS II
Short Title: FINANCE: SPECIAL TOPICS II
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

BUSI 526 - FINANCE: SPECIAL TOPICS III
Short Title: FINANCE: SPECIAL TOPICS III
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines the empirical asset pricing side of financial economics. The course will focus on the development of stylized facts and tools for the investigation of data and on the underlying theoretical asset pricing frameworks. We will also read recent research papers in empirical asset pricing and generate ideas for future research.

BUSI 527 - FINANCE: SPECIAL TOPICS IV
Short Title: FINANCE: SPECIAL TOPICS IV
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate

BUSI 530 - INTRODUCTION TO ACCOUNTING RESEARCH
Short Title: INTRO TO ACCT. RESEARCH
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course offers a thorough and broad-ranging introduction to accounting theory and research. It covers origins and evolution of key relevant accounting institutions, thought, paradigms and methods. Repeatable for Credit.

BUSI 531 - EMPIRICAL METHODS IN ACCOUNTING
Short Title: EMPIRICAL METHODS IN ACCOUNTNG
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

BUSI 532 - ANALYTICAL RESEARCH IN ACCOUNTING
Short Title: ANALYTICAL RESEARCH IN ACCT
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

BUSI 533 - CONTEMPORARY ACCOUNTING: RESEARCH TOPICS
Short Title: CONTEMPORARY ACCT. RES. TOPICS
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this PhD seminar, students will relate and reconcile key theoretical and analytical insights that have emerged in the accounting literature with the vast empirical/experimental research. Specifically, we will pick selected topics of mainstream interest in accounting, review key analytical insights in each topic and relate/reconcile these insights with empirical findings. Where possible, we will attempt to generate testable empirical predictions as well as identify opportunities for analytical research. Topics include agency theory, performance evaluation and incentives, corporate governance, disclosure theory, aspects of auditing, cost measurement and product/capacity planning.
BUSI 540 - STRATEGY I
Short Title: STRATEGY I
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course provides a Ph.D. level seminar focused on seminal theory and recent theoretical approaches in the strategic management literature. The literature in strategic management attempts to explain the differences in the performance and survival of firms by analyzing the effects of a variety of factors at multiple levels, including countries, industries, organizational networks, firms, teams, and individuals. The intent of this seminar is to provide a foundation for conducting and publishing original research in strategic management. The seminar will cover several topics in the field along with relevant theoretical perspectives developed in economics, finance, organization theory, psychology, and sociology. Over the course of the semester, you will: • Read a large amount of articles published in the leading journals of the field; • Evaluate different theoretical perspectives; • Constructively critique empirical research; • Formulate novel research ideas that advance the field of strategic management; • Professionally present research ideas and respond to comments; and • Develop ideas into a research paper that provides the foundations for a future theoretical paper or empirical study. Repeatable for Credit.

BUSI 541 - STRATEGY II
Short Title: STRATEGY II
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Strategic management research attempts to explain the differences in firm behaviors and outcomes by analyzing the effects of a variety of factors at multiple levels, including countries, industries, firms, teams, and individuals. This seminar is the second part of the strategic management seminar series (The first part is Business 540: Strategic Management Theory). While Business 540 focuses on seminal theory and recent theoretical approaches in the strategic management literature, this seminar focuses on phenomena and research topics in strategy research. It provides an overview of classic and current research topics including innovation and technology strategy, strategic alliances and networks, international strategy, product diversification, corporate governance, executive leadership, strategic decision processes, change and adaptation. Specific topics and phenomena will be examined from both theoretical and empirical perspectives. From the theoretical perspective, we will discuss how the various theories discussed in Business 540 are used to explain these phenomena. From the empirical perspective, we will discuss various research designs and methods used to in research on these topics. Overall, the intent of this seminar is to provide students a foundation for conducting and publishing original research in strategic management. Repeatable for Credit.

BUSI 542 - ORGANIZATIONAL CHANGE
Short Title: ORGANIZATIONAL CHANGE
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

BUSI 543 - EXECUTIVE LEADERSHIP AND CORPORATE GOVERNANCE
Short Title: EXEC LEADERSHIP & CORP GOV
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

BUSI 544 - CONTEMPORARY MANAGEMENT THOUGHT
Short Title: CONTEMPORARY MGMT THOUGHT
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate

BUSI 545 - STRATEGY RESEARCH IN CORPORATE DEVELOPMENT
Short Title: STRATEGY RESEARCH IN CORP DEV.
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate

BUSI 546 - EMERGING MARKET STRATEGY
Short Title: EMERGING MARKET STRATEGY
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate

BUSI 547 - INNOVATION AND KNOWLEDGE SPILLOVERS IN EMERGING MARKETS
Short Title: INNOVATION & KNOWLEDGE
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
BUSI 548 - CORPORATE STRATEGY
Short Title: CORPORATE STRATEGY
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate

BUSI 549 - STRATEGY PRO-SEMINAR
Short Title: STRATEGY PRO-SEMINAR
Department: Business
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will expose you to the research areas of the entire strategy and organizational behavior faculty at the Jones School and possible invited guests. Repeatable for Credit.

BUSI 550 - CORPORATE SOCIAL RESPONSIBILITY
Short Title: CORP SOCIAL RESPONSIBILITY
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate

BUSI 551 - STRATEGY RESEARCH IN CORPORATE DEVELOPMENT: STRATEGIC ALLIANCES AND ACQUISITIONS
Short Title: STRATEGY RESEARCH IN CORP DEV
Department: Business
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate

BUSI 552 - DESIGN OF BUSINESS RESEARCH
Short Title: DESIGN OF BUSINESS RESEARCH
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Provides doctoral students with introduction to the design of social research, with particular emphasis on research in the domain of business.

BUSI 577 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Business
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

BUSI 800 - PHD RESEARCH
Short Title: PHD RESEARCH
Department: Business
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-12
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

BUSI 801 - PHD RESEARCH II
Short Title: PHD RESEARCH II
Department: Business
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-12
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

Center for Civic Leadership (LEAD)

LEAD 102 - INTRODUCTION TO CIVIC LEADERSHIP
Short Title: INTRO TO CIVIC LEADERSHIP
Department: Center for Civic Leadership
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: LEAD 102 will increase students’ understanding of civic leadership in theory and practice. Simulations and case studies will examine how public leaders effect societal change while projects on campus and in the community will provide the opportunity to work in small groups to analyze and address leadership challenges and present findings to stakeholders.
Course URL: ccl.rice.edu (http://ccl.rice.edu)
LEAD 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Center for Civic Leadership
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

LEAD 250 - LEADERSHIP AND CIVIC PROFESSIONALISM
Short Title: LEADERSHIP AND CIVIC PROF
Department: Center for Civic Leadership
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course develops knowledge and skills to exercise civic leadership in professional settings. Students will strengthen capacities for recognizing how values, skills, and interests relate to the capacity to exercise effective leadership; for establishing meaningful relationships with mentors, co-workers, and cohort peers and for understanding the interconnectedness of civic leadership in professional contexts. Required of and limited to Leadership Rice Mentorship Experience Fellows placed in mandatory associated internship. Instructor Permission Required.
Course URL: leadership.rice.edu (http://leadership.rice.edu)

LEAD 260 - ADVOCATING FOR IDEAS TO CHANGE THE WORLD
Short Title: ADVOCATING FOR CHANGE
Department: Center for Civic Leadership
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Advocating for change is an experiential learning course that teaches students how to engage in issue advocacy as a method of social change. Students work in teams with faculty mentors to develop and implement an advocacy plan for a particular cause or policy of interest. Cross-list: POLI 260.

LEAD 301 - HISTORICAL AND INTELLECTUAL FOUNDATIONS OF LEADERSHIP
Short Title: FOUNDATIONS OF LEADERSHIP
Department: Center for Civic Leadership
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The focus of this course is to construct a historically informed philosophy of leadership that encompasses not just what leadership is but why it is valued, when it is legitimate, what its moral purpose is, and how it both shapes and reflects societal norms. Cross-list: HUMA 312.
Course URL: leadership.rice.edu (http://leadership.rice.edu)

LEAD 320 - RHETORIC OF LEADERSHIP
Short Title: RHETORIC OF LEADERSHIP
Department: Center for Civic Leadership
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores leadership theories as they relate to persuasive and informative communication strategies deployed by leaders. The class will focus on analyzing speeches, advertisement campaigns, political campaigns, and other leadership-oriented material in order to understand the rhetorical construction of leadership. Cross-list: HUMA 311.

LEAD 321 - LEADERSHIP COMMUNICATION
Short Title: LEADERSHIP COMMUNICATION
Department: Center for Civic Leadership
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Powerful communication skills are essential for effective leadership, and LEAD 321 equips students to articulate ideas with poise, confidence, and clarity. Students develop written, oral, interpersonal, and team skills while developing an understanding of leadership communication in different contexts, including specific fields of study. The Leadership Communication class gives students the opportunity to practice the types of communication that will be required of them in the workplace and that will be crucial for their success.

LEAD 330 - LEADERSHIP IN HIGHER EDUCATION
Short Title: LEADERSHIP IN HIGHER EDUCATION
Department: Center for Civic Leadership
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Students with a class of Freshman may not enroll.
Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Higher education is a challenging environment for leaders - when transformative changes are desired, the process of leadership offers the only possibility for change that is viewed as legitimate. This course uses a case study approach to understand leadership through the lenses of strategic choice, governance, organizational change, culture and values, leader transitions, and crisis.

Course URL: leadership.rice.edu (http://leadership.rice.edu)
LEAD 333 - STEM (SCIENCE TECHNOLOGY ENGINEERING AND MATHEMATICS) OUTREACH: INTRO TO CIVIC SCIENCE
Short Title: STEM OUTREACH
Department: Center for Civic Leadership
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Students teach prepared 4th-grade science lessons in Houston area elementary schools. Students meet weekly with faculty to practice implementing the activities, discuss pedagogical techniques, and delve into issues relating to education and our community. The culminating project is writing a proposal to address a need in education, education policy, and/or community issues.

LEAD 335 - CRISIS LEADERSHIP
Short Title: CRISIS LEADERSHIP
Department: Center for Civic Leadership
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Students with a class of Freshman may not enroll. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: It feels like we live in perpetual whitewater these days. We lurch from crisis to crisis, many of which might have been avoided. This course examines major public crises resulting from low-probability, high-consequence events. The core premise is that effective leadership improves the likelihood of avoiding or mitigating the consequences of crises, and allows us to take advantage of the opportunities that disasters create.

LEAD 340 - PHILANTHROPY IN THEORY AND PRACTICE
Short Title: PHILANTHROPY T & L
Department: Center for Civic Leadership
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of the history, philosophy, and practice of philanthropy in addressing public need with an introduction to ethics and importance of financial giving and community investment. Students will spend substantial time working with local nonprofits in order to select a recipient for a grant awarded by the class.

LEAD 350 - ADVANCED LEADERSHIP PRACTICUM
Short Title: ADVANCED LEADERSHIP PRACTICUM
Department: Center for Civic Leadership
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LEAD 150
Description: This course prepares teaching assistants to mentor and coach students enrolled in LEAD 150. TA's will develop a deep understanding of current leadership literature, analyze challenges facing young leaders today, develop ways to apply leadership concepts to build skills, and apply strategies for coaching and mentoring. Approval required by Leadership Rice. Instructor Permission Required.
Course URL: leadership.rice.edu (http://leadership.rice.edu)

LEAD 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Center for Civic Leadership
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

LEAD 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Center for Civic Leadership
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

Chemical & Biomolecular Eng (CHBE)

CHBE 100 - INTRODUCTION TO CHEMICAL AND BIOMOLECULAR ENGINEERING
Short Title: INTRO TO CHEM&BIOMOLECULAR ENG
Department: Chemical & Biomolecular Engr
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A series of lectures for freshman that outline how chemical and biomolecular engineers tackle today's major energy, health, environmental and economic challenges by working to provide sustainable and affordable energy, by designing new materials, biological products or medical therapeutics, and by developing production methods that are friendly to our environment.
CHBE 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Laboratory, Lecture, Seminar, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

CHBE 281 - ENGINEERING SUSTAINABLE COMMUNITIES
Short Title: ENGRG SUSTAINABLE COMMUNITIES
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Students will work in teams to develop sustainable solutions for energy or environmental problems affecting our Houston and Rice communities. Emphasis will be placed on the integration of engineering fundamentals with societal issues, environmental and safety considerations, sustainability and professional communications. Prerequisites: Introductory Engineering Courses, or Permission of Instructor. Cross-list: ENST 281.

CHBE 301 - CHEMICAL ENGINEERING FUNDAMENTALS
Short Title: CHEMICAL ENGR FUNDAMENTALS
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (CHEM 112 or CHEM 122 or CHEM 152) and (MATH 101 or MATH 105) and (MATH 102 or MATH 106)
Corequisite: CHBE 303
Description: Use of basic mathematical concepts and computer tools, physical laws, stoichiometry and the thermodynamic properties of matter to obtain material and energy balances for steady and unsteady state systems. Required for sophomores intending to major in chemical engineering.

CHBE 303 - COMPUTER-AIDED ANALYSIS OF CHEMICAL AND BIOMOLECULAR PROCESSES
Short Title: COMP ANALYSIS CHEM BIOM PROC
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Corequisite: CHBE 301
Description: An introduction to data analysis, numerical methods, structured programming and computation used to solve relevant chemical and biomolecular engineering problems.

CHBE 305 - COMPUTATIONAL METHODS IN CHEMICAL ENGINEERING
Short Title: COMP METHODS CHEMICAL ENGIN
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHBE 301 and CHBE 303 and MATH 211
Description: Introduction to modern practice and chemical engineering applications of scientific computing: approximations and round-off errors; solution of nonlinear algebraic equations; solution of systems of linear equations; unconstrained and constrained optimization; least squares regression; interpolation; numerical solution of ordinary differential equations; chaos; boundary value problems. Principles illustrated through chemical engineering examples. Instructor Permission Required.

CHBE 310 - FUNDAMENTALS OF BIOMOLECULAR ENGINEERING
Short Title: INTRO BIOMOLECULAR ENGINEERING
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 211 and CHBE 301 and CHBE 303

CHBE 343 - CHEMICAL ENGINEERING LAB I
Short Title: CHEMICAL ENGINEERING LAB I
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHBE 390 and CHBE 401 and CHBE 411
Description: Experiments demonstrating principles presented in core chemical engineering courses.

CHBE 350 - PROCESS SAFETY IN CHEMICAL ENGINEERING
Short Title: PROCESS SAFETY
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHBE 390 and CHBE 401 and CHBE 411 and MATH 211
Description: Examination of principles of chemical process safety through case studies and group discussions.
CHBE 382 - INNOVATION AND SUSTAINABILITY
Short Title: INNOVATION & SUSTAINABILITY
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics in development and environmental economics focusing on how innovation can improve underdeveloped economies and our environment. Introduction to a general framework for assessing the impact of humans on the environment. Environmental consequences of increasing energy use. Case studies showing how innovation information technologies can provide alternatives for sustainable growth. Graduate/Undergraduate Equivalency: CHBE 582. Mutually Exclusive: Cannot register for CHBE 382 if student has credit for CHBE 582.

CHBE 390 - CHEMICAL KINETICS AND REACTOR DESIGN
Short Title: KINETICS & REACTOR DESIGN
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHBE 301 and CHBE 305 and CHBE 310 and MATH 211 and (MATH 212 or MATH 222)
Description: General areas that are covered in this course are (1) principles of chemical kinetics; (2) analysis of reaction rate data; (3) heterogeneous catalysis; (4) ideal reactor design and sizing; and (5) heat effects in reactor designs.

CHBE 401 - TRANSPORT PHENOMENA I
Short Title: TRANSPORT PHENOMENA I
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHBE 301 and CHBE 305 and MATH 211 and MATH 212 or MATH 222
Description: Fundamental principles of energy, mass, and momentum transport applied to the continuum; analysis of macroscopic physical systems based on the continuum equations; applications in chemical engineering practice.

CHBE 402 - TRANSPORT PHENOMENA II
Short Title: TRANSPORT PHENOMENA II
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHBE 401 and CAAM 336 (may be taken concurrently)
Description: Continuation of CHBE 401. Emphasis on energy and mass transport applied to the continuum. CAAM 336 and MATH 381 may be taken concurrently with CHBE 402.

CHBE 403 - DESIGN FUNDAMENTALS
Short Title: DESIGN FUNDAMENTALS
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHBE 390 and CHBE 402 and CHBE 412
Description: Design principles as applied to chemical engineering systems. Engineering economic principles. Costs of equipment, feedstocks, and utilities. Equipment design. Use of modern simulation tools. Graduate/Undergraduate Equivalency: CHBE 503. Mutually Exclusive: Cannot register for CHBE 403 if student has credit for CHBE 503.

CHBE 404 - CHEMICAL ENGINEERING DESIGN
Short Title: CHEMICAL ENGINEERING DESIGN
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHBE 403
Description: Strategies for conceptual design of complex chemical engineering systems. Components include sustainability, heat and power integration, Students tackle engineering design projects in small groups. Instructor Permission Required.

CHBE 405 - DECISION TOOLS FOR CHEMICAL ENGINEERS
Short Title: DECISION TOOLS FOR CHEM ENGRS
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Use of concepts from economics, accounting, and finance in making design and operating decisions in the field of chemical engineering. Introduction to use of life-cycle analysis in decision-making. Appropriate for juniors and higher. Graduate/Undergraduate Equivalency: CHBE 506. Mutually Exclusive: Cannot register for CHBE 405 if student has credit for CHBE 506.

CHBE 411 - THERMODYNAMICS I
Short Title: THERMODYNAMICS I
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHBE 301 and CHBE 305 and MATH 211 and MATH 212
Description: Development and application of the first and second laws of thermodynamics.
CHBE 412 - THERMODYNAMICS II
Short Title: THERMODYNAMICS II
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHBE 411
Description: Advanced treatment of chemical and phase equilibria in multicomponent systems. Includes a detailed study of nonideal solutions. Instructor Permission Required.

CHBE 415 - SEPARATION PROCESSES
Short Title: SEPARATION PROCESSES
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHBE 402 and CHBE 403
Corequisite: CHBE 404
Description: This course covers general separation principles by equilibrium, diffusion and convective mass transport. Topics covered include mass transport, distillation, solid-liquid and liquid-liquid extraction, crystallization, absorption, adsorption, stripping and membrane processes. Graduate/Undergraduate Equivalency: CHBE 515. Mutually Exclusive: Cannot register for CHBE 415 if student has credit for CHBE 515.

CHBE 416 - STRUCTURE AND PROPERTIES OF POLYMERS AND SOFT MATERIALS
Short Title: PROPERTIES OF SOFT MATERIALS
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHBE 343 and CHBE 402 and CHBE 412
Corequisite: CHBE 404
Description: This graduate level course addresses the fundamental structures and properties of polymers and other forms of soft matter (gels, colloids, nanoparticles, etc.) and their many roles as technologically important materials. The electrical, optical, transport, acoustic and mechanical properties are presented with respect to the underlying physics and engineering. Prereqs are concurrent except for MSNE 301. Cross-list: MSNE 416. Graduate/Undergraduate Equivalency: CHBE 516. Mutually Exclusive: Cannot register for CHBE 416 if student has credit for CHBE 516.

CHBE 418 - MATERIALS PHYSICS AND SOLID STATE DEVICES
Short Title: MAT PHYS SOLID STATE DEV
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course is designed to understand how charge and energy flow in basic semiconductor devices. First or second year graduate students from different disciplines and backgrounds will learn about fundamental concepts that describe the physics of semiconductors all the way from atoms and crystal structure to the workings of solar cells and light emitting diodes.

CHBE 420 - TRANSPORT PHENOMENA IN BIOENGINEERING
Short Title: TRANSPORT PHENOMENA BIOENG
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 211 and MATH 212 and (BIOE 332 or CHBE 411) and BIOE 391
Description: BIOE 420/CHBE 420 covers transport phenomena as applied to biological systems and biomedical devices. Conservation of momentum and mass equations are first derived and then used to analyze transport of momentum and mass in biology, physiology, and in biomedical devices. This course is designed for senior bioengineering students. Cross-list: BIOE 420.

CHBE 443 - CHEMICAL ENGINEERING LAB II
Short Title: CHEMICAL ENGINEERING LAB II
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHBE 434 and CHBE 402 and CHBE 412
Description: Experiments demonstrating principles presented in core chemical engineering courses including transport phenomena, thermodynamics, and process control professionalism and engineering ethics.
CHBE 450 - PETROLEUM PHASE BEHAVIOR AND FLOW ASSURANCE
Short Title: PETRO PHASE BEHAV & FLOW ASSUR
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Reviews fundamentals of phase and chemical equilibria thermodynamics focusing on the application of experimental and advanced modeling techniques to characterize reservoir fluids and predict their phase behavior and thermo-physical properties. Intended for students who wish to develop expertise on PVT modeling and gain understanding of common petroleum flow assurance problems. Graduate/Undergraduate Equivalency: CHBE 550. Mutually Exclusive: Cannot register for CHBE 450 if student has credit for CHBE 550.

CHBE 455 - TWO PHASE FLOW/MULTIPHASE FLOW IN PIPES
Short Title: TWO PHASE FLOW/MULTIPHASE FLOW
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Senior. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course addresses the basics concepts, fundamentals, mathematical modeling and practical issues in multiphase fluid flow containing oil, water, gas and suspended solid particles in the oil and gas well columns, offshore and onshore production systems and pipelines. This course will have both an undergraduate and graduate level. Graduate/Undergraduate Equivalency: CHBE 555. Mutually Exclusive: Cannot register for CHBE 455 if student has credit for CHBE 555.

CHBE 465 - STATISTICAL PHYSICS WITH APPLICATIONS TO MOLECULAR NANOSCIENCE AND TECHNOLOGY
Short Title: STAT PHY W/MOL NANOSCI & TECH
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explains the foundations of modern statistical physics, including the renormalization group theory, and describes applications to phenomena at the molecular (“nano”) scale in various disciplines including chemical engineering, physics, chemistry, electrical engineering, and material science. No knowledge of statistical physics is required, but fundamentals of thermodynamics are useful. Graduate/Undergraduate Equivalency: CHBE 565. Mutually Exclusive: Cannot register for CHBE 465 if student has credit for CHBE 565.

CHBE 468 - INDUSTRIAL CHEMICAL PROCESSES
Short Title: INDUSTRIAL CHEMICAL PROCESSES
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHEM 211 and CHBE 390
Description: Survey of the range of key industrial chemical processes to understand the application of industrial chemistry, catalysis, reactor design, and other chemical engineering technologies in the development of those processes. Appropriate for juniors and higher. Graduate/Undergraduate Equivalency: CHBE 568.

CHBE 470 - PROCESS DYNAMICS AND CONTROL
Short Title: PROCESS DYNAMICS & CONTROL
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHBE 390 and CHBE 402 and CHBE 412

CHBE 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

CHBE 490 - CHEMICAL CAR ENGINEERING AND DESIGN
Short Title: CHEM CAR ENG AND DESIGN
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An engineering design course focused on the design and fabrication of a car powered by a chemical reaction. Repeatable for Credit.
CHBE 495 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Discussion of advanced topics of interest. Students will spend time exploring special topics chosen with their advisor, and will participate in weekly discussion groups. The number of credits will vary and are awarded based on total time required to explore the chosen project. Instructor Permission Required. Repeatable for Credit.

CHBE 499 - UNDERGRADUATE RESEARCH
Short Title: UNDERGRADUATE RESEARCH
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Independent investigation of a specific topic or problem in modern chemical engineering research under the direction of a selected faculty member. Department Permission Required. Repeatable for Credit.

CHBE 501 - FLUID MECHANICS AND TRANSPORT PROCESSES
Short Title: FLUID MECH & TRANSPORT PROCES
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced study in fluid mechanics and transport processes including analytical and numerical approximation methods, boundary layer theory, and potential flow theory.

CHBE 503 - DESIGN FUNDAMENTALS
Short Title: DESIGN FUNDAMENTALS
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Design principles as applied to chemical engineering systems. Engineering economic principles. Costs of equipment, feedstocks, and utilities. Equipment design. Use of modern simulation tools. Graduate level course will include an advanced project as a separate requirement. Department Permission Required. Graduate/ Undergraduate Equivalency: CHBE 403. Mutually Exclusive: Cannot register for CHBE 503 if student has credit for CHBE 403.

CHBE 505 - ADVANCED NUMERICAL METHODS
Short Title: ADVANCED NUMERICAL METHODS
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will introduce students to advanced numerical methods in chemical engineering. Topics include: systems of linear and nonlinear equations, quadratures, ODEs and PDEs. Monte Carlo methods, optimization, fast Fourier transforms and statistical description of data. Students will be expected to learn and use a high-level programming language as MATLAB or Python.

CHBE 506 - DECISION TOOLS FOR CHEMICAL ENGINEERS
Short Title: DECISION TOOLS FOR CHEM ENGERS
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Use of concepts from economics, accounting, and finance in making design and operating decisions in the field of chemical engineering. Introduction to use of life-cycle analysis in decision-making. Appropriate for juniors and higher. Graduate/Undergraduate Equivalency: CHBE 405. Mutually Exclusive: Cannot register for CHBE 506 if student has credit for CHBE 405.

CHBE 510 - FUNDAMENTALS AND APPLICATIONS IN ELECTROCHEMICAL ENERGY CONVERSION
Short Title: ELECTROCHEMISTRY
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Course Level: Graduate
Description: This course involves electrochemistry fundamentals and their applications in renewable energy conversion technologies. Specific topics will include water splitting, fuel cells, CO2 reduction to fuels, Li ion batteries, flow batteries, and supercapacitors. Recommended Prerequisite(s): Thermodynamics and Physical Chemistry

CHBE 514 - MACROMOLECULAR ENGINEERING
Short Title: MACROMOLECULAR ENGINEERING
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course provides an in-depth understanding of the structure-property relationships of soft materials (primarily polymers) at the molecular and macromolecular level. Topics will include polymers synthesis, structure, transport and dynamics. In addition, this course will highlight the applications of complex fluids in energy, medicine and coatings/adhesives. Recommended Prerequisite(s): CHEM 211 AND (CHEM 212 OR CHEM 320) AND (MATH 211 OR MATH 221)
CHBE 515 - SEPARATION PROCESSES
Short Title: SEPARATION PROCESSES
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers general separation principles by equilibrium, diffusion and convective mass transport. Topics covered mass transport, distillation, solid-liquid and liquid-liquid extraction, crystallization, absorption, adsorption, stripping and membrane processes. Graduate/Undergraduate Equivalency: CHBE 415. Mutually Exclusive: Cannot register for CHBE 515 if student has credit for CHBE 415.

CHBE 516 - STRUCTURE AND PROPERTIES OF POLYMERS AND SOFT MATERIALS
Short Title: PROPERTIES OF SOFT MATERIALS
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This graduate level course addresses the fundamental structures and properties of polymers and other forms of soft matter (gels, colloids, nanoparticles, etc.) and their many roles as technologically important materials. The electrical, optical, transport, acoustic and mechanical properties are presented with respect to the underlying physics and engineering. Cross-list: MSNE 516. Graduate/Undergraduate Equivalency: CHBE 416. Mutually Exclusive: Cannot register for CHBE 516 if student has credit for CHBE 416.

CHBE 518 - MATERIALS PHYSICS AND SOLID STATE DEVICES
Short Title: MAT PHYS SOLID STATE DEVICES
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is designed to understand how change and energy flow in basic semiconductor devices. First or second year graduate students from different disciplines and backgrounds will learn about fundamental concepts that describe the physics of semiconductors all the way from atoms and crystal structure to the workings of solar cells and light emitting diodes.

CHBE 519 - ATOMIC SIMULATION METHODS AND ENGINEERING APPLICATIONS
Short Title: ATOMIC SIMULATION
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will provide students with an introduction to atomistic-scale simulation methods ranging from empirical force fields to electronic structure theory, as well as overview concepts underlying energy minimization, molecular dynamics, and monte carlo simulations. The course will demonstrate the utilization of these methods for predicting chemical and material properties.

CHBE 523 - BIOENGINEERING SYSTEMS AND CONTROL
Short Title: BIOENG SYSTEMS & CONTROLS
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to basic principles of control theory and applications of these methods and tools to analyze the dynamics of biological systems with examples from metabolic pathway control, synthetic biology and physiological systems. Cross-list: BIOE 523.

CHBE 550 - PETROLEUM PHASE BEHAVIOR AND FLOW ASSURANCE
Short Title: PETRO PHASE BEHAV & FLOW ASSUR
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (CHBE 305 and CHBE 412)
Description: Reviews fundamentals of phase and chemical equilibria thermodynamics focusing on the application of experimental and advanced modeling techniques to characterize reservoir fluids and predict their phase behavior and thermo-physical properties. Intended for students who wish to develop expertise on PVT modeling and gain understanding of common petroleum flow assurance problems. At the graduate level (CHBE 550), a final project will be required. Graduate/Undergraduate Equivalency: CHBE 450. Mutually Exclusive: Cannot register for CHBE 550 if student has credit for CHBE 450.

CHBE 552 - ENERGY CONVERSION AND APPLICATION
Short Title: ENERGY CONVERSION AND APPL
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will give an overview of various unconventional and renewable energy resources and technical challenges facing their production and usage. Issues around energy security, sustainability and affordability will be addressed. In addition, the role of disruptive innovations on energy systems will be discussed. The student will develop both a global and regional view on energy production.
Recommended Prerequisite(s): CHBE 411 or CHBE 412 or MECH 200
CHBE 555 - TWO PHASE FLOW/MULTIPHASE FLOW IN PIPES
Short Title: TWO PHASE FLOW/MULTIPHASE FLOW
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course addresses the basics concepts, fundamentals, mathematical modeling and practical issues in multiphase fluid flow containing oil, water, gas and suspended solid particles in the oil and gas well columns, offshore and onshore production systems and pipelines. This course will have both an undergraduate and graduate level. Graduate/Undergraduate Equivalency: CHBE 455. Mutually Exclusive: Cannot register for CHBE 555 if student has credit for CHBE 455.

CHBE 557 - DISCOVERY AND ENGINEERING OF BIOACTIVE NATURAL PRODUCTS
Short Title: DISCOVERY & ENG BIO NAT PROD
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course surveys the discovery and biosynthesis of natural products and engineering approaches to modify and optimize production of natural products. Topics include: Mechanistic enzymology, Biosynthetic gene clusters and pathways, Bioinformatic analysis and genome mining. Engineering of enzymes for biocatalysis. Metabolic engineering for natural and non-natural products.

CHBE 558 - INTRODUCTION TO GENOME EDITING AND ENGINEERING
Short Title: GENOME EDITING AND ENGINEERING
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course provides an introduction to the recent advances in the genome editing and engineering field. Past and current stages of genome-editing technologies, the fundamental mechanisms of different classes of genome-editing proteins, and cutting-edge strategies for engineering novel genome-editing agents and their applications in synthetic biology and therapeutics. Cross-list: BIOC 558.

CHBE 560 - COLLOIDAL AND INTERFACIAL PHENOMENA
Short Title: COLLOIDAL & INTERFACIAL PHENOM
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course will provide knowledge into the fundamentals of colloidal interactions (e.g., stabilisation, adsorption, self-assembly) and the techniques currently applied for their assessment. Apart from the theoretical background, the course will also provide applicable knowledge by covering current and emerging applications involving these phenomena. Interfacial tension, wetting and spreading, contact angle hysteresis, interaction between colloid particles, stability of interfaces, flow and transport near interfaces will be covered. NOTE: Offered in alternative year with MSNE 594/CHBE 594. Cross-list: MSNE 560.

CHBE 565 - STATISTICAL PHYSICS WITH APPLICATIONS TO MOLECULAR NANOSCIENCE AND TECHNOLOGY
Short Title: STAT PHY W/MOL NANOSCI & TECH
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course explains the foundations of modern statistical physics, including the renormalization group theory, and describes applications to phenomena at the molecular (“nano”) scale in various disciplines including chemical engineering, physics, chemistry, electrical engineering, and material science. No knowledge of statistical physics is required, but fundamentals of thermodynamics are useful. Graduate/Undergraduate Equivalency: CHBE 465. Mutually Exclusive: Cannot register for CHBE 565 if student has credit for CHBE 465.

CHBE 568 - INDUSTRIAL CHEMICAL PROCESSES
Short Title: INDUSTRIAL CHEMICAL PROCESSES
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Survey of the range of key industrial chemical processes to understand the application of industrial chemistry, catalysis, reactor design, and other chemical engineering technologies in the development of those processes. Appropriate for juniors and higher. Graduate/Undergraduate Equivalency: CHBE 468.
CHBE 570 - INDUSTRIAL CATALYSIS AND PETROCHEMICAL PROCESSES
Short Title: INDUSTRIAL CATALYSIS
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers industrial applications of catalysis and petrochemical processes. It intends to bridge the gap between the fundamentals and theories of heterogeneous catalysis and the practical applications in petrochemical industries. It is suitable for graduate students and advanced undergraduate students with permission. Repeatable for Credit.

CHBE 571 - FLOW AND TRANSPORT THROUGH POROUS MEDIA I
Short Title: FLOW&TRANSPRT POROUS MEDIA I
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of the geology, chemistry, and physics of multicomponent, multiphase fluids in porous media. Includes hydrostatic and hydrodynamic properties of fluids in soils and rocks and the simulation of fundamental transport processes in one dimension.

CHBE 580 - PROTEIN ENGINEERING
Short Title: PROTEIN ENGINEERING
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Manipulation of gene expression in prokaryotic and eukaryotic cells. Rational design and directed solutions for cell and protein engineering. Selection and screening technologies and process optimization. Synthetic Biology, engineering and application of gene circuits. Molecular biotechnology applications: Diagnosis, Therapeutics and Vaccines. Cross-list: BIOC 580, BIOE 580. Recommended Prerequisite(s): CHBE 310/510 or equivalent is highly recommended.

CHBE 582 - INNOVATION AND SUSTAINABILITY
Short Title: INNOVATION & SUSTAINABILITY
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics in development and environmental economics focusing on how innovation can improve underdeveloped economies and our environment. Introduction to a general framework for assessing the impact of humans on the environment. Environmental consequences of increasing energy use. Case studies showing how innovation information technologies can provide alternatives for sustainable growth. NOTE: Graduate students taking this course will have to write and present a term paper on sustainability, economics and environmental costs, or IT innovation. Graduate/Undergraduate Equivalency. CHBE 382. Mutually Exclusive: Cannot register for CHBE 582 if student has credit for CHBE 382.

CHBE 590 - KINETICS, CATALYSIS, AND REACTION ENGINEERING
Short Title: ADV REACTION ENGRG
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Review of kinetics and reactor design equations; steady state multiplicity and stability; heterogeneous catalysis; catalyst preparation, characterization, testing; catalytic reaction mechanisms; diffusion and reaction in catalyst pellets; conservation equations; reactor analysis; fixed bed reactor design; reactions of solids; mixing in chemical reactors; parameter estimation for reactor models.

CHBE 593 - INTRODUCTION TO POLYMER PHYSICS AND ENGINEERING
Short Title: POLYMER PHYSICS
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): CHEM 211 and CHEM 212
Description: The course focuses on demonstrating how the physical properties of polymers can be understood from simple models. Students will be introduced to the terminology and mathematics involved in the physical understanding of polymer systems. The course is intended for students who would like to gain an understanding of modern approaches to polymer physics. NOTE: Not offered every year. Cross-list: MSNE 593.

CHBE 594 - PROPERTIES OF POLYMERS
Short Title: PROPERTIES OF POLYMERS
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (CHEM 211 or CHEM 251) and (MATH 211 or MATH 221)
Description: The course will introduce basic concepts in polymer science including the synthesis and chemical modification of polymers as well as physical properties of polymers. Topics include approaches to polymer synthesis, processing and characterization of polymer materials, and an introduction to mathematical models applied to describe the structure and dynamics of polymeric materials. NOTE: Offered in alternative year with MSNE 560/CHBE 560. Cross-list: MSNE 594. Repeatable for Credit.

CHBE 600 - MASTER OF CHEMICAL ENGINEERING RESEARCH
Short Title: MASTER CHEM ENGINEER RESEARCH
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-12
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Independent investigation of a topic or problem in modern chemical engineering research under the direction of a selected faculty member. Department Permission Required. Repeatable for Credit.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Short Title</th>
<th>Department</th>
<th>Grade Mode</th>
<th>Course Type</th>
<th>Credit Hours</th>
<th>Restrictions</th>
<th>Course Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHBE 602</td>
<td>PHYSICO-CHEMICAL HYDRODYNAMICS</td>
<td></td>
<td>Chemical &amp; Biomolecular Engr</td>
<td>Graduate</td>
<td>Lecture</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Topics in hydrodynamics including areas such as waves on liquid surfaces, convection and diffusion in liquids, motion of drops and bubbles, and electrophoresis.</td>
</tr>
<tr>
<td>CHBE 605</td>
<td>TEACHING ASSISTANT</td>
<td></td>
<td>Chemical &amp; Biomolecular Engr</td>
<td>Graduate</td>
<td>Internship/Practicum</td>
<td>1</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Registration for this class is required for all graduate students assigned as teaching assistants within the Department of Chemical and Biomolecular Engineering. Repeatable for Credit.</td>
</tr>
<tr>
<td>CHBE 606</td>
<td>DEAN'S TEACHING ASSISTANT</td>
<td></td>
<td>Chemical &amp; Biomolecular Engr</td>
<td>Graduate</td>
<td>Internship/Practicum</td>
<td>1</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Registration for this class is required for all graduate students assigned as Dean's teaching assistants within the Department of Chemical and Biomolecular Engineering. Repeatable for Credit.</td>
</tr>
<tr>
<td>CHBE 609</td>
<td>RISK ASSESSMENT AND ASSET INTEGRITY IN OIL AND GAS PRODUCTION AND REFINING OPERATIONS I</td>
<td></td>
<td>Chemical &amp; Biomolecular Engr</td>
<td>Graduate</td>
<td>Lecture</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Students will learn how thermodynamics can be used to gain insights into hydrocarbon energy production processes. Classical thermo is covered in bulk phase equilibrium and stability, interfaces, and then liquid films areas. Some statistical thermo and molecular simulations. Effect of nano-size and charge on material properties, nucleation, species distribution, climate change, and shale gas/oil.</td>
</tr>
<tr>
<td>CHBE 610</td>
<td>THERMODYNAMICS AND APPLICATIONS TO HYDROCARBON PRODUCTION AND CHEMICAL ENGINEERING PHENOMENA</td>
<td></td>
<td>Chemical &amp; Biomolecular Engr</td>
<td>Graduate</td>
<td>Lecture</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Students will learn how thermodynamics can be used to gain insights into hydrocarbon energy production processes. Classical thermo is covered in bulk phase equilibrium and stability, interfaces, and then liquid films areas. Some statistical thermo and molecular simulations. Effect of nano-size and charge on material properties, nucleation, species distribution, climate change, and shale gas/oil.</td>
</tr>
<tr>
<td>CHBE 611</td>
<td>ADVANCED TOPICS-THERMODYNAMICS</td>
<td></td>
<td>Chemical &amp; Biomolecular Engr</td>
<td>Graduate</td>
<td>Lecture</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>An advanced treatment of the thermodynamics of pure and multicomponent systems. Topics range from classical thermodynamics to a discussion of modern developments, and include an introduction to statistical thermodynamics.</td>
</tr>
<tr>
<td>CHBE 615</td>
<td>APPLICATION OF MOLECULAR SIMULATION AND STATISTICAL MECHANICS</td>
<td></td>
<td>Chemical &amp; Biomolecular Engr</td>
<td>Graduate</td>
<td>Lecture</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Introduction to molecular simulation techniques and applications of statistical mechanics-based theory to engineering problems. Projects involve topics of current research interest. Students are expected to know thermodynamics and to have had some introduction to statistical mechanics.</td>
</tr>
</tbody>
</table>
CHBE 618 - RISK ASSESSMENT AND ASSET INTEGRITY IN OIL AND GAS PRODUCTION AND REFINING OPERATIONS II
Short Title: OIL AND GAS ASSET INTEGRITY II
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course integrates risk assessment and mitigation, asset integrity management, corrosion control and materials selection across the oil and gas value chain, from production to refining and retail. The full course covers 2 semesters. Session 'I' to be delivered in the Spring 2017 semester. Session 'II' will be delivered in the Fall 2017 semester. Instructor Permission Required. Cross-list: MSNE 618.

CHBE 620 - TISSUE ENGINEERING
Short Title: TISSUE ENGINEERING
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will focus on cell-cell interactions and the role of the extracellular matrix in the structure and function of normal and pathological tissues. Includes strategies to regenerate metabolic organs and repair structural tissues, as well as cell-based therapies to deliver proteins and other therapeutic drugs, with emphasis on issues related to cell and tissue transplantation such as substrate properties, angiogenesis, growth stimulation, cell differentiation, and immunoprotection. Cross-list: BIOE 620.

CHBE 630 - CHEMICAL ENGINEERING OF NANOSTRUCTURED MATERIALS
Short Title: CHEM ENG NANOSTRUCTURE MATRALS
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Overview of materials with structural features on the nanometer scale. Discussion of general concepts of synthesis, characterization and applications. Highlight advances found in recent literature.

CHBE 633 - SPECIAL TOPICS ON THE STATISTICAL FOUNDATIONS OF NON-EQUILIBRIUM MOLECULAR NANOSYSTEMS
Short Title: SPEC TOPICS:STAT FNDT MOL NANO
Department: Chemical & Biomolecular Engr
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Selected topics in the foundations of the statistical physics of soft condensed matter, including colloidal, nanoscale, and macromolecular systems. Foundations of transport phenomena statistical theory; stochastic processes in macromolecular and colloidal systems; course-graining; modeling and simulation of intramolecular forces; stochastic differential equations; simulation techniques. Instructor Permission Required.

CHBE 634 - SURFACE ANALYSIS METHODS IN MATERIALS SCIENCE
Short Title: SURFACE ANALYSIS METHODS
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers the theory and practice of modern surface analysis methods, including secondary ion mass spectroscopy, atomic force microscopy, and X-ray photoelectron spectroscopy. The theory and example application of each technique will be presented, and prior experience with surface analysis is not required. This course may be taken concurrently with the Surface Science Lab, CHBE 636.

CHBE 636 - SURFACE ANALYSIS METHODS LAB
Short Title: SURFACE ANALYSIS METHODS LAB
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Corequisite: CHBE 634
Description: Surface science laboratory course for surface analysis techniques including time-of-flight secondary ion mass spectroscopy (ToF-SIMS), X-ray photoelectron spectroscopy (XPS), and atomic force microscopy. Must be taken concurrently with CHBE 634. Instructor Permission Required.

CHBE 640 - METABOLIC ENGINEERING
Short Title: METABOLIC ENGINEERING
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

CHBE 655 - THERMODYNAMICS AND APPLICATIONS TO HYDROCARBON PRODUCTION AND CHEMICAL ENGINEERING PHENO
Short Title: THERMODYNAMICS & APPS HC PROD
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: How thermodynamics can be used to gain fundamental insights into many chem-e problems and hydrocarbon energy production processes. Course covers classical thermodynamics in the broad context of bulk phase equilibrium and stability, bulk phase irreversible phenomena, interfacial thermodynamics, and thermodynamics of thin liquid films; some statistical thermodynamics and molecular simulations.
CHBE 661 - GRADUATE SEMINAR
Short Title: GRADUATE SEMINAR
Department: Chemical & Biomolecular Engr
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

CHBE 662 - GRADUATE SEMINAR
Short Title: GRADUATE SEMINAR
Department: Chemical & Biomolecular Engr
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

CHBE 671 - FLOW AND TRANSPORT THROUGH POROUS MEDIA II
Short Title: FLOW&TRANSPORT POROUS MEDIA II
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Calculation of multicomponent-multiphase transport in one to three dimensions using finite difference methods. Includes development of multidimensional models of systems and representation and estimation of geological heterogeneity.

CHBE 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Laboratory, Seminar
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

CHBE 682 - SYSTEMS BIOLOGY OF HUMAN DISEASES
Short Title: SYS BIO OF HUMAN DISEASES
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to concepts necessary for application of systems - Biology Approaches to Human Diseases. Topics include transcriptional and metabolic design principles, introduction to various regulatory network motifs in diseases and potential treatments using embryonic stem cells. Analysis of complex diseases using engineering concepts such as optimality, nonequilibrium thermodynamics, multiscale analysis and spatiotemporal transport. Cross-list: BIOE 682.

CHBE 692 - APPLIED MATHEMATICS FOR CHEMICAL ENGINEERING
Short Title: APPL MATHEMATICS FOR CHEM ENG
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The class focuses on the numerical analysis of various times integration techniques for ordinary differential equations, as well as spatial and temporal discretization methods for hyperbolic and parabolic partial differential equations that describe processes in engineering and biology. Homework and projects aim at the comparative evaluation of the various schemes discussed in class. Recommended prerequisite(s): Knowledge of a programming language (Fortran preferably) elementary P.D.E.'s, basic concepts of calculus.

CHBE 695 - MCHE INDEPENDENT STUDY
Short Title: MCHE INDEPENDENT STUDY
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students will do research and/or carry out independent study on a particular problem as agreed by the student and advisor. The number of credit hours granted will be determined in each case based upon work load. Students will be provided an outline (syllabus) of the expectations for hours and product that will be reviewed periodically with the advisor and course instructor. Instructor Permission Required. Repeatable for Credit.

CHBE 700 - M.S. RESEARCH AND THESIS
Short Title: M.S. RESEARCH AND THESIS
Department: Chemical & Biomolecular Engr
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

CHBE 720 - SPECIAL TOPICS IN CHEMICAL ENGINEERING I
Short Title: SPECIAL TOPICS CHEM ENGRG I
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A course which covers various special topics in chemical engineering. Offered at irregular intervals on demand. Instructor Permission Required. Repeatable for Credit.

CHBE 760 - BAYLOR/RICE MD/PHD PROGRAM
Short Title: BAYLOR/RICE MD/PHD PROGRAM
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.
Chemistry (CHEM)

CHEM 101 - INTRODUCTION TO SCIENTIFIC RESEARCH
Short Title: INTRO SCIENTIFIC RESEARCH
Department: Chemistry
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 5
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is for high school students of the classes 2019 and 2020. As visiting students, the students will conduct scientific research in the laboratories of Rice faculty in the areas of Nanotechnology, Chemistry, Materials, and Engineering. Two applications need to be submitted for enrollment into this course. First, the Research Experience in Chemistry application (see course URL for link to application below) should be emailed, along with all required documents as indicated in the application, to CHEM101@rice.edu. Upon confirmation of acceptance from the Chemistry department, students must then complete the visiting student application process for high school students. Instructions to do this can be found in the Application Checklist at summer.rice.edu. Instructor Permission Required. Repeatable for Credit.

CHEM 110 - FRESHMAN CHEMISTRY SEMINAR
Short Title: FRESHMAN CHEMISTRY SEMINAR
Department: Chemistry
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This half-semester course introduces freshmen to chemical research at Rice and in Houston. All first-year non-transfer students are eligible to enroll in CHEM 110 regardless of AP credit.
CHEM 121 - GENERAL CHEMISTRY I
Short Title: GENERAL CHEMISTRY I
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction of chemical phenomena emphasizing problems and methods in Chemistry. Either CHEM 121 or CHEM 151 may be taken as a prerequisite for higher study in chemistry, but only one of these may be taken for credit. Students must also register for CHEM 123 General Chemistry Laboratory I. The course and the co-requisite lab are graded jointly.

CHEM 122 - GENERAL CHEMISTRY II
Short Title: GENERAL CHEMISTRY II
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): CHEM 111 or CHEM 121
Description: A continuation of CHEM 121. Either CHEM 122 or CHEM 152 may be taken as prerequisites for higher study in chemistry, but only one may be taken for credit. Students must also register for CHEM 124 General Chemistry Laboratory II. The course and the co-requisite lab are graded jointly.

CHEM 123 - GENERAL CHEMISTRY LABORATORY I
Short Title: GENERAL CHEMISTRY LAB I
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Required laboratory component of CHEM 121. Students must also register for CHEM 123. Credit may only be received for either CHEM 123 or CHEM 153 but not both. The course and the co-requisite lab are graded jointly. Distribution Credit for CHEM 123 no longer eligible beginning Fall 2019.

CHEM 124 - GENERAL CHEMISTRY LABORATORY II
Short Title: GENERAL CHEMISTRY LAB II
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): CHEM 113 or CHEM 123 or CHEM 153
Description: Required laboratory component of CHEM 122. Students must also register for CHEM 122. Credit may not be received for both CHEM 124 and CHEM 154. The course and the co-requisite lab are graded jointly. Distribution Credit for CHEM 124 no longer eligible beginning Fall 2019.

CHEM 151 - HONORS CHEMISTRY I
Short Title: HONORS CHEMISTRY I
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Corequisite: CHEM 153
Description: An accelerated introduction to chemical phenomena emphasizing principles and theories in chemistry. Recommended strongly for students who plan to major in chemistry or have a strong high school background. Students with AP credit in Chemistry who intend to pursue advanced study in Chemistry are strongly encouraged to take CHEM 151 and CHEM 152. Students must also register for CHEM 153, which is laboratory that meets once per week. Either CHEM 121 or CHEM 151 may be taken as a prerequisite for higher study in chemistry, but only one of these may be taken for credit. The course and the co-requisite lab are graded jointly. Recommended prerequisite(s): high school chemistry and physics.

CHEM 152 - HONORS CHEMISTRY II
Short Title: HONORS CHEMISTRY II
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Corequisite: CHEM 154
Description: A continuation of CHEM 151. Students with AP credit in Chemistry who intend to pursue advanced study in Chemistry are strongly encouraged to take CHEM 151 and CHEM 152. Students must also register for CHEM 154 which is a laboratory that meets once per week. Either CHEM 122 or CHEM 152 may be taken as a prerequisite for higher study in chemistry, but only one of these may be taken for credit. The course and the co-requisite lab are graded jointly.
CHEM 153 - HONORS CHEMISTRY LABORATORY I
Short Title: HONORS CHEMISTRY LABORATORY I
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Corequisite: CHEM 151
Description: Required laboratory component of CHEM 151. Students must also register for CHEM 151. The course and the co-requisite lab are graded jointly. Distribution Credit for CHEM 153 no longer eligible beginning Fall 2019.

CHEM 154 - HONORS CHEMISTRY LABORATORY II
Short Title: HONORS CHEMISTRY LABORATORY II
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): CHEM 153 or CHEM 123 or CHEM 113
Corequisite: CHEM 152
Description: Required laboratory component of CHEM 152. Students must also register for CHEM 152. The course and the co-requisite lab are graded jointly. Distribution Credit for CHEM 154 no longer eligible beginning Fall 2019.

CHEM 176 - THE CHEMISTRY OF ART
Short Title: THE CHEMISTRY OF ART
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The chemistry of the materials and methods used to create, conserve and authenticate art objects will be presented. Topics will include sculpture, painting, photography, textiles, jewelry, furniture, etc. Taught in conjunction with the Conservation Department and Staff of the MFAH. Some classes will be held at the MFAH or HMNS.

CHEM 177 - THE CHEMISTRY OF COOKING
Short Title: THE CHEMISTRY OF COOKING
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course examines the chemistry involved in the composition, transformation, and consumption of food. Topics include chemical properties and reactions of food, cooking tools, and techniques, sensory perception, and nutrition. Lectures and hands-on kitchen experiments are taught in conjunction with Rice Dining Service. Knowledge of high school chemistry is expected.

CHEM 201 - ADVANCED TOPICS IN GENERAL CHEMISTRY
Short Title: ADV TOPICS IN GEN CHEMISTRY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: CHEM 201 is a one-semester lecture course intended for 1st-year undergraduates who have completed a high school AP Chem course (or equivalent) and wish to reinforce or deepen their understanding of challenging core topics. Focus areas include: quantum descriptions of atoms and molecules, chemical thermodynamics, and reaction kinetics and dynamics. Completion of AP Calculus or concurrent enrollment in Math 101 or 111 is expected.

CHEM 210 - WILD TOPICS IN CHEMISTRY AND NANOTECHNOLOGY
Short Title: WILD TOPICS CHEM AND NANOTECH
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A variety of topics related to chemistry and nanotechnology will be discussed. Some topics are classical while others are current. Topics may include nanocars, molecular electronics, how to form a startup company. Grades will be based upon attendance and quizzes. Cross-list: CEVE 210, MSNE 210. Repeatable for Credit.

CHEM 211 - ORGANIC CHEMISTRY I
Short Title: ORGANIC CHEMISTRY I
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): CHEM 112 or CHEM 122 or CHEM 152
Corequisite: CHEM 213
Description: Organic chemistry of aliphatic and aromatic compounds with emphasis on structure, functional groups, bonding, stereochemistry, and reaction mechanisms. CHEM 211 may be taken as a prerequisite for higher study in chemistry. CHEM 211 and CHEM 213 are co-requisites and must be taken together in the same semester.
CHEM 212 - ORGANIC CHEMISTRY II
Short Title: ORGANIC CHEMISTRY II
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Course Level: Undergraduate Lower-Level
Prerequisite(s): CHEM 211
Corequisite: CHEM 214
Description: Continuation of CHEM 211 with an emphasis on aromatic compounds, reactivity and biologically relevant molecules. Either CHEM 212 or CHEM 320 may be taken as a prerequisite for higher study in chemistry, but only one of these may be taken for credit. CHEM 212 and CHEM 214 are co-requisites and must be taken together the same semester. Mutually Exclusive: Cannot register for CHEM 212 if student has credit for CHEM 320.

CHEM 213 - ORGANIC CHEMISTRY DISCUSSION
Short Title: ORGANIC CHEMISTRY DISCUSSION
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 0
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Corequisite: CHEM 211
Description: CHEM 211 and CHEM 213 are co-requisites and must be taken together in the same semester.

CHEM 214 - ORGANIC CHEM DISCUSSION II
Short Title: ORGANIC CHEM DISCUSSION II
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 0
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Corequisite: CHEM 212
Description: CHEM 212 and CHEM 214 are co-requisites and must be taken together in the same semester. Repeatable for Credit.

CHEM 215 - ORGANIC CHEMISTRY LAB
Short Title: ORGANIC CHEMISTRY LAB
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): CHEM 211
Description: Synthesis, purification, and characterization of organic compounds. Experiments related to topics covered in CHEM 211, 212. Includes identification of unknown organic compounds. One lab per week.

CHEM 217 - ORGANIC LABORATORY FOR CHEMICAL ENGINEERS
Short Title: ORGANIC LAB CHEM ENGINEERS
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): CHEM 211
Description: Organic laboratory designed for chemical engineering majors. Emphasis placed on the synthesis and the characterization of organic compounds. This laboratory does not satisfy requirements for science majors or premedical students. This course meets 7 times during the semester.

CHEM 220 - UNDERGRADUATE CHEMISTRY SEMINAR
Short Title: UNDERGRADUATE CHEMISTRY SEM
Department: Chemistry
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An introduction to modern chemical research through seminars and/or directed reading.

CHEM 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

CHEM 280 - UNDERGRADUATE TEACHING PRACTICUM
Short Title: UG TEACHING PRACTICUM
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: In this course, undergraduates who have previously excelled in CHEM courses will develop teaching skills while supporting faculty as teaching assistants (TAs) in a particular CHEM course for the benefit of the students taking that particular course. This course is open only to undergraduates with special permission of the course instructor and can be repeated for credit. Instructor Permission Required. Repeatable for Credit.
CHEM 301 - PHYSICAL CHEMISTRY I
Short Title: PHYSICAL CHEMISTRY I
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (CHEM 112 or CHEM 122 or CHEM 152) and (MATH 212 or MATH 222)
Description: An introduction to fundamental principles in quantum chemistry, chemical bonding and molecular spectroscopy. Mutually Exclusive: Cannot register for CHEM 301 if student has credit for CHEM 312.

CHEM 302 - PHYSICAL CHEMISTRY II
Short Title: PHYSICAL CHEMISTRY II
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (CHEM 112 or CHEM 122 or CHEM 152) and MATH 212
Description: An introduction to the principles of thermodynamics, statistical thermodynamics, kinetic theory of gases, chemical kinetics and the statistical mechanics. Mutually Exclusive: Cannot register for CHEM 302 if student has credit for CHEM 311.

CHEM 320 - ORGANIC CHEMISTRY II
Short Title: ORGANIC CHEMISTRY II
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Chemistry or Chemical Physics. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHEM 211 and (CHEM 215 (may be taken concurrently) or CHEM 365 (may be taken concurrently))
Description: A continuation of CHEM 211 that is in greater depth than CHEM 212. Primarily for chemistry majors and science or engineering students with a strong interest in chemistry research. Either CHEM 212 or CHEM 320 completes the two-semester organic chemistry sequence and may be taken as a prerequisite for higher study in chemistry. Majors other than CHEM should request instructor permission to enroll. Mutually Exclusive: Cannot register for CHEM 320 if student has credit for CHEM 212.

CHEM 330 - ANALYTICAL CHEMISTRY
Short Title: ANALYTICAL CHEMISTRY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHEM 211
Description: A treatment of modern analytical chemistry with an emphasis on instrumentation. Applications of analytical chemistry as applied to areas of medicine, forensics, and material. Taught in the Fall.

CHEM 360 - INORGANIC CHEMISTRY
Short Title: INORGANIC CHEMISTRY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Corequisite: CHEM 362
Description: Survey of the periodic table; atomic and molecular structure; bonding in covalent, ionic, and electron deficient systems; thermochemical principles and experimental techniques for analysis, structure determination, and synthesis.

CHEM 362 - INORGANIC CHEMISTRY DISCUSSION
Short Title: INORGANIC CHEMISTRY DISCUSSION
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 0
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Corequisite: CHEM 360
Description: Repeatable for Credit.

CHEM 365 - ORGANIC CHEMISTRY LAB
Short Title: ORGANIC CHEMISTRY LAB
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHEM 211
Description: Experiments illustrating techniques in synthetic organic chemistry and instrumental methods of analysis. Normally taken in conjunction with CHEM 212 or CHEM 320. NOTE: only one of CHEM 232 and CHEM 365 may be taken for credit.
CHEM 360 - ADVANCED ORGANIC CHEMISTRY
Short Title: ADVANCED ORGANIC CHEMISTRY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHEM 212 or CHEM 320
Description: The principles of structure and bonding are used to explain and predict reactivity in organic chemistry. Extensive practice with reaction mechanism and curved-arrow formalism. Topics include conformational analysis, acidity/basicity, functional group preparation, stereoselective synthesis, and organo-element chemistry. Graduate/Undergraduate Equivalency: CHEM 501. Mutually Exclusive: Cannot register for CHEM 401 if student has credit for CHEM 501.

CHEM 361 - ADVANCED INORGANIC SYNTHESIS
Short Title: ADVANCED INORGANIC SYNTHESIS
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Advanced techniques in inorganic and organometallic synthesis will be covered including air sensitive manipulations using Schlenk line, vacuum lines and dry box. Graduate students may register with an approved Special Registration form.

CHEM 362 - ADVANCED EXPERIMENTAL PHYSICAL CHEMISTRY
Short Title: ADVANCED EXPERIMENTAL PHYSICAL CHEMISTRY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The principles of structure and bonding are used to explain and predict reactivity in organic chemistry. Extensive practice with reaction mechanism and curved-arrow formalism. Topics include conformational analysis, acidity/basicity, functional group preparation, stereoselective synthesis, and organo-element chemistry. Graduate/Undergraduate Equivalency: CHEM 501. Mutually Exclusive: Cannot register for CHEM 401 if student has credit for CHEM 501.
CHEM 415 - CHEMICAL KINETICS AND DYNAMICS
Short Title: CHEMICAL KINETICS & DYNAMICS
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 212 and (PHYS 102 or PHYS 112)
Description: Description and analysis of the rates of unimolecular, bimolecular and composite chemical reactions in gas and solution phases. Both macroscopic kinetics and microscopic reaction dynamics are covered. Graduate/Undergraduate Equivalency: CHEM 515. Mutually Exclusive: Cannot register for CHEM 415 if student has credit for CHEM 515.

CHEM 420 - CLASSICAL AND STATISTICAL THERMODYNAMICS
Short Title: CLASSICAL & STAT THERMODYNAMIC
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 212 and (PHYS 102 or PHYS 112) and CHEM 310 or (CHEM 311 and CHEM 312)
Description: A review of the principles of classical thermodynamics and an introduction to the theories and methods of statistical thermodynamics with applications to problems in chemistry. Graduate/Undergraduate Equivalency: CHEM 520. Mutually Exclusive: Cannot register for CHEM 420 if student has credit for CHEM 520.

CHEM 425 - ORGANIC GEOCHEMISTRY
Short Title: ORGANIC GEOCHEMISTRY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHEM 360
Description: This course covers the organic geochemistry of the natural environment. Topics include: production, transport, decomposition, and storage of organic matter in the marine and terrestrial environments, use of isotopes to track biogeochemical processes, and natural and perturbed carbon cycle issues, including past and recent climate shifts. Cross-list: ENST 425, ESCI 425.

CHEM 430 - QUANTUM CHEMISTRY
Short Title: QUANTUM CHEMISTRY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (CHEM 310 or CHEM 312) and MATH 212 and (PHYS 102 or PHYS 112)
Description: The purpose of this course is to provide the student with a working knowledge of the basic concepts and mathematical formalism of quantum mechanics. Topics include the mathematics of quantum mechanics, one-dimensional problems, central field problems, the harmonic oscillator, angular momentum, perturbation theory, spin, and introduction to methods of modern electronic structure theory, with applications in atomic and molecular structures, spectroscopy, and chemical bonding. Graduate/Undergraduate Equivalency: CHEM 530. Mutually Exclusive: Cannot register for CHEM 430 if student has credit for CHEM 530.

CHEM 475 - PHYSICAL METHODS IN INORGANIC CHEMISTRY
Short Title: PHYS METH INORGANIC CHEMISTRY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHEM 360
Description: A survey course of research techniques used in modern inorganic chemistry. Topics covered will include X-ray diffraction, mass spectrometry, magnetism, and various spectroscopies (IR, Raman, UV-Vis, NMR, EPR, XPS, and Mossbauer). Graduate/Undergraduate Equivalency: CHEM 575. Mutually Exclusive: Cannot register for CHEM 475 if student has credit for CHEM 575.

CHEM 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.
CHEM 491 - RESEARCH FOR UNDERGRADUATES
Short Title: RESEARCH FOR UNDERGRADUATES
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-5
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHEM 391
Description: Independent chemical research at Rice or in other Teams Medical Center groups. Ordinarily taken by students who have taken CHEM 391. Students spend at least 3 hours per week in the laboratory for each semester hour of credit, in addition to other requirements. Instructor permission required. Prior to enrollment, students must secure a position in a laboratory. Application materials, found on the department website, must be submitted by August 1st for Fall term, December 1st for Spring term, or April 1st for Summer term. Instructor Permission Required. Repeatable for Credit.

CHEM 492 - UNDERGRADUATE HONORS RESEARCH
Short Title: UNDERGRADUATE HONORS RESEARCH
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 5
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHEM 391
Description: The 1st half of the Honors Research Program. CHEM 492 and CHEM 493 function as a pair and must be taken in the same academic year. Registration for CHEM 492 requires a commitment to register for CHEM 493. Requirements include at least 15 hours of laboratory research per week and written and/or oral progress reports. The sequence will culminate in the completion of a thesis (research report) in the spring term. Instructor permission required; for approved students only. Applications must be submitted to the course instructor February 1 - August 1. Students are encouraged to apply early. Students who complete the Chemistry Honors Research Program are given primary consideration for 'Distinction in Research and Creative Work,' a university award for select undergraduates, chosen by the department and granted at commencement, which appears on the transcript and diploma. Ordinarily offered Fall term. Instructor Permission Required.

CHEM 493 - UNDERGRADUATE HONORS RESEARCH
Short Title: UNDERGRADUATE HONORS RESEARCH
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 5
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHEM 492
Description: The 2nd half of the Honors Research Program. CHEM 492 and CHEM 493 function as a pair and must be taken in the same academic year. Requirements include at least 15 hours or laboratory research per week and a thesis (research report). Students who complete the Chemistry Honors Research Program are given primary consideration for 'Distinction in Research and Creative Work,' a university award for select undergraduates, chosen by the department and granted at commencement, which appears on the transcript and diploma. Ordinarily offered in Spring. Instructor Permission Required.

CHEM 495 - TRANSITION METAL CHEMISTRY
Short Title: TRANSITION METAL CHEMISTRY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHEM 211 and CHEM 360
Description: Structure, bonding and reactivity of coordination and organometallic compounds; ligand field theory; electronic spectroscopy; magnetism; reaction mechanisms; catalysis. Graduate/Undergraduate Equivalency: CHEM 595. Mutually Exclusive: Cannot register for CHEM 495 if student has credit for CHEM 595.

CHEM 501 - ADVANCED ORGANIC CHEMISTRY
Short Title: ADVANCED ORGANIC CHEMISTRY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The principles of structure and bonding are used to explain and predict reactivity in organic chemistry. Extensive practice with reaction mechanism and curved-arrow formalism. Topics include conformational analysis, acidity/basicity, functional group preparation, stereoselective synthesis, and organo-element chemistry. Graduate/Undergraduate Equivalency: CHEM 401. Mutually Exclusive: Cannot register for CHEM 501 if student has credit for CHEM 401.

CHEM 505 - PROPOSAL WRITING AND REVIEW IN CHEMISTRY
Short Title: PROPOSAL WRITING IN CHEMISTRY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course teaches how to prepare scientific proposals including developing an idea, writing, and peer review including creating a mock panel review.
CHEM 511 - SPECTRAL METHODS IN ORGANIC CHEMISTRY
Short Title: SPECTRAL METHODS ORGANIC CHEM
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): CHEM 212 or CHEM 320
Description: Description and analysis of the rates of unimolecular, bimolecular, and composite chemical reactions in gas and solution phases. Both macroscopic kinetics and microscopic reaction dynamics are covered. Graduate/Undergraduate Equivalency: CHEM 415.Mutually Exclusive: Cannot register for CHEM 515 if student has credit for CHEM 415.

CHEM 515 - CHEMICAL KINETICS AND DYNAMICS
Short Title: CHEMICAL KINETICS & DYNAMICS
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Description and analysis of the rates of unimolecular, bimolecular, and composite chemical reactions in gas and solution phases. Both macroscopic kinetics and microscopic reaction dynamics are covered. Graduate/Undergraduate Equivalency: CHEM 415. Mutually Exclusive: Cannot register for CHEM 515 if student has credit for CHEM 415.

CHEM 520 - CLASSICAL AND STATISTICAL THERMODYNAMICS
Short Title: CLASSICAL & STAT THERMODYNAMIC
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): CHEM 310 or (CHEM 311 or CHEM 312) and MATH 212 and (PHYS 102 or PHYS 112)
Description: A review of the principles of classical thermodynamics and an introduction to the theories and methods of statistical thermodynamics with applications to problems in chemistry. Graduate/Undergraduate Equivalency: CHEM 420. Mutually Exclusive: Cannot register for CHEM 520 if student has credit for CHEM 420.

CHEM 523 - ADVANCED ANALYSIS METHODS FOR MOLECULAR DYNAMICS FROM STATISTICAL MECHANICS TO MACHINE LEARNING
Short Title: MOLECULAR DYNAMICS METHODS
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Enrollment is open to all students. Undergraduate enrollment requires instructor permission via special registration form. Modern methods to extract physical and chemical information from molecular dynamics simulation will be presented, including the determination of reaction coordinates, free energies calculations, and estimation of experimentally measurable observables. The theoretical background and different applications will be discussed. The students will apply the methods on practical examples.

CHEM 525 - FUNDAMENTAL PHOTOLUMINESCENCE SPECTROSCOPY
Short Title: FUND PHOTOLUM SPECT
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Enrollment is open to all students. Undergraduate enrollment requires instructor permission via special registration form. This course aims to cover basic topics in photoluminescence spectroscopy such as instrumentation, different photoluminescent species, solvent relaxation, photoluminescence quenching, energy transfer and anisotropy. Novel applications of photoluminescence spectroscopy such as sensing, multiphoton excitation and the fluorescence of proteins will also be discussed. Undergraduates may register for this course by a Special Registration form.

CHEM 530 - QUANTUM CHEMISTRY
Short Title: QUANTUM CHEMISTRY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The purpose of this course is to provide the student with a working knowledge of the basic concepts and mathematical formalism of quantum mechanics. Topics include the mathematics of quantum mechanics, one-dimensional problems, central field problems, the harmonic oscillator, angular momentum, perturbation theory, spin, and introduction to methods of modern electronic structure theory, with applications in atomic and molecular structures, spectroscopy, and chemical bonding. Graduate/Undergraduate Equivalency: CHEM 430. Mutually Exclusive: Cannot register for CHEM 530 if student has credit for CHEM 430.

CHEM 531 - ADVANCED QUANTUM CHEMISTRY
Short Title: ADV QUANTUM CHEMISTRY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Enrollment is open to all students. Undergraduate enrollment requires instructor permission via special registration form. A hands-on approach to the methods of computational quantum chemistry and their application.
CHEM 533 - NANOSCIENCE AND NANOTECHNOLOGY I
Short Title: NANOSCIENCE & NANOTECHNOLOGY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Enrollment is open to all students. Undergraduate enrollment requires instructor permission via special registration form. An introduction to the basic principles of nanoscience and nanotechnology. Size dependent physical properties of nanoscopic solids will be described using solid state physics and molecular orbital theory as a foundation. Wet chemical techniques that produce nanoscale materials (e.g. carbon nanotubes, semiconductor and metallic nanocrystals, dendrimers...) will be introduced in the second half of the semester. Expected to be taught Spring 2019. Cross-list: CEVE 533, MSNE 534.

CHEM 537 - BIOPHYSICAL CHEMISTRY
Short Title: BIOPHYSICAL CHEMISTRY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will cover selected modern experimental and theoretical approaches to biophysical problems. Specifically, protein folding, single molecules and cytoskeleton dynamics will be discussed from theoretical and experimental points of view.

CHEM 541 - MOLECULES THAT CHANGED THE WORLD
Short Title: MOLECULES CHANGED THE WORLD
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): CHEM 212 or CHEM 320
Description: Enrollment is open to all students. Undergraduate enrollment requires instructor permission via special registration form. This course will expand on our learned knowledge of some of the Nature's most intriguing molecules and the ability of Man to discover, synthesize, modify and use them to our advantage in what areas were not formerly envisioned. Undergraduates may register for the course by filling out a special registration form. These forms can be brought to DBH 243 for processing.

CHEM 542 - MEDICINAL CHEMISTRY I
Short Title: MEDICINAL CHEMISTRY I
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (CHEM 212 or CHEM 320) and BIOC 301
Description: Enrollment is open to all students. Undergraduate enrollment requires instructor permission via special registration form. An introductory course intended to provide the student with an overview of the elements of drug discover, design and development. Targets for drug discovery will be discussed, as well as considerations of drug optimization with respect to the biological target and drug metabolism. A summary of the FDA and patent processes will also be included. Undergraduates may register for the course by filling out a special registration form. These forms can be brought to DBH 243 for processing.

CHEM 545 - PHYSICAL ORGANIC CHEMISTRY
Short Title: PHYSICAL ORGANIC CHEMISTRY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of organic reaction mechanisms. Includes Huckel M.O. theory, kinetics, isotope effects, linear free energy relationships, thermochemical group additivity, substituent and solvent effects, acidity, and free radical chemistry. Recommended Prerequisite(s): CHEM 311. Repeatable for Credit.

CHEM 547 - SUPRAMOLECULAR CHEMISTRY
Short Title: SUPRAMOLECULAR CHEMISTRY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): CHEM 212 or CHEM 320
Description: Enrollment is open to all students. Undergraduate enrollment requires instructor permission via special registration form. An examination of noncovalent interactions and their impact in biology, chemistry, and engineering. Topics will include self-assembly, molecular recognition, protein folding and structure, nucleic acid structure, polymer organization, crystallization and applications of the above for the design and synthesis of nanostructured materials.
CHEM 548 - PEPTIDE CHEMISTRY DESIGN, SYNTHESIS AND STRUCTURE
Short Title: PEPTIDE CHEMISTRY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines biological problems from a chemical perspective. Starting with the structural and functional properties of amino acids, nucleotides, and sugars, we discuss how these molecules organize into higher-order structures (e.g., proteins and nucleic acids). Topics include macromolecular structure-function relationships, developing hybrid chemical/biological drugs, and modern target discovery approaches.

CHEM 551 - BIOMOLECULAR CONCEPTS
Short Title: BIOMOLECULAR CONCEPTS
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): CHEM 310 or CHEM 311
Description: Enrollment is open to all students. Undergraduate enrollment requires instructor permission via special registration form. This course will explore quantitative concepts and tools from chemistry and physics relevant to molecular biology. An executive survey of molecular biology and the basic experimental approaches to biomolecular structure will be followed by a discussion of the structural basics of proteins and nucleic acids. The motion and energy landscapes of proteins will be discussed. Protein folding and evolution and the dynamic basis of gene regulation will be explored. Mutually Exclusive: Cannot register for CHEM 551 if student has credit for CHEM 451.

CHEM 552 - CHEMICAL BIOLOGY
Short Title: CHEMICAL BIOLOGY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines biological problems from a chemical perspective. Starting with the structural and functional properties of amino acids, nucleotides, and sugars, we discuss how these molecules organize into higher-order structures (e.g., proteins and nucleic acids). Topics include macromolecular structure-function relationships, developing hybrid chemical/biological drugs, and modern target discovery approaches.

CHEM 553 - STRATEGIC APPLICATIONS OF NAMED REACTIONS IN ORGANIC SYNTHESIS
Short Title: NAMED REACTIONS IN SYNTHESIS
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will provide a detailed investigation into the mechanism and strategic applications of approximately 150 widely used named reactions in organic synthesis. The students will learn how to navigate the vast chemical literature effectively using sophisticated search engines like SciFinder and Reaxys and will get the opportunity to prepare and give 10-minute presentations on 5 recent named rxns. Recommended Prerequisite(s): CHEM 211 and CHEM 212. Repeatable for Credit.

CHEM 554 - DRUG DISCOVERY AT THE INTERFACE OF CHEMISTRY AND BIOLOGY
Short Title: DRUG DISCOVERY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Drug discovery requires a close integration of chemistry and biology. This course explores the design and development of new medicine from a chemical biological perspective. Topics include fundamental methods for biomolecule synthesis and engineering and application to hybrid chemical/biologic drugs, as well as modern approaches for target discovery and validation.

CHEM 555 - NANOCARBS
Short Title: NANOCARBS
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will cover the mechanism and strategic applications of approximately 150 widely used named reactions in organic synthesis. The students will learn how to navigate the vast chemical literature effectively using sophisticated search engines like SciFinder and Reaxys and will get the opportunity to prepare and give 10-minute presentations on 5 recent named rxns. Recommended Prerequisite(s): CHEM 211 and CHEM 212. Repeatable for Credit.

CHEM 558 - NANOCRYSTALS
Short Title: NANOCRYSTALS
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this course we will cover the mechanism and strategic applications of approximately 150 widely used named reactions in organic synthesis. The students will learn how to navigate the vast chemical literature effectively using sophisticated search engines like SciFinder and Reaxys and will get the opportunity to prepare and give 10-minute presentations on 5 recent named rxns. Recommended Prerequisite(s): CHEM 211 and CHEM 212. Repeatable for Credit.
CHEM 559 - SPECTROSCOPY AT THE SINGLE MOLECULE/PARTICLE LIMIT
Short Title: SPEC SINGLE MOLECULE/PARTICLE
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): CHEM 310 or (CHEM 311 and CHEM 312)
Description: Enrollment is open to all students. Undergraduate enrollment requires instructor permission via special registration form. This course will cover principles of electronic spectroscopy of molecules and nanoparticles with emphasis on single molecule/particle spectroscopy methods and analysis techniques.

CHEM 570 - NANOTECHNOLOGY FOR TEACHERS, TEACHING CHEMICAL CONCEPTS VIA INQUIRY I
Short Title: TEACHING CHEMICAL CONCEPTS
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Using the Concept Development Approach, this course will teach teachers how to engage students in inquiry science and provide teachers with in depth conceptual knowledge about chemical fundamentals. The course will include hands-on activities and discussions about chemical concepts that include atomic molecular theory, atomic structure, quantum energy levels, thermodynamics, equilibrium, and bonding. Nanotechnology research with environmental applications will be highlighted throughout the course. Instructor Permission Required.

CHEM 571 - TEACHING CHEMICAL CONCEPTS VIA INQUIRY II, NANOTECHNOLOGY FOR TEACHERS
Short Title: CHEMICAL CONCEPTS - INQUIRY II
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Using the Concept Development Approach, this course will teach teachers how to engage students in inquiry science and provide teachers with in depth conceptual knowledge about chemical fundamentals. The course will include hands-on activities and discussions about chemical concepts that include gas laws, kinetic molecular theory, acid base equilibrium, and phase equilibrium. Nanotechnology research with biological applications will be highlighted throughout the course. Instructor Permission Required. Recommended Prerequisite(s): CHEM 570.

CHEM 575 - PHYSICAL METHODS IN INORGANIC CHEMISTRY
Short Title: PHYS METH INORGANIC CHEMISTRY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A survey course of research techniques used in modern inorganic chemistry. Topics covered will include X-ray diffraction, matrix isolation, mass spectrometry, magnetism, electrochemistry, and various spectroscopies (IR, Raman, UV-Vis, NMR, EPR, XPS, EXAFS, and Mossbauer). Graduate/Undergraduate Equivalency: CHEM 475. Mutually Exclusive: Cannot register for CHEM 575 if student has credit for CHEM 475.

CHEM 580 - MICROSCOPY METHODS IN MATERIALS SCIENCE
Short Title: MICROSCOPY METHODS
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers theory and applications of electron microscopy techniques with an emphasis on transmission and scanning transmission electron microscopy (TEM, STEM). Topics include modern instrumentation and hardware, electron diffraction, imaging modes, tomography, and spectroscopy (energy dispersive x-ray spectroscopy (EDS), electron-energy loss spectroscopy (EELS), cathodoluminescence (CL)). Previous experience with electron microscopes recommended. Can be taken alone or concurrently with lab course MSNE 582. Instructor Permission Required. Recommended Prerequisite(s): CHEM 570.

CHEM 582 - ELECTRON MICROSCOPY CENTER LAB
Short Title: ELECTRON MICROSCOPY CENTER LAB
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Corequisite: CHEM 580
Description: Hands-on laboratory using the instruments in the electron microscopy center. The students will gain the knowledge necessary to operate the instruments and analyze data independently. Must be taken concurrently with CHEM 580. Instructor Permission Required. Cross-list: MSNE 582.
CHEM 583 - ORGANOMETALLIC CHEMISTRY I  
Short Title: ORGANOMETALLIC CHEMISTRY I  
Department: Chemistry  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Organometallic Chemistry I. An introduction to organometallic chemistry, focusing on transition metal structure, bonding, and reactivity. This course is the first half of a two-course sequence, together with CHEM 584: Organometallic Chemistry II. Each course is a half-semester course. Expected to be taught 1st half of the term. Recommended Prerequisite(s): CHEM 320 or CHEM 212 or CHEM 360.  

CHEM 584 - ORGANOMETALLIC CHEMISTRY II  
Short Title: ORGANOMETALLIC CHEMISTRY II  
Department: Chemistry  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 1.5  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): CHEM 583  
Description: Organometallic Chemistry II. An introduction to organometallic chemistry, focusing on transition metal structure, bonding, and reactivity. This course is the first half of a two-course sequence, together with CHEM 583: Organometallic Chemistry I. Each course is a half-semester course. Expected to be taught 2nd half of the term.  

CHEM 586 - CHEMICAL TOOLS FOR BIOLOGY  
Short Title: CHEMICAL TOOLS FOR BIOLOGY  
Department: Chemistry  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 1.5  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Enrollment is open to all students. Undergraduate enrollment requires instructor permission via special registration form. Selected topics in modern chemical biology. The development and application of chemical methods to probe, perturb, and understand biological systems. Topics include protein and DNA chemistry, classical and modern approaches to inhibitor development, and chemical reaction design in living cells. Expected to be taught Fall 2018.  

CHEM 595 - TRANSITION METAL CHEMISTRY  
Short Title: TRANSITION METAL CHEMISTRY  
Department: Chemistry  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Structure, bonding and reactivity of coordination and organometallic compounds; ligand field theory; electronic spectroscopy; magnetism; reaction mechanisms; catalysis. Graduate/Undergraduate Equivalency: CHEM 495. Mutually Exclusive: Cannot register for CHEM 595 if student has credit for CHEM 495. Repeatable for Credit.  

CHEM 600 - GRADUATE SEMINAR  
Short Title: GRADUATE SEMINAR  
Department: Chemistry  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hour: 1  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Section 1: PHYSICAL CHEMISTRY-NANO Section 2: ORGANIC AND BIOLOGICAL CHEMISTRY Section 3: NANOCHEMISTRY Section 4: CARBON NANOCHEMISTRY. This seminar series is open to all chemistry graduate students or graduate students whose home department is chemistry. Students from other departments may audit the course with instructor permission. Repeatable for Credit.  

CHEM 650 - CHEMICAL PHYSICS OF CONDENSED AND BIOLOGICAL MATTER  
Short Title: CHEM PHYS CONDENSED&BIO MATTER  
Department: Chemistry  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: The principles underlying the structure and dynamics of condensed phase and biological matter. Both experimental phenomenology and theoretical approaches will be used. Starting with a review of intermolecular forces, the course will describe the structure and thermodynamics of clusters, crystalline solids, metals, liquids, glasses and biomolecules. A unified picture of reactions and classical and quantum phase transitions in condensed matter will be presented. The energy landscape theory of the dynamics of glasses and protein folding will also be covered. Expected to be taught Fall 2018. Mutually Exclusive: Cannot register for CHEM 650 if student has credit for CHEM 450.  

CHEM 656 - CLASSICS IN TOTAL SYNTHESIS  
Short Title: CLASSICS IN SYNTHESIS  
Department: Chemistry  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 1.5  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): (CHEM 211 and CHEM 212 and CHEM 401 and CHEM 442)  
Description: Selected total synthesis will be discussed. Special emphasis will be placed on retro-synthetic analysis, synthetic strategies and technologies, asymmetric synthesis and catalysis.  

CHEM 677 - SPECIAL TOPICS  
Short Title: SPECIAL TOPICS  
Department: Chemistry  
Grade Mode: Standard Letter  
Course Type: Seminar, Lecture, Internship/Practicum, Laboratory  
Credit Hours: 1-4  
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.  
Course Level: Graduate  
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.
CHEM 700 - TEACHING PRACTICUM
Short Title: TEACHING PRACTICUM
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Description: Open to graduate students in chemistry and only in exceptional circumstances to undergraduates. Repeatable for Credit.

CHEM 800 - GRADUATE RESEARCH
Short Title: GRADUATE RESEARCH
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Description: Repeatable for Credit.

Chinese (CHIN)

CHIN 141 - FIRST YEAR CHINESE I
Short Title: FIRST YEAR CHINESE I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Development of interactional competence in Chinese (sociolinguistic and sociocultural knowledge) to communicate and interact with speakers of Chinese. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. No prior knowledge of this language is necessary. Effective May 15, 2019, this course does not carry D1 credit. Mutually Exclusive: Cannot register for CHIN 141 if student has credit for CHIN 101/CHIN 222.

CHIN 142 - FIRST YEAR CHINESE II
Short Title: FIRST YEAR CHINESE II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Continuation of CHIN 141, for students whose home language is not Chinese. Development of interactional competence in Chinese, (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Chinese. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Effective May 15, 2019, this course does not carry D1 credit.

CHIN 206 - ACCELERATED SECOND-YEAR CHINESE
Short Title: ACCEL 2ND YR CHINESE
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): CHIN 106
Description: Intensive second-year Chinese course for students who completed accelerated first-year Chinese or have a comparable level in Chinese. This is a course covering the equivalents of CHIN 263 and 264. Students will be prepared for CHIN 301 upon completion of the course. Mutually Exclusive: Credit cannot be earned for this course AND CHIN 263 and/or CHIN 264. CHIN 206 covers the same material as 263 and 264 combined.

CHIN 211 - ACCELERATED ELEMENTARY CHINESE I
Short Title: ACCEL ELEMENTARY CHINESE I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: For students with some background in spoken Chinese but with limited reading and writing ability. Introduces the Chinese writing system and the use of Chinese dictionaries. Students will be familiar with approximately 350 characters at the end of the course, and able to perform communicative tasks appropriate to this range of characters. Placement Test is Required. Effective May 15, 2019, this course does not carry D1 credit.

CHIN 212 - ACCELERATED ELEMENTARY CHINESE II
Short Title: ACCEL ELEMENTARY CHINESE II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): CHIN 211
Description: Increasing attention paid to more formal narrative texts. Writing focused on personal needs, with some attention to social correspondence. Students will be familiar with approximately 500 characters at the end of the course, and able to perform communicative tasks appropriate to this range of characters. Effective May 15, 2019, this course does not carry D1 credit.
CHIN 222 - AP/OTH CREDIT IN CHINESE LANGUAGE
Short Title: AP/OTH CREDIT CHINESE LANGUAGE
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Transfer
Credit Hours: 3
Course Level: Undergraduate Lower-Level
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation. Mutually Exclusive: Cannot register for CHIN 222 if student has credit for CHIN 101/CHIN 141.

CHIN 263 - SECOND YEAR CHINESE I
Short Title: SECOND YEAR CHINESE I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): CHIN 142
Description: Continuation of CHIN 142, for students whose home language is not Chinese. Development of interactional competence in Chinese, (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Chinese. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Cannot register for CHIN 263 if student has credit for CHIN 201.

CHIN 264 - SECOND YEAR CHINESE II
Short Title: SECOND YEAR CHINESE II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): CHIN 263
Description: Continuation of CHIN 263, for students whose native language is not Chinese. Development of interactional competence in Chinese (sociolinguistic and sociocultural knowledge) to communicate and interact with speakers of Chinese. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Cannot register for CHIN 264 if student has credit for CHIN 202.

CHIN 301 - THIRD YEAR CHINESE I
Short Title: THIRD YEAR CHINESE I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHIN 301
Description: Continuation of CHIN 301, for students whose home language is not Chinese. Emphasis on developing reading and writing ability as more authentic materials and socio-cultural topics are introduced. Upon completion students are expected to be able to write approximately 800 characters and perform communicative tasks appropriate to this range of characters.

CHIN 302 - THIRD YEAR CHINESE II
Short Title: THIRD YEAR CHINESE II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHIN 301
Description: Continuation of CHIN 301, for students whose home language is not Chinese. Emphasis on developing reading and writing ability as more authentic materials and socio-cultural topics are introduced. Upon completion students are expected to be able to write approximately 800 characters and perform communicative tasks appropriate to this range of characters.

CHIN 311 - ACCELERATED INTERMEDIATE CHINESE I
Short Title: ACCEL INTERMEDIATE CHINESE I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHIN 212
Description: Emphasis on reading narrative texts, and understanding authentic oral texts. Writing assignments stress skills necessary for basic personal needs and tasks necessary for writing social correspondence. At the completion of 311, students will be able to write approximately 800 Chinese characters, and be able to perform communicative tasks appropriate to this range of characters.
CHIN 312 - ACCELERATED INTERMEDIATE CHINESE II
Short Title: ACCEL INTERMEDIATE CHINESE II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHIN 311
Description: Continuation of CHIN 311. More emphasis on reading narratives, comprehending authentic oral texts, and speaking in more formal contexts. Writing assignments stress skills necessary for expressing arguments on socio-cultural topics. At the completion of CHIN 312, students will be able to write approximately 1000 Chinese characters.

CHIN 319 - SPECIAL TOPICS: ADVANCED CHINESE I
Short Title: SPECIAL TOPICS: ADV CHINESE I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHIN 301 or CHIN 311
Description: This course helps students develop an advanced level of proficiency in Chinese through the analysis and use of the target language in the context of specific topics of interest that will vary.

CHIN 320 - SPECIAL TOPICS: ADVANCED CHINESE II
Short Title: SPECIAL TOPICS: ADV CHINESE II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHIN 319
Description: This is a continuation of CHIN 319. This course helps students develop an advanced level of proficiency in Chinese through the analysis and use of the target language in the context of specific topics of interest that will vary.

CHIN 330 - INTRODUCTION TO TRADITIONAL CHINESE POETRY
Short Title: INTRO TO TRAD CHINESE POETRY
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course seeks to decode enchanting features of traditional Chinese poetry through examining the transformation of poetic genres, the interaction between poetic creation and political, social and cultural changes, and the close association of poetry with art. Thus, this course also serves to understand Chinese culture and history through poetic perspectives. All readings in English translation. Cross-list: ASIA 330, MDEM 370.

CHIN 332 - CHINESE LITERATURE AND ITS MOVIE ADAPTATIONS
Short Title: FILM & CHINESE LITERATURE
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Exploration of modern Chinese literature through the visual imagery of Chinese films to show how and why different time periods and different media affect the theme of a story. One third covers movie adaptations of classical Chinese literature. Films subtitled in English, shown outside of class. All readings in English translation. Cross-list: ASIA 332.

CHIN 334 - TRADITIONAL CHINESE TALES AND SHORT STORIES
Short Title: TRADITIONAL CHINESE TALES
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Learning Chinese literature and culture through reading vernacular stories, fantastic tales, biographies, and philosophical parables. Discussion topics: literature and Confucianism, Taoism and Buddhism; literature and history; self and other; fantastic world and reality; women as domestic aliens and aliens portrayed as women, etc. Readings are in English translation. Cross-list: ASIA 334.
**CHIN 335 - INTRODUCTION TO CLASSICAL CHINESE NOVELS**

**Short Title:** CLASSICAL CHINESE NOVELS  
**Department:** Cntr Lang & Intercultural Comm  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Examination of the basic characteristics of classical Chinese novels, primarily through six important works from the 16th to 18th centuries: Water Margin, Monkey, Golden Lotus, Scholars, Romance of the Three Kingdoms, and Dream of the Red Chamber. Cross-list: ASIA 335, MDEM 375.

**CHIN 401 - FOURTH YEAR CHINESE I**

**Short Title:** FOURTH YEAR CHINESE I  
**Department:** Cntr Lang & Intercultural Comm  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** CHIN 302  
**Description:** Continuation of CHIN 302, emphasis on developing oral fluency at the discourse level and cultivating advanced writing skill. Students will read and discuss a variety of social, political and economic issues. Upon completion, students are expected to be able to write approx. 1000 characters.

**CHIN 402 - FOURTH YEAR CHINESE II**

**Short Title:** FOURTH YEAR CHINESE II  
**Department:** Cntr Lang & Intercultural Comm  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** CHIN 401  
**Description:** Continuation of CHIN 401, emphasis on strengthening speaking and writing skills at the advance level with more authentic readings selected from newspapers, literary works and academic texts. Upon completion, students are expected to be able to write approx. 1200 characters.

**CHIN 422 - THE ORIGINAL BEAUTY OF CHINESE LITERATURE**

**Short Title:** ORIGINAL BEAUTY OF CHINESE LIT  
**Department:** Cntr Lang & Intercultural Comm  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** The course will expose students to the best literary works created in the Chinese tradition, both classical and modern, and give them a general introduction to different genres, including poetry, fiction, drama, and philosophical essays. It will improve their language proficiency through reading original texts of Chinese literature. Cross-list: ASIA 422.

**CHIN 477 - SPECIAL TOPICS**

**Short Title:** SPECIAL TOPICS  
**Department:** Cntr Lang & Intercultural Comm  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar, Lecture, Laboratory, Internship/Practicum  
**Credit Hours:** 1-4  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

**Civil and Environmental Eng (CEVE)**

**CEVE 100 - AP/OTH CREDIT IN ENVIRONMENTAL SCIENCE**

**Short Title:** AP/OTH CR ENVIRONMENTL SCIENCE  
**Department:** Civil & Environmental Engr  
**Grade Mode:** Standard Letter  
**Course Type:** Transfer  
**Credit Hours:** 3  
**Course Level:** Undergraduate Lower-Level  
**Description:** This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation.

**CEVE 101 - FUNDAMENTALS OF CIVIL AND ENVIRONMENTAL ENGINEERING**

**Short Title:** FUNDAMENTAL OF CIVIL & ENVIR E  
**Department:** Civil & Environmental Engr  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** This introduction will cover the essential topics and quantitative techniques in civil and environmental engineering. General engineering, engineering math, fluid mechanics, hydrology, statistics, and mass balance techniques will be presented followed by applications.
CEVE 210 - WILD TOPICS IN CHEMISTRY AND NANOTECHNOLOGY
Short Title: WILD TOPICS CHEM AND NANOTECH
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A variety of topics related to chemistry and nanotechnology will be discussed. Some topics are classical while others are current. Topics may include nanocars, molecular electronics, how to form a start-up company. Grades will be based upon attendance and quizzes. Cross-list: CHEM 210, MSNE 210. Repeatable for Credit.

CEVE 211 - ENGINEERING MECHANICS
Short Title: ENGINEERING MECHANICS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): (PHYS 101 or PHYS 111 or PHYS 125 or PHYS 141) and (MATH 101 or MATH 105) and (MATH 102 or MATH 106)
Description: The study equilibrium of static systems, the dynamics of a particle and particle systems, and rigid-body dynamics. Required for mechanical engineering and materials science and engineering majors. Cross-list: MECH 211.

CEVE 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

CEVE 301 - ENGINEERING ECONOMICS AND PROJECT MANAGEMENT
Short Title: ENG ECONOMICS & PROJECT MGMT
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CEVE 101
Description: Life cycle economics analysis to project development, project economic analysis, contracting, network scheduling, risk management, organizational structures and cases. Mutually Exclusive: Cannot register for CEVE 301 if student has credit for CEVE 201/CEVE 479/CEVE 505/ENGI 505.

CEVE 302 - SUSTAINABLE DESIGN
Short Title: SUSTAINABLE DESIGN
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The objective of this course is to develop skills in formulating and solving problems of societal development and advancement in light of increasing material, energy and water demands and decreasing resource availability. Sustainable design requires balancing economic, ecological/environmental and social issues to create physical as well as social structures that will work for current and future generations. In addition to learning to apply sustainable design principles to individual engineering and developing projects, students will be challenged to understand the application of sustainable design thinking at the municipal and corporate level. Cross-list: ENGI 302. Graduate/Undergraduate Equivalency: CEVE 502. Mutually Exclusive: Cannot register for CEVE 302 if student has credit for CEVE 502.

CEVE 307 - ENERGY AND THE ENVIRONMENT
Short Title: ENERGY AND THE ENVIRONMENT
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores the physical principles of energy use and its impacts on Earth's environment and climate. Topics will include energy mechanics, climate change, and the environmental impacts and future prospects of various fossil fuel and alternative energy sources. Cross-list: ENST 307, ESCI 307. Graduate/Undergraduate Equivalency: CEVE 507. Mutually Exclusive: Cannot register for CEVE 307 if student has credit for CEVE 507.

CEVE 308 - INTRODUCTION TO AIR POLLUTION CONTROL
Short Title: INTRO TO AIR POLLUTION CONTROL
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (CHEM 112 or CHEM 122 or CHEM 152) and (MATH 101 or MATH 105) and (MATH 102 or MATH 106) and (PHYS 101 or PHYS 111 or PHYS 125 or PHYS 141)
Description: This course will discuss the history of air pollution and its effects as motivation for control of anthropogenic emissions to the atmosphere. Topics will include air pollution control strategies and regulations, predictive pollution concentration models, general ideas to reduce air pollution, and specific technologies to limit emissions of criteria pollutants and their precursors. Graduate/Undergraduate Equivalency: CEVE 508. Mutually Exclusive: Cannot register for CEVE 308 if student has credit for CEVE 508.
CEVE 310 - PRINCIPLES OF ENVIRONMENTAL ENGINEERING
Short Title: PRINCIPLES OF ENVI ENGINEERING
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course covers principles of water quality engineering, air pollution control and solid and hazardous waste management. Elements of risk assessment, global atmospheric change, and pollution prevention are also addressed to contribute to adequate-level competency in Environmental Engineering. Graduate students will write a term paper and prepare a lecture. Graduate/Undergraduate Equivalency: CEVE 510. Mutually Exclusive: Cannot register for CEVE 310 if student has credit for CEVE 510.

CEVE 311 - MECHANICS OF SOLIDS AND STRUCTURES
Short Title: MECHANICS OF SOLIDS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Bioengineering, Civil & Environmental Engineering, Civil Engineering or Mechanical Engineering. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CEVE 211 or MECH 211 or MECH 202
Description: Analysis of stress and the deformation of solids with applications to beams, circular shafts, and columns. Required for following undergraduate majors: civil and environmental and mechanical engineering. Cross-list: MECH 311.

CEVE 312 - STRENGTH OF MATERIALS LAB
Short Title: STRENGTH OF MATERIALS LAB
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CEVE 311 (may be taken concurrently) or MECH 311 (may be taken concurrently)
Description: Instruction in standard tension, compression, and torsion tests of ferrous and nonferrous metals. Includes experimental techniques and the behavior of structural elements. Prerequisites may be taken concurrently.

CEVE 313 - UNCERTAINTY AND RISK IN URBAN INFRASTRUCTURES
Short Title: RISK-BASED DEC UNDER UNCERT
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): STAT 312 or STAT 310 or STAT 315 or DSCI 301 or ECON 307 or ECON 382 or STAT 331 or ELEC 331
Description: This course explores methods for practical risk-based decision support, particularly for infrastructure systems. Uncertainty quantification (UQ) to external events including natural hazards is at the core of risk-informed design, operation, and mitigation actions. UQ also guides engineering practice and enables code developments. The course emphasizes decision theory, Bayesian approaches, risk analysis tools, and infrastructure safety. Cross-list: STAT 313. Repeatable for Credit.

CEVE 314 - SUSTAINABLE WATER PURIFICATION FOR THE DEVELOPING WORLD
Short Title: SUST WTR PURIF FOR DEV WORLD
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course is an overview of sustainable strategies for safe water supply in off-the-grid, low-income regions. Topics covered include water quality and treatment, sustainability and WASH (water, sanitation and hygiene). A major element of the course is a project to solve a water-related issue in a real-world context. Cross-list: BIOE 365, GLHT 314. Repeatable for Credit.

CEVE 320 - ETHICS AND ENGINEERING LEADERSHIP
Short Title: ETHICS & ENGINRNG LEADERSHIP
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Civil & Environmental Engineer, Civil Engineering or Environment Analysis&Decisions. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CEVE 101
Description: Seminar introduces students to a framework for discussing and making ethical engineering and professional decisions. Using case studies and exercises, students will look at their own profession and its Engineering Code of Ethics as well as at the issues and risks they may face as managers and executives. Cross-list: ENGI 320. Graduate/Undergraduate Equivalency: CEVE 529. Mutually Exclusive: Cannot register for CEVE 320 if student has credit for CEVE 529.
CEVE 322 - ENGINEERING ECONOMICS
Short Title: ENGINEERING ECONOMICS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Introduction to the evaluation of alternative investment opportunities with emphasis on engineering projects and capital infrastructure. Time value of money concepts are developed in the context of detailed project evaluation and presentations. In addition, concepts and applications of risk analysis and investment under uncertainty are introduced. Requires oral and written presentations by students. Cross-list: ENGI 303. Graduate/Undergraduate Equivalency: CEVE 528. Mutually Exclusive: Cannot register for CEVE 322 if student has credit for CEVE 528.

CEVE 323 - APPLIED SUSTAINABLE PLANNING AND DESIGN
Short Title: APPL. SUST. PLANNING & DESIGN
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CEVE 302 or CEVE 502
Description: This course applies principles learned in CEVE 302/502 to real-world sustainability projects. Three to four case studies will comprise the class. These case studies will involve development of design solutions for (1) carbon neutral design, (2) ecosystem services transactions, (3) sustainable industrial applications and/or (4) air pollution and environmental justice. Graduate/Undergraduate Equivalency: CEVE 523. Mutually Exclusive: Cannot register for CEVE 323 if student has credit for CEVE 523.

CEVE 325 - STRUCTURAL ANALYSIS AND MODELING
Short Title: STRUCTURAL ANALYSIS & MODELING
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CEVE 311 or MECH 311
Description: This course provides students with a fundamental understanding of structural analysis and behavior with application to determinate and indeterminate structures. Classical methods of analysis along with an introduction to structural modeling will be examined. Mutually Exclusive: Cannot register for CEVE 325 if student has credit for CEVE 304.

CEVE 363 - APPLIED FLUID MECHANICS
Short Title: APPLIED FLUID MECHANICS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 212 and (PHYS 101 or PHYS 111 or PHYS 125 or PHYS 141)
Description: Study of fluid properties, fluid statics, and incompressible fluid steady flow. Includes energy and momentum equations with many applications, similitude and dimensional analysis, and viscous fluid flow in pipe networks. Required for B.S.C.E.

CEVE 400 - ADVANCED MECHANICS OF MATERIALS
Short Title: ADV MECHANICS OF MATERIALS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (MECH 202 or MECH 211 or CEVE 211) and (MECH 311 or CEVE 311)
Description: Advanced topics in solid mechanics and strength of materials including energy methods, principle of virtual work, conservation laws, constitutive modeling, aspects of elasticity theory, stability and fracture mechanics with application to the analysis and design of reliable structures. Cross-list: MECH 400. Graduate/Undergraduate Equivalency: CEVE 500. Mutually Exclusive: Cannot register for CEVE 400 if student has credit for CEVE 500.

CEVE 401 - CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE LAB
Short Title: ENVIRONMENTAL CHEMISTRY
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics include: introductory concepts of general chemistry; applied physical chemistry; and organic and biochemical concepts as used in the profession. Undergraduate lab covers basic statistics and EPA-certified software for inorganic and organic property estimations needed for data reduction and report writing. Most common measures of water quality are performed by students including pH, Alkalinity, dissolved oxygen, spectroscopic methods, and soils extraction. Graduate/Undergraduate Equivalency: CEVE 501. Mutually Exclusive: Cannot register for CEVE 401 if student has credit for CEVE 501.
CEVE 404 - ATMOSPHERIC PARTICULATE MATTER
Short Title: ATMOSPHERIC PARTICULATE MATTER
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (CHEM 112 or CHEM 122 or CHEM 152) and (MATH 101 or MATH 105) and (MATH 102 or MATH 106) and (PHYS 101 or PHYS 111 or PHYS 125 or PHYS 141)
Description: Description and examination of the processes determining the chemical and physical characteristics of atmospheric aerosol particles. Important focal points include aerosol measurements and control techniques and aerosol climate effects. Most attention will be paid to processes active in the troposphere, but important differences between the troposphere and stratosphere are addressed. Graduate/Undergraduate Equivalency: CEVE 504. Mutually Exclusive: Cannot register for CEVE 404 if student has credit for CEVE 504.

CEVE 406 - INTRODUCTION TO ENVIRONMENTAL LAW
Short Title: INTRO TO ENVIRONMENTAL LAW
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Introduction to Environmental Law is intended to introduce the student to the methods used by the United States and the international community to regulate and/or allocate air, water and land resources. A key focus of this course will be the emerging area of the law of sustainable development, including the implementation of full price costing, life cycle analysis, carbon cycle analysis, allocation of assimilative capacity and other similar issues. Cross-list: ENST 406.

CEVE 407 - CONCRETE AND STEEL STRUCTURES LABORATORY
Short Title: CONCRETE LABORATORY
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Corequisite: CEVE 407
Description: Instruction in data analysis, design of concrete mix, testing of concrete cylinders, testing of concrete steel: beams; columns; and frames. Mutually Exclusive: Cannot register for CEVE 408 if student has credit for CEVE 431/CEVE 432.

CEVE 411 - ATMOSPHERIC PROCESSES
Short Title: ATMOSPHERIC PROCESSES
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (CHEM 111 or CHEM 121) and (CHEM 112 or CHEM 122) and (MATH 101 or MATH 105) and (MATH 102 or MATH 106) and (PHYS 101 or PHYS 111 or PHYS 125 or PHYS 141)
Description: Study of the chemical and physical processes that govern the formation, transformation, and transport of gases and particles in the atmosphere. Overview of urban and regional air pollution, including tropospheric ozone formation and particulate matter; stratospheric chemistry; and global climate change. Graduate/Undergraduate Equivalency: CEVE 511. Mutually Exclusive: Cannot register for CEVE 411 if student has credit for CEVE 511.

CEVE 412 - HYDROLOGY AND WATER RESOURCES ENGINEERING
Short Title: HYDROLOGY & WATER RESOURCE ENG
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The purpose of this course is to introduce the student to the fundamentals of the hydrologic cycle, surface water, open channel flow concepts, and water resources. The course will introduce concepts related to the hydrologic cycle in urban and natural watersheds, rainfall runoff and hydrograph response, overland and channel flood routing, open channel flow, and the basics of floodplain. At the end of the semester, we will also cover the current state of flood policy, flood disasters, and discuss innovative strategies for tackling flood-related issues and adapting to changes in flood risk over time. There will be significant emphasis on applying and solving the governing equations, calculations and models to analyze water balance, and hydrologic and hydraulic response to severe rainfall events. Student participation and a completion of a HEC-HMS modeling exercise will be expected. Case studies will be presented and discussed near end of the class. Graduate/Undergraduate Equivalency: CEVE 509. Mutually Exclusive: Cannot register for CEVE 412 if student has credit for CEVE 509.
CEVE 417 - FINITE ELEMENT ANALYSIS
Short Title: FINITE ELEMENT ANALYSIS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (MATH 212 or MATH 222) and (CAAM 210 or CAAM 211)
Description: An introduction to finite element analysis by Galerkin’s method and the method of least squares as applied to both ordinary and partial differential equations common in engineering applications. Element interpolations, numerical integration, computational considerations for efficient solution and post-processing methods. Application of the commercial codes to ANSYS and Cosmosworks. Cross-list: MECH 417. Graduate/Undergraduate Equivalency CEVE 517. Mutually Exclusive: Cannot register for CEVE 417 if student has credit for CEVE 517.

CEVE 418 - QUANTITATIVE HYDROGEOLOGY
Short Title: QUANTITATIVE HYDROGEOLOGY
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Advanced course that will provide a quantitative overview of groundwater hydrology. Emphasis will be placed on mastering concepts in fluid mechanics and applying these concepts to water supply, environmental, and geological problems. Cross-list: ESCI 418.

CEVE 420 - ENVIRONMENTAL REMEDIATION RESTORATION
Short Title: ENVIRONMENTAL REMEDIATION RESTORATION
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Remediation principles and application of full-scale remediation technologies for restoration of contaminated soil, groundwater, and surface water. Topics include mass balances and distribution of chemicals in environmental media; development of remediation goals through risk assessment; treatment technology selection criteria and costs; groundwater, soil, and surface water restoration technologies; and regulatory considerations. Graduate/Undergraduate Equivalency CEVE 520. Mutually Exclusive: Cannot register for CEVE 420 if student has credit for CEVE 520.

CEVE 424 - TIME-DEPENDENT SYSTEM RELIABILITY METHODS AND APPLICATIONS
Short Title: SYSTEM RELIABILITY METHODS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Students will learn computational simulation and theoretical techniques for the reliability assessment of engineered systems as a function of their component failure probabilities. We will explore time-dependent and algorithmic system reliability, and will use modern structural infrastructure systems as case studies, including power systems, wind turbines, bridges, and buildings. Graduate/Undergraduate Equivalency CEVE 524. Mutually Exclusive: Cannot register for CEVE 424 if student has credit for CEVE 524.

CEVE 427 - COMPUTATIONAL STRUCTURAL MECHANICS AND FEM
Short Title: COMPUTATIONAL STR MECH & FEM
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CEVE 311 or MECH 311
Description: Introduction to matrix structural analysis, trusses, beams, frames. Use of computer programs for structural analysis of Civil, Mechanical, and Aerospace Structures. Cross-list: MECH 427. Mutually Exclusive: Cannot register for CEVE 427 if student has credit for CEVE 527.

CEVE 431 - DESIGN AND BEHAVIOR OF CONCRETE BUILDINGS AND BUILDING ELEMENTS
Short Title: REINFORCED CONCRETE BUILDINGS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Corequisite: CEVE 432
Description: Design of reinforced concrete buildings including concepts and code practices routinely used in professional structural engineering design for concrete members and structural systems. Behavior of building members as related to design will be discussed as well. Graduate/Undergraduate Equivalency: CEVE 531. Recommended Prerequisite(s): CEVE 304 and CEVE 311 Mutually Exclusive: Cannot register for CEVE 431 if student has credit for CEVE 407/CEVE 408/CEVE 530/CEVE 531.
CEVE 432 - CONCRETE AND STEEL STRUCTURES LABORATORY
Short Title: CONCRETE & STEEL LABORATORY
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Corequisite: CEVE 431
Description: Instruction in testing and data analysis, design of concrete mix, casting concrete cylinders and reinforced concrete beams, fabrication of steel frame, testing of concrete beams and steel frame. Mutually Exclusive: Cannot register for CEVE 432 if student has credit for CEVE 407/CEVE 408.

CEVE 434 - FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT
Short Title: FATE/TRANSPORT OF CONTAMINANTS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Physical and chemical principles governing the fate and transport of contaminants in the aqueous environment, and the applications of such principles in environmental engineering. Emphasis is put on mass transport and transportation processes in natural and engineering systems. Previous course work in fluid mechanics and calculus through differential equations is strongly suggested. Graduate/Undergraduate Equivalency: CEVE 534. Mutually Exclusive: Cannot register for CEVE 434 if student has credit for CEVE 534.

CEVE 441 - DESIGN AND BEHAVIOR OF STRUCTURAL STEEL BUILDINGS AND BUILDING ELEMENTS
Short Title: STRUCTURAL STEEL BUILDINGS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CEVE 311
Description: Design of structural steel buildings including concepts and material routinely used in professional structural engineering design practice for steel members, connections and assemblies. Behavior of building members as related to design will be discussed as well. Graduate/Undergraduate Equivalency: CEVE 541. Recommended Prerequisite(s): CEVE 304 Mutually Exclusive: Cannot register for CEVE 441 if student has credit for CEVE 541.

CEVE 442 - WATER REUSE AND RESOURCE RECOVERY
Short Title: WATER REUSE AND RESOURCE RECOVERY
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will focus on concepts of resource recovery and water reuse from wastewater and associated processes treatment needs. Students will understand the function and design of key biological, physical, and chemical treatment processes for wastewater treatment and resource recovery and water reuse applications.

CEVE 444 - ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY
Short Title: ENVIRON MICROBIO & ECOLOGY
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Fundamentals of microbiology and the ecology of microbes, highlighting their interactions with each other and the environment, and integration of these principles in the context of important natural and engineered environmental systems. Graduate/Undergraduate Equivalency: CEVE 544. Mutually Exclusive: Cannot register for CEVE 444 if student has credit for CEVE 544.

CEVE 450 - REMOTE SENSING
Short Title: REMOTE SENSING
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Introduction to electromagnetic remote sensing of the earth and other planets using passive and active methods. The course includes a computer lab component involving processing and interpretation of remote sensing imagery, and an individual project. Cross-list: ESCI 450.

CEVE 452 - URBAN TRANSPORTATION SYSTEMS
Short Title: URBAN TRANSPORTATION SYSTEMS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Survey of operation characteristics of transport modes the elements of transportation planning, and the design of stationary elements.
CEVE 453 - GEOGRAPHIC INFORMATION SCIENCE
Short Title: GEOGRAPHIC INFORMATION SCIENCE
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Introduction to geographic information systems (GIS) technology, mapping sciences, and spatial analysis. The course will include extensive computer use and the completion of a major individual project on a topic selected by the student. Cross-list: ESCI 454.

CEVE 454 - COMPUTATIONAL FLUID MECHANICS
Short Title: COMPUTATIONAL FLUID MECHANICS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MECH 371 (may be taken concurrently) or CEVE 363 (may be taken concurrently) or CHBE 401 (may be taken concurrently) or BIOE 420 (may be taken concurrently) or CHBE 420 (may be taken concurrently)
Description: Fundamental concepts of finite element methods in fluid mechanics, including spatial discretization and numerical integration in multi-dimensions, time-integration, and solution of nonlinear ordinary differential equation systems. Advanced numerical stabilization techniques designed for fluid mechanics problems. Strategies for solution of complex, real-world problems. Topics in large-scale computing, parallel processing, and visualization. Prerequisites may be taken concurrently. Cross-list: BIOE 454, MECH 454. Graduate/Undergraduate Equivalency: CEVE 554. Mutually Exclusive: Cannot register for CEVE 454 if student has credit for CEVE 554.

CEVE 455 - NUMERICAL METHODS FOR PARTIAL DIFFERENTIAL EQUATIONS
Short Title: NUMERICAL METHODS FOR PDES
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Description: This course covers various numerical methods for solving partial differential equations: aspects of finite difference methods, finite element methods, finite volume methods, mixed methods, discontinuous Galerkin methods, and meshless methods. Both theoretical convergence and practical implementation of the methods are studied for elliptic and parabolic problems. Cross-list: CAAM 452. Graduate/Undergraduate Equivalency: CEVE 555. Recommended Prerequisite(s): CAAM 336
Mutually Exclusive: Cannot register for CEVE 455 if student has credit for CEVE 555.

CEVE 460 - BRIDGE ENGINEERING AND EXTREME EVENTS
Short Title: BRIDGE ENG. & EXTREME EVENTS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (CEVE 311 or MECH 311) and CEVE 304
Corequisite: CEVE 407
Description: This course integrates information from various engineering and scientific disciplines to provide a rational basis for bridge design under regular and extreme loading. It provides an introduction to bridge engineering, including bridge systems, construction material, loading, and reliability-based design. Design, analysis, and retrofit for seismic and coastal threats will be introduced. Graduate/Undergraduate Equivalency: CEVE 560. Mutually Exclusive: Cannot register for CEVE 460 if student has credit for CEVE 560.

CEVE 471 - PRINCIPLES OF SOIL MECHANICS AND FOUNDATION ENGINEERING
Short Title: SOIL MECHANICS AND FOUNDATIONS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Introduction to fundamentals of soil mechanics will include phase relationships, grain size, plasticity, soil classification, and clay mineralogy. The effect of water in soils, including capillarity, shrinkage and swelling, permeability, seepage and effective stress will be discussed. Consolidation, settlement, compressibility, failure theory, and the strength of sands and clays will be investigated. Design considerations will be discussed. Introduction to fundamentals of foundation engineering will include subsurface exploration methods and lateral earth pressures. The design of shallow and deep foundations, including pile installation and geophysical and geotechnical site investigation will be presented. CEVE 471, the undergrad version, includes a lab. Graduate/Undergraduate Equivalency: CEVE 571. Mutually Exclusive: Cannot register for CEVE 471 if student has credit for CEVE 470/CEVE 570/CEVE 571.

CEVE 472 - SOIL MECHANICS LABORATORY WITH INDIVIDUAL PARTICIPATION
Short Title: SOIL MECHANICS LABORATORY
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Determine the water content, liquid limit, plastic limit, grain size from sieve and hydrometer analyses, falling head permeability, specific gravity, and the shear strength of clays from pocket penetrometer, Torvane, miniature vane, unconsolidated undrained triaxial compression and direct shear tests. Study the consolidation of clays and the compaction of clays and sands.
CEVE 476 - STRUCTURAL DYNAMIC SYSTEMS
Short Title: STRUCTURAL DYNAMIC SYSTEMS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CEVE 311 or MECH 311
Description: Introduction to structural dynamic systems. Linear SDOF and MDOF discrete systems, undamped and damped systems, free and forced vibration, dynamic response to periodic and arbitrary excitations, numerical evaluation of dynamic response, response spectrum and modal analysis. Additional topics for graduate version 576: Linear systems theory, transform methods, state space methods, feedback control, observers and identification. Applications using MATLAB. Demonstrations and laboratory examples. Students will be required to do more advanced assignments and a project. Graduate/Undergraduate Equivalency: CEVE 576. Mutually Exclusive: Cannot register for CEVE 476 if student has credit for CEVE 576.

CEVE 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Laboratory, Lecture, Internship/Practicum, Seminar, Lecture/Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

CEVE 480 - SENIOR DESIGN
Short Title: SENIOR DESIGN
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The capstone designed course in the Spring Semester will provide senior engineering students with a complete designed experience including fundamental design issues in the major areas of the curriculum, small team experiences, project proposals, progress reports and presentations, design software and computations, major report writing, and a final presentation to the CEE faculty and an external jury of professional engineers. An established local firm will assist in teaching practical design methods and consultation with other faculty is required as part of the overall experience.

CEVE 481 - INTRODUCTION TO SENIOR DESIGN
Short Title: INTRODUCTION TO SENIOR DESIGN
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Semester. Lectures will focus on various engineering design topics and CAD training. Potential design projects will be introduced and students will form interdisciplinary design teams. Design teams will present before jury to win their design projects.

CEVE 484 - ENVIRONMENTAL RISK ASSESSMENT & HUMAN HEALTH
Short Title: ENVIRON RISK ASSESS&HUMAN HLTH
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): STAT 280 or STAT 305
Description: Learn and apply quantitative risk assessment methodology to estimate human health risk from environmental exposure to contamination in air, soil and water. Students will conduct a series of team projects focused on toxicology, risk based screening levels, exposure concentration estimation and risk characterization. Cross-list: STAT 484. Graduate/Undergraduate Equivalency: CEVE 684. Mutually Exclusive: Cannot register for CEVE 484 if student has credit for CEVE 684.

CEVE 492 - MODELING AND ANALYSIS OF NETWORKED SYSTEMS
Short Title: MODELING & ANALYSIS OF NET SYS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course introduces methods for modeling, characterizing and predicting the behavior of complex infrastructure and technological systems. The discussed analysis methods rely on network science optimization, and computational complexity principles so as to unravel the emergent features of structural and infrastructure systems. Topological properties, ranking tools, dynamic processes, and percolation-based resilience are studied from analytical, algorithmic, and numerical simulation perspectives. The course also explores interdependencies and mitigation actions for spatially and temporally evolving systems. The graduate level course includes advanced exercises in homework and exams, as well as a research-oriented final project. Graduate/Undergraduate Equivalency: CEVE 592. Mutually Exclusive: Cannot register for CEVE 492 if student has credit for CEVE 592. Repeatable for Credit.
CEVE 496 - SYSTEM IDENTIFICATION OF DYNAMIC SYSTEMS WITH MACHINE LEARNING
Short Title: SYSTEM I.D. & MACHINE LEARNING
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Introduction to modeling and system identification of dynamic systems with machine learning. Students in CEVE 596 will be required to do more advanced assignments and a project. Graduate/Undergraduate Equivalency: CEVE 596. Mutually Exclusive: Cannot register for CEVE 496 if student has credit for CEVE 596.

CEVE 499 - SPECIAL PROBLEMS
Short Title: SPECIAL TOPICS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-12
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Independent research and investigation, including a course toward directed research and/or a research project. Study of selected topics including individual investigations special lectures, and seminars. Student works independently with only minimal faculty direction. Offered upon mutual agreement of faculty and student. May earn varying amount of credit hours depending on the amount of time devoted and the amount of academic work associated with the course. Repeatable for Credit.

CEVE 500 - ADVANCED MECHANICS OF MATERIALS
Short Title: ADV MECHANICS OF MATERIALS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (MECH 211 or CEVE 211) and (MECH 311 or CEVE 311)
Description: Advanced topics in solid mechanics and strength of materials including energy methods, principle of virtual work, conservation laws, constitutive modeling, aspects of elasticity theory, stability and fracture mechanics with application to the analysis and design of reliable structures. Cross-list: MECH 500. Graduate/Undergraduate Equivalency: CEVE 400. Mutually Exclusive: Cannot register for CEVE 500 if student has credit for CEVE 400.

CEVE 501 - CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE
Short Title: ENVIRONMENTAL CHEMISTRY
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics include: introductory concepts of general chemistry, applied physical chemistry, and organic and biochemical concepts as used in the profession. Graduate students are required to write and present an advanced paper. Graduate/Undergraduate Equivalency: CEVE 401. Mutually Exclusive: Cannot register for CEVE 501 if student has credit for CEVE 401.

CEVE 502 - SUSTAINABLE DESIGN
Short Title: SUSTAINABLE DESIGN
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The objective of this course is to develop skills in formulating and solving problems of societal development and advancement in light of increasing material, energy and water demands and decreasing resource availability. Sustainable design requires balancing economic, ecological/environmental and social issues to create physical as well as social structures that will work for current and future generations. In addition to learning to apply sustainable design principles to individual engineering and developing projects, students will be challenged to understand the application of sustainable design thinking at the municipal and corporate level. Graduate students will be required to undertake additional assignments relative to sustainable design. Graduate/Undergraduate Equivalency: CEVE 302. Mutually Exclusive: Cannot register for CEVE 502 if student has credit for CEVE 302.

CEVE 503 - NONLINEAR FINITE ELEMENT ANALYSIS
Short Title: NONLINEAR FEM
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
CEVE 504 - ATMOSPHERIC PARTICULATE MATTER  
Short Title: ATMOSPHERIC PARTICULATE MATTER  
Department: Civil & Environmental Engr  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): (CHEM 111 or CHEM 121) and (MATH 101 or MATH 105) and (MATH 102 or MATH 106) and (PHYS 101 or PHYS 111 or PHYS 125 or PHYS 141)  
Description: Description and examination of the processes determining the chemical and physical characteristics of atmospheric aerosol particles. Important focal points include aerosol measurements and control techniques and aerosol climate effects. Most attention will be paid to processes active in the troposphere, but important differences between the troposphere and stratosphere are addressed. Extra work required for graduate students. Graduate/Undergraduate Equivalency: CEVE 404. Mutually Exclusive: Cannot register for CEVE 504 if student has credit for CEVE 404.

CEVE 507 - ENERGY AND THE ENVIRONMENT  
Short Title: ENERGY AND THE ENVIRONMENT  
Department: Civil & Environmental Engr  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course explores the physical principles of energy use and its impacts on Earth's environment and climate. Topics will include energy mechanics, climate change, and the environmental impacts and future prospects of various fossil fuel and alternative energy sources. Additional problems will be assigned to Graduate students. Graduate/Undergraduate Equivalency: CEVE 307. Mutually Exclusive: Cannot register for CEVE 507 if student has credit for CEVE 307.

CEVE 508 - INTRODUCTION TO AIR POLLUTION CONTROL  
Short Title: INTRO TO AIR POLLUTION CONTROL  
Department: Civil & Environmental Engr  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): (CHEM 111 or CHEM 121) and (MATH 101 or MATH 105) and (MATH 102 or MATH 106)  
Description: This course will discuss the history of air pollution and its effects as motivation for control of anthropogenic emissions to the atmosphere. Topics will include air pollution control strategies and regulations, predictive pollution concentration models, general ideas to reduce air pollution, and specific technologies to limit emissions of criteria pollutants and their precursors. Additional paper is required for graduate students. Graduate/Undergraduate Equivalency: CEVE 308. Mutually Exclusive: Cannot register for CEVE 508 if student has credit for CEVE 308.

CEVE 509 - HYDROLOGY AND WATER RESOURCES ENGINEERING  
Short Title: HYDROLOGY & WATER RESOURCE ENG  
Department: Civil & Environmental Engr  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Fundamentals of the hydrologic cycle, meteorology, rainfall-runoff, flood routing, urban system design, and open channel flow are covered. Topics in ground water flow and well mechanics are also included. Applications include computational hydrology, floodplain analysis, watershed behavior, and low impact development. Group presentations are required. The graduate level course includes an extra paper. Graduate/Undergraduate Equivalency: CEVE 412. Mutually Exclusive: Cannot register for CEVE 509 if student has credit for CEVE 412.

CEVE 510 - PRINCIPLES OF ENVIRONMENTAL ENGINEERING  
Short Title: PRINCIPLES OF ENVI ENGINEERING  
Department: Civil & Environmental Engr  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course covers principles of water quality engineering, air pollution control and solid and hazardous waste management. Elements of risk assessment, global atmospheric change, and pollution prevention are also addressed to contribute to adequate-level competency in Environmental Engineering. Graduate students will write a term paper and prepare a lecture. Graduate/Undergraduate Equivalency: CEVE 310. Mutually Exclusive: Cannot register for CEVE 510 if student has credit for CEVE 310.

CEVE 511 - ATMOSPHERIC PROCESSES  
Short Title: ATMOSPHERIC PROCESSES  
Department: Civil & Environmental Engr  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): (CHEM 111 or CHEM 121) and (MATH 101 or MATH 105) and (MATH 102 or MATH 106) and (PHYS 101 or PHYS 111 or PHYS 125 or PHYS 141)  
Description: Study of the chemical and physical processes that govern the formation, transformation, and transport of gases and particles in the atmosphere. Overview of urban and regional air pollution, including tropospheric ozone formation and particulate matter; stratospheric chemistry; and global climate change. Extra work required for graduate students. Graduate/Undergraduate Equivalency: CEVE 411. Mutually Exclusive: Cannot register for CEVE 511 if student has credit for CEVE 411.
CEVE 512 - ADVANCED HYDROLOGY AND HYDRAULICS
Short Title: ADV HYDROLOGY & HYDRAULICS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers principles and applications of the GIS programs, theory and implementation of advanced hydrologic and hydraulic models, and the linkage of these models to engineering analysis of important water problems. GIS software is covered in detail. Each class consists of an advanced theory lecture followed by modeling tutorials using Hec-HMS, VFLO, and Hec-RAS codes. A semester group project addresses a full watershed analysis with class presentations and engineering reports required.

CEVE 517 - FINITE ELEMENT ANALYSIS
Short Title: FINITE ELEMENTS ANALYSIS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Course Level: Graduate
Prerequisite(s): (MATH 212 or MATH 222) and (CAAM 210 or CAAM 211)

CEVE 518 - ENVIRONMENTAL HYDROGEOLOGY
Short Title: ENVIRONMENTAL HYDROGEOLOGY
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Darcy’s law, 1-D and 2-D steady-state groundwater flow, transient groundwater flow, aquifer testing, movement of chemicals in the subsurface, modeling groundwater flow and contaminant transport, current issues in hydrogeology including salt water intrusion, subsidence, and emerging environmental contaminants. Includes a final project using groundwater flow and contaminant transport models MODFLOW and MT3D.

CEVE 519 - ELASTICITY, PLASTICITY AND DAMAGE MECHANICS
Short Title: ELASTICITY/PLASTICITY/DAMAGE
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An overview of phenomena that determine the response of solids to deformation and loading: elasticity, plasticity, damage mechanics and cracking. Review of continuum mechanics with emphasis on the physical mechanisms of deformation and fracture. Classification of the behavior of solids. Modeling of different types of material behavior. The physics underlying the phenomena and methods for the numerical analysis of the resulting equations are discussed. Cross-list: MECH 519.

CEVE 520 - ENVIRONMENTAL REMEDIATION RESTORATION
Short Title: ENVI REMEDIATION RESTORATION
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Remediation principles and application of full-scale remediation technologies for restoration of contaminated soil, groundwater, and surface water. Topics include mass balances and distribution of chemicals in environmental media; development of remediation goals through risk assessment; treatment technology selection criteria and costs; groundwater, soil, and surface water restoration technologies; and regulatory considerations. Graduate students receive additional, more challenging assignments. Graduate/Undergraduate Equivalency: CEVE 420. Mutually Exclusive: Cannot register for CEVE 520 if student has credit for CEVE 420.

CEVE 523 - APPLIED SUSTAINABLE PLANNING AND DESIGN
Short Title: APPL. SUST. PLANNING & DESIGN
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): CEVE 302 or CEVE 502
Description: This course applies principles learned in CEVE 302/502 to real-world sustainability projects. Three to four case studies will comprise the class. These case studies will involve development of design solutions for (1) carbon neutral design, (2) ecosystem services transactions, (3) sustainable industrial applications and/or (4) air pollution and environmental justice. Graduate/Undergraduate Equivalency: CEVE 323. Mutually Exclusive: Cannot register for CEVE 523 if student has credit for CEVE 323.
CEVE 524 - TIME-DEPENDENT SYSTEM RELIABILITY METHODS AND APPLICATIONS  
**Short Title:** SYSTEM RELIABILITY METHODS  
**Department:** Civil & Environmental Engr  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Students will learn computational simulation and theoretical techniques for the reliability assessment of engineered systems as a function of their component failure probabilities. We will explore time-dependent and algorithmic system reliability, and will use modern structural infrastructure systems as case studies, including power systems, wind turbines, bridges, and buildings. Extra provisions for graduate students in assignments, exams, and projects. Graduate/Undergraduate Equivalency: CEVE 424. Mutually Exclusive: Cannot register for CEVE 524 if student has credit for CEVE 424.

CEVE 527 - COMPUTATIONAL STRUCTURAL MECHANICS AND FEM  
**Short Title:** COMPUTATIONAL STR MECH & FEM  
**Department:** Civil & Environmental Engr  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Introduction to differential and integral formulations, minimum principles, variational principles, weighted residuals, energy principles, and principle of virtual work. Boundary, initial, and eigenvalue problems. Finite element and finite difference methods for structural mechanics. Applications to static and dynamic truss beams and frame problems. MATLAB programming and use of computer software. Students in CEVE 527 (GR version) will be required to do more advanced assignments and a project. Cross-list: MECH 527. Mutually Exclusive: Cannot register for CEVE 527 if student has credit for CEVE 427.

CEVE 528 - ENGINEERING ECONOMICS  
**Short Title:** ENGINEERING ECONOMICS  
**Department:** Civil & Environmental Engr  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Introduction to the evaluation of alternative investment opportunities with emphasis on engineering projects and capital infrastructure. Time value of money concepts are developed in the context of detailed project evaluation and presentations. In addition, concepts and applications of risk analysis and investment under uncertainty are developed. Requires oral and written presentations by students. Grad students will have an additional case study to perform beyond CEVE 322 requirements. Cross-list: ENGI 528. Graduate/Undergraduate Equivalency: CEVE 322. Mutually Exclusive: Cannot register for CEVE 528 if student has credit for CEVE 322.

CEVE 529 - ETHICS AND ENGINEERING LEADERSHIP  
**Short Title:** ETHICS & ENGINEERING LEADERSHIP  
**Department:** Civil & Environmental Engr  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to students with a major in Civil & Environmental Engineer, Civil Engineering or Environment Analysis&Decisions. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Seminar introduces students to a framework for discussing and making ethical engineering and professional decisions. Using case studies and exercises, students will look at their own profession and its Engineering Code of Ethics as well as at the issues and risks they may face as managers and executives. Graduate students will do an extra paper. Instructor Permission Required. Cross-list: ENGI 529. Graduate/Undergraduate Equivalency: CEVE 320. Mutually Exclusive: Cannot register for CEVE 529 if student has credit for CEVE 320.

CEVE 531 - DESIGN AND BEHAVIOR OF CONCRETE BUILDINGS AND BUILDING ELEMENTS  
**Short Title:** REINFORCED CONCRETE BUILDINGS  
**Department:** Civil & Environmental Engr  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Design of reinforced concrete buildings including concepts and code practices routinely used in professional structural engineering design for concrete members and structural systems. Behavior of building members as related to design will be discussed as well. Graduate/Undergraduate Equivalency: CEVE 431. Recommended Prerequisite(s): CEVE 311. Mutually Exclusive: Cannot register for CEVE 531 if student has credit for CEVE 407/CEVE 431/CEVE 530.

CEVE 533 - NANOSCIENCE AND NANOTECHNOLOGY  
**Short Title:** NANOSCIENCE & NANOTECHNOLOGY  
**Department:** Civil & Environmental Engr  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Introduction to the basic principles of nanoscience and nanotechnology. Size dependent physical properties of nanoscopic solids will be described using solid state physics and molecular orbital theory as a foundation. Wet chemical techniques that produce nanoscale materials (e.g. carbon nanotubes, semiconductor and metallic nanocrystals, dendrimers...) will be introduced in the second half of the semester. Expected to be taught Spring 2019. Cross-list: CHEM 533, MSNE 534.
CEVE 534 - FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT
Short Title: FATE/TRANSPORT OF CONTAMINANTS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Physical and chemical principles governing the fate and transport of contaminants in the aqueous environment, and the applications of such principles in environmental engineering. Emphasis is put on mass transport and transportation processes in natural and engineering systems. Previous course work in fluid mechanics and calculus through differential equations is strongly suggested. Extra work required, for Graduate Students. Graduate/Undergraduate Equivalency: CEVE 434. Mutually Exclusive: Cannot register for CEVE 534 if student has credit for CEVE 434. Repeatable for Credit.

CEVE 535 - PHYSICAL CHEMICAL PROCESSES FOR WATER QUALITY CONTROL
Short Title: PHYS CHEM PROC WATER QUAL CTRL
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Principles, modeling and design aspects of physical chemical treatment processes in drinking water, wastewater and groundwater remediation applications. Modern treatment technologies such as membrane separation, advanced oxidation, and photocatalysis will be covered.

CEVE 536 - ENVIRONMENTAL BIOTECHNOLOGY AND BIOREMEDIATION
Short Title: ENVIRONMENTAL BIOTECHNOLOGY
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Theory and application of biochemical processes in environmental engineering.

CEVE 538 - COMPUTATIONAL NANOSCIENCE FOR GREEN INFRASTRUCTURE
Short Title: COMPUTATIONAL NANOSCIENCE
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Computational methods such as first principles, kinetic Monte Carlo (KMC), classical MC (in Canonical, Grand Canonical, and isobaric-isothermal ensembles), and classic MD in predicting materials formation and properties. Case studies include cementitious materials, metals, and thermoelectric materials. Other case studies are possible depending on the student’s background and instructor’s approval. Cross-list: MSNE 538.

CEVE 541 - DESIGN AND BEHAVIOR OF STRUCTURAL STEEL BUILDINGS AND BUILDING ELEMENTS
Short Title: STRUCTURAL STEEL BUILDINGS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Design of structural steel buildings including concepts and material routinely used in professional structural engineering design practice for steel members, connections and assemblies. Behavior of building members as related to design will be discussed as well. Graduate students registered to CEVE 541 will explore advanced topics in structural steel building behavior and design. Graduate/Undergraduate Equivalency: CEVE 441. Mutually Exclusive: Cannot register for CEVE 541 if student has credit for CEVE 441.

CEVE 544 - ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY
Short Title: ENVIRON MICROBIOL & ECOLOGY
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Fundamentals of microbiology and the ecology of microbes, highlighting their interactions with each other and the environment, and integration of these principles in the context of important natural and engineered environmental systems. Graduate/Undergraduate Equivalency: CEVE 444. Mutually Exclusive: Cannot register for CEVE 544 if student has credit for CEVE 444.

CEVE 550 - ENVIRONMENTAL ORGANIC CHEMISTRY
Short Title: ENVIRONMENTAL ORGANIC CHEM
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A course covering parameter estimation methods, thermodynamics, and kinetic needed to predict the fate, transports, and reactivity of organic compounds in air, water, and soils. Topics: volatization, solubility, sorption, partitioning, diffusion, aquatic reactivity, photochemistry, and transport modeling.
CEVE 554 - COMPUTATIONAL FLUID MECHANICS  
Short Title: COMPUTATIONAL FLUID MECHANICS  
Department: Civil & Environmental Engr  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): MECH 371 (may be taken concurrently) or CEVE 363 (may be taken concurrently) or CHBE 401 (may be taken concurrently) or BIOE 420 (may be taken concurrently) or CHBE 420 (may be taken concurrently)  
Description: Fundamental concepts of finite element methods in fluid mechanics, including spatial discretization and numerical integration in multidimensions, time-integration, and solution of nonlinear ordinary differential equation systems. Advanced numerical stabilization techniques designed for fluid mechanics problems. Strategies for solution of complex, real-world problems. Topics in large-scale computing, parallel processing, and visualization. Prerequisites may be taken concurrently. Additional work required. Cross-list: BIOE 554, MECH 554. Graduate/Undergraduate Equivalency: CEVE 454. Mutually Exclusive: Cannot register for CEVE 554 if student has credit for CEVE 454.

CEVE 555 - NUMERICAL METHODS FOR PARTIAL DIFFERENTIAL EQUATIONS  
Short Title: NUMERICAL METHODS FOR PDES  
Department: Civil & Environmental Engr  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course covers various numerical methods for solving partial differential equations: aspects of finite difference methods, finite element methods, finite volume methods, mixed methods, discontinuous Galerkin methods, and meshless methods. Both theoretical convergence and practical implementation of the methods are studied for elliptic and parabolic problems. May receive credit for only one of the following courses: CAAM 452/CEVE 455/CAAM 536/CEVE 555. Cross-list: CAAM 536. Graduate/Undergraduate Equivalency: CEVE 455. Recommended Prerequisite(s): CAAM 336 Mutually Exclusive: Cannot register for CEVE 555 if student has credit for CEVE 455.

CEVE 560 - BRIDGE ENGINEERING AND EXTREME EVENTS  
Short Title: BRIDGE ENG. & EXTREME EVENTS  
Department: Civil & Environmental Engr  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course integrates information from various engineering and scientific disciplines to provide a rational basis for bridge design under regular and extreme loading. It provides an introduction to bridge engineering, including bridge design, construction material, loading, and reliability-based design. Design, analysis, and retrofit for seismic and coastal threats will be introduced. Graduate/Undergraduate Equivalency: CEVE 460. Recommended Prerequisite(s): CEVE 304 and CEVE 311. Mutually Exclusive: Cannot register for CEVE 560 if student has credit for CEVE 460.

CEVE 565 - NANOTECHNOLOGY ENVIRONMENTAL ENGINEERING FOR TEACHERS (NEET)  
Short Title: NANOENVIRONMENTL ENGR-TEACHERS  
Department: Civil & Environmental Engr  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: The Nano-Environmental Engineering for Teachers (NEET) course is designed to serve AP environmental science teachers. The purpose of the program is to increase the current knowledge of educators to empower them in implementing rigorous project-based engineering activities on the topic of water sustainability. Instructor Permission Required.

CEVE 571 - PRINCIPLES OF SOIL MECHANICS AND FOUNDATION ENGINEERING  
Short Title: SOIL MECHANICS AND FOUNDATIONS  
Department: Civil & Environmental Engr  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Introduction to fundamentals of soil mechanics will include phase relationships, grain size, plasticity, soil classification, and clay mineralogy. The effect of water in soils, including capillarity, shrinkage and swelling, permeability, seepage and effective stress will be discussed. Consolidation, settlement, compressibility, failure theory, and the strength of sands and clays will be investigated. Design considerations will be discussed. Introduction to fundamentals of foundation engineering will include subsurface exploration methods and lateral earth pressures. The design of shallow and deep foundations, including pile installation and geophysical and geotechnical site investigation will be presented. CEVE 471, the undergrad version, includes a lab. Students in CEVE 571 (GR version—does not include a laboratory) will be required to do more advanced assignments and a project. Graduate/Undergraduate Equivalency: CEVE 471. Mutually Exclusive: Cannot register for CEVE 571 if student has credit for CEVE 470/CEVE 471/CEVE 570.

CEVE 576 - STRUCTURAL DYNAMIC SYSTEMS  
Short Title: STRUCTURAL DYNAMIC SYSTEMS  
Department: Civil & Environmental Engr  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Introduction to structural dynamic systems. Linear SDOF and MDOF discrete systems, undamped and damped systems, free and forced vibration, dynamic response to periodic and arbitrary excitations, numerical evaluation of dynamic response, response spectrum and modal analysis. Additional topics for graduate version 576: Linear systems theory, transform methods, state space methods, feedback control, observers and identification. Applications using MATLAB. Demonstrations and laboratory examples. Students will be required to do more advanced assignments and a project. Cross-list: MECH 576. Graduate/Undergraduate Equivalency: CEVE 476. Mutually Exclusive: Cannot register for CEVE 576 if student has credit for CEVE 476.
CEVE 578 - EARTHQUAKE ENGINEERING
Short Title: EARTHQUAKE ENGINEERING
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Characteristics of ground motion, analysis methods for linear and nonlinear base excited structures, and principles of seismic design including case studies and performance based engineering concepts. Probabilistic methods in earthquake engineering including seismic hazard analysis, fragility modeling, and risk assessment and mitigation. Recommended Prerequisite(s): CEVE 576 or equivalent course in Structural Dynamics.

CEVE 590 - MCEE SPECIAL STUDY
Short Title: MCEE SPECIAL STUDY
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 2-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Professional master Project course involves the following (1) a project of practical relevance to the practice of Civil and Environmental Engineering, and (2) detailed project report. Students need to work with a faculty advisor. Instructor Permission Required. Repeatable for Credit.

CEVE 592 - MODELING AND ANALYSIS OF NETWORKED SYSTEMS
Short Title: MODELING & ANALYSIS OF NET SYS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course introduces methods for modeling, characterizing and predicting the behavior of complex infrastructure and technological systems. The discussed analysis methods rely on network science optimization, and computational complexity principles so as to unravel the emergent features of structural and infrastructure systems. Topological properties, ranking tools, dynamic processes, and percolation-based resilience are studied from analytical, algorithmic, and numerical simulation perspectives. The course also explores interdependencies and mitigation actions for spatially and temporally evolving systems. The graduate level course includes advanced exercises in homework and exams, as well as a research-oriented final project. Graduate/Undergraduate Equivalency: CEVE 492. Mutually Exclusive: Cannot register for CEVE 592 if student has credit for CEVE 492. Repeatable for Credit.

CEVE 596 - SYSTEM IDENTIFICATION OF DYNAMIC SYSTEMS WITH MACHINE LEARNING
Short Title: SYSTEM I.D. & MACHINE LEARNING
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to modeling and system identification of dynamic systems with machine learning. Students in CEVE 596 will be required to do more advanced assignments and a project. Graduate/Undergraduate Equivalency: CEVE 496. Mutually Exclusive: Cannot register for CEVE 596 if student has credit for CEVE 496.

CEVE 599 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Civil & Environmental Engr
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Continuing seminar on Civil and Environmental research. Repeatable for Credit.

CEVE 601 - SEMINAR
Short Title: SEMINAR
Department: Civil & Environmental Engr
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: See CEVE 601. Repeatable for Credit.

CEVE 602 - SEMINAR
Short Title: SEMINAR
Department: Civil & Environmental Engr
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: See CEVE 602. Repeatable for Credit.

CEVE 603 - NANOTECHNOLOGY-ENABLED WATER TREATMENT (NEWT)
CORE CONCEPTS SEMINAR
Short Title: NEWT CORE COURSE
Department: Civil & Environmental Engr
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar will introduce NEWT graduate students to the basic scientific concepts behind NEWT research. It is also intended to develop a common language for NEWT students in different research areas, and to contribute to the development of a center culture. Instructor Permission Required. Repeatable for Credit.
CEVE 635 - ADVANCED TOPICS: WATER CHEMISTRY  
Short Title: ADV TOPICS: WATER CHEMISTRY  
Department: Civil & Environmental Engr  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 1-12  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Formal lecture and assigned reading in topics such as redox kinetics and thermodynamics, absorption and desorption, and the associated mathematics. An advanced topics course. Repeatable for Credit.

CEVE 636 - ADVANCED TOPICS IN BIOREMEDIATION  
Short Title: ADV TOPICS IN BIOREMEDIATION  
Department: Civil & Environmental Engr  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Basic principles of Microbial Physiology, Metabolism, Stoichiometry, Thermodynamics and Kinetics applied to the selection, design and performance evaluation of engineered and intrinsic bioremediation systems. Repeatable for Credit.

CEVE 640 - ADVANCED TOPICS IN ENVIRONMENTAL ENGINEERING SCIENCES  
Short Title: ADV TOPICS/ENVIRONMENTAL ENG  
Department: Civil & Environmental Engr  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 1-12  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Special topics in Graduate Study.

CEVE 641 - ADVANCED TOPICS IN ENVIRONMENTAL ENGINEERING  
Short Title: ADV TOPICS/ENVIRONMENTAL ENG  
Department: Civil & Environmental Engr  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 1-12  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Advanced topics in Graduate Study.

CEVE 652 - M.S. RESEARCH AND THESIS  
Short Title: M.S. RESEARCH AND THESIS  
Department: Civil & Environmental Engr  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Research  
Credit Hours: 1-15  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Repeatable for Credit.

CEVE 654 - ADVANCED COMPUTATIONAL MECHANICS  
Short Title: ADV COMPUTATIONAL MECHANICS  
Department: Civil & Environmental Engr  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): CEVE 554 or BIOE 554 or MECH 554 or BIOE 454 or CEVE 454 or MECH 454  

CEVE 657 - SPECIAL TOPICS  
Short Title: SPECIAL TOPICS  
Department: Civil & Environmental Engr  
Grade Mode: Standard Letter  
Course Type: Internship/Practicum, Laboratory, Lecture, Seminar, Lecture/Laboratory  
Credit Hours: 1-4  
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.  
Course Level: Graduate  
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

CEVE 678 - APPLIED STOCHASTIC MECHANICS  
Short Title: APPLIED STOCHASTIC MECHANICS  
Department: Civil & Environmental Engr  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Nonlinear random vibrations, Statistical Linearization, ARMA filters modeling, Monte Carlo Simulation, Wiener-Volterra series, time-variant structural reliability, and Stochastic Finite Elements are presented from a perspective of usefulness to aerospace, civil, marine, and mechanical applications. Cross-list: MECH 678.
CEVE 679 - APPLIED MONTE CARLO ANALYSIS
Short Title: APPLIED MONTE CARLO ANALYSIS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: Probability density and power spectrum based simulation concepts and procedures are discussed. Scalar and vectorial simulation are addressed. Spectral decomposition and digital filter algorithms are presented. Applications from aerospace, earthquake, marine, and wind engineering, and from other applied science disciplines are included. Cross-list: MECH 679.

CEVE 684 - ENVIRONMENTAL RISK ASSESSMENT & HUMAN HEALTH
Short Title: ENVIRON RISK ASSESS&HUMAN HLTH
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Prerequisite(s): STAT 280 or STAT 305
Description: Learn and apply quantitative risk assessment methodology to estimate human health risk from environmental exposure to contamination in air, soil and water. Students will conduct a series of team projects focused on toxicology, risk based screening levels, exposure concentration estimation and risk characterization. Cross-list: STAT 684. Graduate/Undergraduate Equivalency: CEVE 484. Mutually Exclusive: Cannot register for CEVE 684 if student has credit for CEVE 484.

CEVE 736 - ADVANCED RESEARCH TOPICS: ENVIRONMENTAL BIOTECHNOLOGY AND NANOTECHNOLOGY
Short Title: ADV TOPICS:ENVIR BIOTECH & NAN
Department: Civil & Environmental Engr
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: Research oriented presentations and discussions of landmark papers and experimental methods for doctoral students in the Alvarez research group. Repeatable for Credit.

CEVE 801 - PH.D. RESEARCH AND THESIS
Short Title: PHD RESEARCH AND THESIS
Department: Civil & Environmental Engr
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Description: Repeatable for Credit.

Classical Studies (CLAS)

CLAS 102 - INTRODUCTION TO THE HISTORY OF WESTERN ART I: PREHISTORIC TO GOTHIC
Short Title: INTRO TO HIST OF WESTERN ART I
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Description: A survey of painting, sculpture, and architecture from Antiquity through the 15th century. Students will also attend a one-hour weekly tutorial with a teaching assistant. Cross-list: HART 101, MDEM 111. Mutually Exclusive: Cannot register for CLAS 102 if student has credit for HART 220.

CLAS 107 - GREEK CIVILIZATION AND ITS LEGACY
Short Title: GREEK CIVILIZATION & LEGACY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Description: An examination of the literary, artistic, and intellectual achievements of classical Greek civilization from Homer through the golden age of classical Athens to the spread of Greek culture in the Hellenistic world. The influence of ancient Greece on Western culture will be a focus. Case studies in the later reception of classical Greek literature (e.g., tragedy), philosophy (e.g., Socrates), history (e.g., democracy), and art (e.g., The Parthenon) will be examined. Cross-list: HUMA 107. Course URL: classicallegacy.rice.edu (http://classicallegacy.rice.edu)
CLAS 108 - ROMAN CIVILIZATION AND ITS LEGACY
Short Title: ROMAN CIVILIZATION & ITS LEGACY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will investigate central aspects of Roman civilization: politics, religion, law, oratory, private life, public entertainment, literature, and visual art and architecture. We will also examine the place of ancient Rome in the western imagination, and the influence of ancient Rome on later politics, literature, and art. Cross-list: HUMA 111.
Course URL: classicallegacy.rice.edu/ (http://classicallegacy.rice.edu/)

CLAS 201 - HISTORY OF PHILOSOPHY I
Short Title: HISTORY OF PHILOSOPHY I
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Survey of the major philosophers and philosophical systems of ancient Greece, from Parmenides to the Stoics. Cross-list: MDEM 201, PHIL 201.

CLAS 207 - LOVE LIFE IN CLASSICAL ANTIQUITY
Short Title: LOVE LIFE IN ANTIQUITY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Love, sex, marriage and eroticism were important aspects of ancient Greek and Roman culture as they are of our own, though they were sometimes conceived of very differently. In this course we will consider the evidence for various aspects of sexual relationships in poetry, art, inscriptions, philosophy, and more.

CLAS 209 - CAMENAE TO CHRISTIANITY: A SURVEY OF LATIN POETRY
Short Title: A SURVEY OF LATIN POETRY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A survey of Latin poetry from its origins to its late period. Readings are in English. The course provides a broad overview of Latin literary history through the close study of Roman poetry and of the culture in which it was produced. Authors include Catullus, Virgil, Horace, and Ovid.

CLAS 210 - HOMER AND VIRGIL AND THEIR RECEPTION
Short Title: HOMER AND VIRGIL
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course reads Homer's Iliad and Odyssey and Virgil's Aeneid in translation. Topics include the nature of oral poetry, the history of the epic genre, Virgilian intertextuality, the cultural and political contexts in which the poems arose, and case studies in the poets' reception.
Course URL: classicallegacy.rice.edu (http://classicallegacy.rice.edu)

CLAS 218 - CITIES, SANCTUARIES, CIVILIZATIONS: INTRODUCTION TO GREEK ART AND ARCHAEOLOGY
Short Title: GREEK ART AND ARCHAEOLOGY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An introduction to the art and archaeology of the ancient Greek world. Artistic media, such as sculpture and vase painting will be examined in a broad range of the material culture ancient Greeks created and used. Consideration of these materials within their cultural, social and religious contexts will be discussed. Cross-list: HART 216.

CLAS 219 - OLD ENGLISH: READINGS IN BEOWULF
Short Title: OLD ENGLISH
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: We will read selections from Beowulf in the original Old English, and discuss its literary and historical importance. No prior knowledge of Old English required.
### CLAS 235 - CLASSICAL MYTHOLOGY: INTERPRETATION, ORIGINS, AND INFLUENCE

**Short Title:** CLASSICAL MYTHOLOGY  
**Department:** Classical and European Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** We will read and analyze some of the most influential Greek myths (including their parallels and permutations in other cultures). Employing insights from a variety of theoretical approaches to myth, we will identify typical story patterns, characters, and events, and the values, anxieties, and aspirations for which they stand.  
**Course URL:** [classicallegacy.rice.edu](http://classicallegacy.rice.edu)

### CLAS 238 - SPECIAL TOPICS

**Short Title:** SPECIAL TOPICS  
**Department:** Classical and European Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Internship/Practicum, Lecture, Seminar  
**Credit Hours:** 1-4  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

### CLAS 301 - ANCIENT AND MEDIEVAL PHILOSOPHY

**Short Title:** ANCIENT & MEDIEVAL PHILOSOPHY  
**Department:** Classical and European Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Topics in the history of philosophy from the 4th century B.C. through the 14th century. Graduate students require permission of instructor. Cross-list: MDEM 301, PHIL 301. Mutually Exclusive: Cannot register for CLAS 301 if student has credit for MDEM 481. Repeatable for Credit.

### CLAS 302 - GREEK TRAGEDY

**Short Title:** GREEK TRAGEDY  
**Department:** Classical and European Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** We will read 16 Greek tragedies by Aeschylus, Sophocles, and Euripides as well as contemporary criticism of tragedy by Aristophanes, Plato, and Aristotle. We will consider how ancient tragedies were staged, how they were received by their audiences, how they fit in the life of Athens, how they influenced later dramatic arts, and how they continue to stimulate thinking about the human situation.

### CLAS 303 - SOCRATES

**Short Title:** SOCRATES  
**Department:** Classical and European Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** The course will seek to understand the life and thought of Socrates, arguably the most influential philosopher in history. Readings will focus on Plato's Socratic dialogues, among the world's masterpieces of prose literature, and Aristophanes' Clouds, in which the "sophist" Socrates is mercilessly mocked for his outlandish uselessness. We will read Plato's Apology of Socrates at both the beginning and the end of the course, considering the reasons that Socrates was tried, convicted, and executed by his fellow citizens, and what was the nature of his defense. Mutually exclusive with FWIS 149. Students cannot receive credit for both FWIS 149 and CLAS 303. Mutually Exclusive: Cannot register for CLAS 303 if student has credit for FWIS 149.

### CLAS 309 - THE DAWN OF ROME: GENERATING THE URBAN, SOCIAL AND POLITICAL LIFE OF THE ETERNAL CITY

**Short Title:** THE DAWN OF ROME  
**Department:** Classical and European Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** In this course you will uncover the roots of the Eternal City, Rome. Through analysis of archaeological remains, art historical methodologies and theories of social space, intentionality, structuration and agency, you will question how and why Rome became a city and a culture the reshaped the world. The course will focus on the first 500 years of Roman art and society, ca. 800-300 BCE, looking closely at the kingship of Rome, the genesis of the Roman Republic, and the ability to understand a distant culture through artistic manufacture, materiality and philosophical shift. Cross-list: HART 309.

### CLAS 316 - DEMOCRACY AND POLITICAL THEORY IN ANCIENT GREECE

**Short Title:** DEMOCRACY & POLITICAL THEORY  
**Department:** Classical and European Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** The Greeks created political society and studied political society in order to understand and improve it. One particular form of political society, democracy, reached its pinnacle in Athens. We shall attempt to understand how ancient Greeks thought about politics from the rudimentary beginnings in Homer to the complex, incisive arguments of Aristotle. Cross-list: PLST 316.
CLAS 317 - THE SELF IN GREEK AND ROMAN THOUGHT
Short Title: SELF IN GREEK&ROMAN THOUGHT
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores conceptions of the self from Homer to Augustine of Hippo, focusing especially on views of the mind or soul and its relation to the body, thought or reason and its relation to desire, human agency and responsibility, and the individual self in relation to others.

CLAS 319 - ANCIENTS VERSUS MODERNS
Short Title: ANCIENTS VERSUS MODERNS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Ancients and moderns have participated in constant dialogue – sometimes friendly, sometimes hostile – that still shapes the complexities of our own approaches to the past. This seminar traces approximately two millennia of conflict and compromise between so-called “ancients” and “moderns” from ancient Greece and Rome to the French Revolution and beyond.

CLAS 321 - SPECIAL TOPICS IN ANCIENT ART
Short Title: ROME: THE ETERNAL CITY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will introduce you to the major monuments of Rome, Pompeii, and Herculaneum. We will focus not only on the history and functions of these monuments in antiquity but also on how their meaning and representation has changed and evolved in the post-classical world. Instructor Permission Required. Cross-list: HART 318. Repeatable for Credit.

CLAS 324 - THE GENESIS OF ROMAN ART
Short Title: THE GENESIS OF ROMAN ART
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores the roots of the art and architecture of ancient Rome (ca. 600-200 BCE). In it we will examine the earliest vestiges of sculpture, painting and architecture from the Archaic and Classical periods to the twisted forms of Hellenistic conquest. You will grapple with the questions of cultural agency, connoisseurship, cultural interaction, network and object theories and spatial imagination to question standard narratives that divide Rome in this time from neighboring Greek polities. Cross-list: HART 327.

CLAS 326 - MATERIAL, FORM, SPACE, TIME: CONCRETE AND THE REVOLUTION OF SPACE IN ANCIENT ROME
Short Title: MATERIAL, FORM, SPACE, TIME
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: 'Architectural Revolution' has been tied to Le Corbusier, the Eiffel Tower, the Louvre, Brunelleschi and to towering Gothic cathedrals. At the foundation of all these endeavors is the Concrete Revolution in Roman Architecture. In this course we'll look at the four essential elements of this revolution from the fourth century BCE to the fifth century CE, and we'll investigate how shifts in application and experience created a background that informs design to this day. Cross-list: ARCH 326, HART 326.

CLAS 336 - INTRO TO INDO-EUROPEAN
Short Title: INTRO TO INDO-EUROPEAN
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will begin with a brief survey of the Indo-European languages, followed by a detailed reconstruction of Proto-Indo-European phonology, morphology, and syntax. The second half of the course will deal with Indo-European culture, laws, society and poetics, together with a consideration of advanced topics in the individual branches. Cross-list: LING 336.
CLAS 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Laboratory, Seminar
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

CLAS 482 - CAESAR'S PALACE: AUTHOR(ITY) AND MEANING IN THE ROMAN IMPERIAL RESIDENCE
Short Title: CAESAR'S PALACE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Described as both a "Hall of Despotism" and a "Citadel of Majesty," the palace of the Roman emperors is one of the great enigmas of antiquity. Its vast remains (larger than Versailles) are relatively well preserved, but it is poorly understood as part of the concept of emperors. In this course we will examine the palace within the context of Imperial Roman art and politics; then we will dissect its meaning(s), the intentions of those who created it, and generally deconstruct it, brick by brick, to question agency and spatial experience from a macro-historical perspective. Cross-list: HART 482.

CLAS 492 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Independent work. Instructor Permission Required. Repeatable for Credit.

CLAS 493 - SENIOR THESIS
Short Title: SENIOR THESIS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Senior. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Open to Classical Studies majors in their final year. Thesis, approximately 7,500-15,000 words (30-60 pages), on a topic of the student's choice in consultation with a faculty member. Instructor Permission Required.

CLAS 494 - SENIOR THESIS
Short Title: SENIOR THESIS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CLAS 493
Description: Continuation of CLAS 493. Open to Classical Studies majors in their final year. Thesis, approximately 7,500-15,000 words (30-60 pages), on a topic of the student's choice in consultation with a faculty member. Instructor Permission Required.

CNTR LANG & INTERCULTURAL COMM (CLIC)

CLIC 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: CNTR LANG & INTERCULTURAL COMM
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

CLIC 369 - INTERCULTURAL COMMUNICATION: IC LANGUAGE IN INTERACTION
Short Title: IC LANGUAGE IN INTERACTION
Department: CNTR LANG & INTERCULTURAL COMM
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARAB 264 or CHIN 264 or FREN 264 or GERM 264 or HEBR 264 or HIND 264 or ITAL 264 or JAPA 264 or KORE 264 or PORT 264 or RUSS 264 or SPAN 264
Description: This course centers on the development of intercultural communicative competence in the context of learning a L2 with special focus on language uses, sociolinguistic strategies and structures of interactional discourses in spoken and written languages. This course is taught in English.
CLIC 385 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Students will engage in an in depth study of topics related to language study and intercultural communication under the guidance of CLIC faculty. Topics will vary but will develop the students' ability to communicate in the target language. Department Permission Required.

CLIC 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

Cognitive Sciences (CSCI)

CSCI 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Cognitive Sciences
Grade Mode: Standard Letter
Course Type: Laboratory, Lecture, Seminar, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

CSCI 390 - SUPERVISED RESEARCH IN COGNITIVE SCIENCES
Short Title: SUPERV RESRCH COGNITIVE SCI
Department: Cognitive Sciences
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Supervised research on topics relevant to the cognitive sciences. Limited to majors in Cognitive Sciences. Instructor Permission Required. Repeatable for Credit.

CSCI 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Cognitive Sciences
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

College Course (COLL)

COLL 100 - SOVIET UNION SCIENCE FICTION (HANSZEN)
Short Title: SOVIET SCIENCE FICTION
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: What features of the science fiction genre made it so popular as a medium for social criticism in the Soviet Union? Starting with Zamyatin's We, a 1920s dystopian novel that inspired Orwell's 1984, we will explore how Soviet writers and filmmakers responded to the political, social, and cultural shifts of the 20th century.

COLL 101 - THE ART OF DECOLONIZATION (LOVETT)
Short Title: THE ART OF DECOLONIZATION
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: In this course, students will learn about the art born out of global decolonization efforts, uncovering how the colonized understand themselves and their relations to the colonial power structure. Using these historical precedents, this class will culminate in a final project in which students will present on the effects of colonization and decolonization in communities they're part of and showcase their own creative responses to these movements.
COLL 102 - EFFECTS & AFFECT IN MUSIC VIDEOS (HANSZEN)
Short Title: HELLOMTV & WELCOME TO MY CLASS
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course inquires into the relationship between aural and visual elements to investigate how visual elements highlight certain aural aspects. Students will observe and discuss professional music videos and apply their understanding of those elements by creating a music video for a final project.

COLL 103 - J.R.R. TOLKIEN AND THE HISTORY OF MIDDLE EARTH (LOVETT)
Short Title: THE HISTORY OF MIDDLE EARTH
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Students will study the history of the fictional Middle Earth as described by Tolkien in his published works and collected papers, as well as the slow creative development of the world as a whole. Students will also be introduced to the academic field of Tolkien Studies, in order to identify the real stories that influenced his writings.

COLL 104 - SOUL TO SOLE: INTRO TO TAP DANCING (HANSZEN)
Short Title: INTRO TO TAP DANCE
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Offers an introduction to tap for beginner students that includes tap technique and a brief overview and analysis of tap dancing culture and history.

COLL 105 - HISTORY OF DRAG AND LGBTQ+ ACCEPTANCE (BAKER)
Short Title: HISTORY OF DRAG
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: In this course, students will look at the rise of drag in the U.S. since the 1920s and how its evolution influenced and promoted LGBT pride and gender acceptance up to the modern day. Students will analyze articles, films and popular culture relating to drag to understand the meaning and significance of drag.

COLL 106 - THE ART OF ORIGAMI (BAKER)
Short Title: THE ART OF ORIGAMI
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Art of Origami focuses on the concepts, materials, history, culture, and processes of origami. Each class will begin with students being guided through the folding of a simple but important origami model. The specific model will motivate the main topic of the class. Finally, students will create original origami figurines through specific guided projects.

COLL 107 - SUPER SMASH THEORY: GAMING SUBCULTURE (MARTEL)
Short Title: SUPER SMASH THEORY
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: In this course, novice and expert students alike will undergo an in-depth investigation of the social impacts and intricacies of Super Smash Bros., through the subsequent competitive scene that has developed around it using a host of analytical methods.

COLL 108 - SURVIVOR: SOCIAL STRATEGIES IN FOCUS (WIESS)
Short Title: SURVIVOR: SOCIAL STRATEGIES
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Students analyze the successful strategies used in the show “Survivor” and relevant scholarly papers on the psychological aspects of the topic. They then apply those strategies in practice by playing the game in the classroom.

COLL 109 - STRATEGIES OF FANTASY FOOTBALL (HANSZEN)
Short Title: STRATEGIES OF FANTASY FOOTBALL
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will cover different fantasy football strategies and statistical application used to inform decision making and to optimize team scoring. Students will demonstrate learning strategies through the management of their own fantasy football teams. Experience with fantasy football is not required; however, experience with statistical models/methods is required.
COLL 110 - THE AMERICAN MICROBREWERY: A HISTORY AND A PRACTICUM (SID RICH)
Short Title: THE AMERICAN MICROBREWERY
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Through a historical and sociological analysis students will think critically about the American Microbrewery as both a historical institution and modern phenomenon. To complement this and demonstrate their knowledge students will physically brew multiple beers during the semester. Due to the necessity of sampling, this course will be limited to ages 21+.

COLL 111 - AN INTRODUCTION TO THE STUDIES OF HAPPINESS & WELLBEING (JONES)
Short Title: THE HAPPINESS CLASS
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course serves as an introduction to studies and practices of happiness and wellbeing from an interdisciplinary perspective. We will investigate anthropological, scientific, literary, and artistic approaches to various aspects of wellbeing, in addition to critically engaging with diverse practices associated with the maintenance and creation of happiness.

COLL 112 - BASKETBALL HISTORY: A THOROUGH LOOK AT THE HISTORY OF THE GAME ALONG WITH ITS IMPACTS (JONES)
Short Title: BASKETBALL HISTORY
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Basketball is a game that only requires a ball and a basket. Since its inception in 1891, the simple nature of the game has captivated millions of people, boys and girls, blacks and whites, Christians and Muslims. It has been integrated into the cultures of countries across the globe. The game itself has changed, including rules, strategies, and styles of play. More importantly, the game has changed the society, leaving its imprints on civil rights movement, feminism, pop culture, and, of course, our lifestyle. In this course, students will learn the history of the game as well as the impacts extending beyond just basketball as we march through the different eras from 1891 all the way up to now. We will look at different professional leagues, such as National Basketball Association, American Basketball Association, Women's National Basketball Association, and international events, such as the Olympics, and even youth basketball. Students will be given reading materials, documentaries to enhance understanding of what is taught in class and will be graded on participation in discussions, short presentations, and short essays. There is no exam. By the end of the course, students should have holistic view of how has basketball impacted the society throughout the history of the game? This class should equip students with the skills to critically think about the game in relation to society.

COLL 113 - ASIAN AMERICANS IN MEDIA (WIESS)
Short Title: ASIAN AMERICANS IN MEDIA
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will analyze how Asian Americans are represented in modern films by drawing connections to contemporary Asian American issues using a variety of films and TV shows.

COLL 114 - CREATIVITY: THINKING DIFFERENTLY (WILL RICE)
Short Title: CREATIVITY
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: “Imagination is more important than knowledge. Knowledge is limited. Imagination encircles the world.” – Albert Einstein Creativity is a skill that is often mistaken for an innate talent. Although often portrayed as something that you must be born with, many theories frame it as rather a particular ability that can be cultivated and developed.
COLL 115 - HOUSTON FOOD AND IMMIGRATION (MCMURTRY)
Short Title: HOUSTON FOOD AND IMMIGRATION
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course uses food and cuisine as a method of understanding the history and culture of Houston and its immigrants. We seek to answer how much does Houston's food culture and cuisine accurately represent immigrants and the waves of immigration through multiple field trips into Houston and discussions about food, culture, immigration, and cuisine.

COLL 116 - CANTONESE LANGUAGE & CULTURE (BROWN)
Short Title: CANTONESE LANGUAGE & CULTURE
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is designed for those who have no background in Cantonese OR for heritage speakers who wish to improve their Cantonese. We will focus on the speaking and listening aspects of the language. Students will also be introduced to the rich culture associated with the Cantonese language and hopefully leave with an interest to learn more on their own.

COLL 117 - WIKIPEDIA EMPOWERMENT KNOWLEDGE (MARTEL)
Short Title: WIKIPEDIA EMPOWERMENT KNOWLEDGE
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will teach students about the politics of information and allow them a first-hand opportunity to use Wikipedia to expand informational access for the world while simultaneously researching an individual academic passion. Students will learn about the roots of inequalities in access to information and write several reflective papers.

COLL 118 - VEGAN TREATS AND SINFUL SWEETS (BAKER)
Short Title: VEGAN TREATS AND SINFUL SWEETS
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Are there ways to practically integrate vegan desserts into our diets without breaking the bank and fundamentally changing the tastes that make them so irresistible to begin with? In this course, students will be given the tools to establish a firm foundation in vegan baking.

COLL 119 - KEEP ABREAST WITH YOUR CHEST: WHAT YOU DIDN'T KNOW ABOUT BREASTS AND BRAS (BROWN)
Short Title: KEEP ABREAST WITH YOUR CHEST
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Despite the attention breasts receive in media, most people know very little about the physiology and history of breasts, causing physical and emotional pain for billions of people. Students will study the physiology, commercialization, and social history of breasts from viewpoints of various cultures and time periods. No breasts are required!

COLL 120 - SYNTHETIC BIOLOGY FOR REAL WORLD APPLICATIONS (DUNCAN)
Short Title: SYNTHETIC BIOLOGY
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Synthetic biology is a mixture of engineering and biology which emphasizes applications to the real world. Whether it be using artificial, small bacteria to clean water, genetically engineering crops to resist harsh climates, or even creating medicine through the help of microorganisms, all these actions are examples of synthetic biology being put to use. How can we use synthetic biology to engineer biological specimen for the sake of fixing real world problems that affect humanity? Students will tackle this question by analyzing real world problems and evaluating how/whether synthetic biology can be used to solve such problems. Students will use their understanding of synthetic biology to pick a problem they are passionate about and go on to develop and design a solution using synthetic biology. Solutions can range from innovative mechanisms of disease detection, water filtration, material/fuel creation, and more. No prior knowledge of biology is necessary and students of all majors are welcome. Students will learn cellular processes crucial to synthetic biology, genetic circuit design, the scope of synthetic biology applications, and synthetic biology project design. In class, students will learn through activities/discussion, assigned reading/homework, and a project design stage with guidance from people of numerous biological backgrounds.

COLL 121 - CONSPIRACY THEORIES: JUST FOR PARANIOIACS...OR ARE THEY? (LOVETT)
Short Title: CONSPIRACY THEORIES
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Conspiracy theories have become a staple of modern American culture. In this course, students will look at various conspiracy theories and unsolved mysteries in an effort to understand the reason behind this and possible effects of this growth in popularity.
COLL 123 - THE CULTURAL AND SOCIAL IMPACT OF K-POP (WIESS)
Short Title: K-POP AND SOCIETY
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: In this course, students will examine the impact of Korean and Western culture on the K-Pop industry.

COLL 124 - LEAGUE OF LEGENDS: RISE OF ESPORTS INFRASTRUCTURE AND STATUS (DUNCAN)
Short Title: LoL INFRASTRUCTURE & STATUS
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The Esports industry has quietly existed since the late 1990s. However, recently the wildly popular MOBA game known as League of Legends and its pro scene has brought the Esports industry to the forefront. With all the good and bad the game has done for the esports community, we must ask ourselves: To what extent has League of Legends accounted for the success of esports and the creation of a toxic subculture, and how will its role evolve? Students will be introduced to the mechanics of the game in order to adopt a player perspective during analysis of esports. Through class discussion, readings, and responses, they will trace the impact the game has had on the rise of esports infrastructure, viewership and the creation of toxic player interactions between themselves and towards the teams they support. After completing this course, students should walk away with a greater understanding of esports, an appreciation for how far esports has come, and, possibly, a desire to participate in the esports community as a positive influence.

COLL 125 - VITICULTURE AND VINICULTURE: THE SHAPING FORCES BEHIND WINE (MCMURTRY)
Short Title: VITICULTURE AND VINICULTURE
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course addresses the impact of viticulture and viniculture on wine. To ground our discussions in real-world examples, we will taste and compare important regionally distinct wines. As we explore the choices involved in winemaking, students will also determine how a wine's attributes suit it to pairing with certain foods. Students must be 21+.

COLL 126 - FASHION FURIOUS - FASHION AS SELF EXPRESSION AND INDUSTRY (BAKER)
Short Title: FASHION FURIOUS
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Students will be introduced to the fundamental artistic elements of fashion as well as components of the fashion industry in order to make informed fashion decisions regarding their own style and their impact on the world around them.

COLL 127 - SEAFOOD FOR THOUGHT: A FISHY INVESTIGATION OF MARINE RESOURCE USE (MCMURTRY)
Short Title: SEAFOOD FOR THOUGHT
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will examine contemporary issues in marine science as they relate to the seafood industry and associated resource use sectors. In other words, what kind of relationships do individuals and societies have to the ocean through diet, and how does that translate to effective conservation efforts?

COLL 128 - THE PAST, PRESENT, AND FUTURE OF COLLEGE FOOTBALL (MARTEL)
Short Title: HISTORY OF COLLEGE FOOTBALL
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: College football is one of the most popular and most controversial sports in America. It draws millions of fans to stadiums and TVs, but its scandals, violence, and billion-dollar business model raise serious questions about the sport's ethics. This raises the question: Why does college football exist today?

COLL 129 - WHAT'S THE CRAIC: CULTURAL LANDSCAPES OF IRELAND (JONES)
Short Title: INTRO TO IRISH CULTURE
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is an introduction to how cultural landscapes define Ireland. Topics will include Irish music, mythology, language, food, and pubs, among others. The course will help students develop a framework to evaluate the anthropological concept of culture, specifically through studying the Emerald Isle.
COLL 130 - ASTROLOGY & SPIRITUALITY IN THE 21ST CENTURY
Short Title: MODERN ASTROLOGY & SPIRITUALITY
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is designed to answer the question: how can modern day astrology be used as a tool for self-discovery and personal development? Students will study the 12 astrological houses, the 12 signs and their meanings, their own individual birth chart, the planets, symbols, aspects, elements and modalities. This course will also go over current events that led to an increased interest in spirituality, and discuss the common misconceptions and arguments about astrology in pop culture.

COLL 131 - NARRATIVE IN INTERACTIVE MEDIA: THE MECHANICS OF STORYTELLING IN VIDEO GAMES (MCMURTRY)
Short Title: NARRATIVE IN INTERACTIVE MEDIA
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: How does one convey narrative in an inherently interactive medium? In this course, students will engage with video games through an analytical lens to explore how game designers use mechanics, content, and the mind of the player to shape a game's central thesis.

COLL 132 - ORIGAMI SEKKEI: A MATHEMATICAL APPROACH TO THE ANCIENT ART OF PAPER FOLDING (JONES)
Short Title: MATHEMATICAL ORIGAMI DESIGN
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The art of paper folding has existed for over fifteen centuries, yet an astonishing 98 percent of new origami designs have been developed within the past fifty years and with rapidly increasing complexity. This modern day origami renaissance has been closely connected to advances in science, technology, and computational mathematics combined with artistic intuition and creativity. How can mathematical methods be applied to develop awesome, creative origami with a purpose? The practice of origami sekkei, or technical origami design, overthrows the traditional freestyle folding process and instead turns to a carefully engineered theoretical model. Students will explore contributions from the pioneers of modern origami, ranging from the fantastically intricate work of NASA physicist Robert J. Lang to the elegant simplicity of origami grandmaster Kiyo Yoshizawa. The course will cover mathematical techniques such as base folding, grafting, circle packing, tetrahedron, and polyhedron folding through hands-on, interactive exercises. Starting with the very basics, this course is designed to be approachable to beginners in all aspects but also offers topics that may be of additional interest for those in specialized fields of study. Overall, we hope to unfold the mysteries of origami and turn the page to reveal some of the most cutting-edge work in the field.

COLL 133 - BEATS BY YOU: AN INTRODUCTION TO BEATBOXING (BROWN)
Short Title: INTRO TO BEATBOX
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will focus on becoming a beatboxer, and will include a brief history of beatbox and the basic music theory behind it. Students will study the social and musical contexts of beatbox, analyze old school, new school, and battle beatbox, and learn beatbox techniques.

COLL 134 - HOW THE WEB WORKS: AN INTRODUCTION TO INTERNET TECHNOLOGIES (MARTEL)
Short Title: HOW THE WEB WORKS
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This class will present modern internet technologies in the context of a user, rather than a developer. The skills and knowledge learned in the class will culminate in the design and publication of a resume website. The course is designed for students with no prior experience and limited knowledge.

COLL 135 - BEGINNING CHESS STRATEGY (MARTEL)
Short Title: BEGINNING CHESS STRATEGY
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The class is an introduction to basic strategy and concepts in the game of chess. Will cover all phases of the chess game, as well as some sport psychology. Class will be a mix of practical playing time and interactive lecture.

COLL 137 - PHILOSOPHY OF COFFEE (MCMURTRY)
Short Title: PHILOSOPHY OF COFFEE
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Through this course, coffee and espresso aficionados will gain a deeper understanding of the intricate flavors, colorful history, popular brewing methods, and diverse cultures that go into making every cup of coffee.
COLL 138 - LET'S TALK ABOUT POP: CRITIQUING AND UNDERSTANDING POP MUSIC (WIESS)
Short Title: PHILOSOPHY OF POP
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: In this course, music lovers and casual listeners will examine pop music as an art form and the arguments on its legitimacy, as well as discussing and refining their opinions on multiple works of pop.

COLL 139 - SOCIOLOGY OF LOVE AND MEDIA: A CASE STUDY OF THE BACHELOR (BAKER)
Short Title: SOCIOLOGY OF LOVE AND MEDIA
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Students will analyze the reality television show The Bachelor, and recognize how this idealized vision of romance influences an individual's journey to find love. Students will consider and think critically about the question: How do modern ideals of romance, as portrayed by the media, influence everyday dating patterns?

COLL 140 - INTRODUCTION TO MUSIC PRODUCTION (BROWN)
Short Title: INTRO TO MUSIC PRODUCTION
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Using a variety of computer-based software, students taking this course will learn how to produce their own music. The course will cover sound design, music theory, mixing, mastering, as well as the history of computer music production and the technologies involved.

COLL 141 - FREESTYLE RAP, ITS HIDDEN STRUCTURE (BROWN)
Short Title: INTRO TO IMPROMPTU POETRY
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Through this course students will learn how to decipher and implement the hidden structure behind freestyle-rap. Students will partake in in-class workshops targeted at developing the different skills required when freestyling. These skills include but are not limited to random generation, word association, rhyme schemes, freestyle etiquette, and delivery.

COLL 142 - HOUSTON MICROBREWERIES: CULTURE AND APPRECIATION (MCMURTRY)
Short Title: HOUSTON MICROBREWERIES
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: What do the places of beer consumption reveal about our culture? In Houston Microbreweries, students will examine the history and culture of the microbrewery movement, developing a stronger appreciation for the breweries themselves and their social importance. Due to in-class tastings, this course is restricted to ages 21+.

COLL 143 - THE ULTIMATE POTENTIAL OF VIRTUAL REALITY: AN EXPLORATION (BROWN)
Short Title: ULTIMATE POTENTIAL OF VR
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Virtual reality (VR) can be a powerful tool. This class explores the application and potential of VR in multiple domains through guest lectures, interviews, papers, discussions, and most importantly, experiences in VR. Topics covered include art, medical, industrial training, psychology, education, and more. All majors are encouraged to enroll.

COLL 144 - WEB APP DEVELOPMENT FOR NON-MAJORS (DUNCAN)
Short Title: WEB DEV FOR NON-MAJORS
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course explores topics in web-based app development with an emphasis on front-end. By the end of the course, students will have an understanding of how web-based applications function and the knowledge necessary to build simple applications. This course is only for students not intending to major in CS/ECE.

COLL 145 - FROM RENT TO HAMILTON: SOCIAL ISSUES IN MODERN MUSICALS (BROWN)
Short Title: SOCIAL ISSUES MODERN MUSICALS
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Through analysis of recent productions (such as Next to Normal, Billy Elliot, and Hamilton), students will explore how the Broadway musical's storytelling conventions and contemporary cultural and commercial contexts inform its representation of race, class, gender, disability, and social change. No previous music or theater experience needed.
COLL 146 - DESIGN FOR SOCIAL IMPACT: CREATING IMPACTFUL CHANGE IN HOUSTON (BROWN)
Short Title: DESIGN FOR SOCIAL IMPACT
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will engage students in learning and actively applying the design thinking process to solve social problems in Houston. Students will define a social problem they want to solve, ideate potential solutions, create a prototype of their solution, and present it before the class in a mock "pitch" competition.

COLL 147 - UNDERSTANDING THE FEDERALIST PAPERS (DUNCAN)
Short Title: THE FEDERALIST PAPERS
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The object of this course is to read the papers, understand the context in which they were written, and the significance that the work has in a broader sense. Really, all we want to know is, what were the Federalist Papers and in how are they applicable to government today?

COLL 148 - THE MEMES OF PRODUCTION: INVESTIGATING THE SOCIAL PHENOMENON OF INTERNET MEMES (DUNCAN)
Short Title: THE MEMES OF PRODUCTION
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Internet culture has largely adopted meme usage as an avenue of communication, a rallying point for communities, and a way to express personal humor. In this course, we will bridge the gap between academic and popular discourse on internet memes by studying the interdependence between meme culture and society.

COLL 149 - WILL THE REAL COMEDIAN PLEASE STAND UP? (HANSZEN)
Short Title: STAND-UP (COMEDY) FOR YOURSELF
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: In this class, students will learn and analyze different techniques used by stand-up comedians in order to prepare for a 5 minute comedy set at the end of the semester.

COLL 150 - CREATING ART THROUGH CODE (MCMURTRY)
Short Title: CREATING ART THROUGH CODE
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: In this class, students will create their own digital art using basic programming concepts applied to the tools that artists use, while simultaneously examining the current landscape of digital art.

COLL 151 - REALITY TV AND THE MODERN MIND (HANSZEN)
Short Title: REALITY TV AND THE MODERN MIND
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Are reality TV shows merely mindless entertainment, or can we use them to better understand our own desires, actions, and motivations? This course delves into ten reality TV shows, supplemented by class discussions and short academic articles. Students will become critical consumers of reality TV and the ideas it purports.

COLL 152 - MAPPING DANCE ACROSS SOUTH ASIA (HANSZEN)
Short Title: DANCE ACROSS SOUTH ASIA
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will study dance vignettes across South Asia and how dance reflects historical alterations in South Asian society. Students will analyze the intricate political and economic history of South Asians portrayed in a dance framework through case studies of regional dances from both a performer and audience standpoint.

COLL 153 - SOCIALIZATION THROUGH SPORTS: HOW SPORTS SHAPE WHO WE ARE (HANSZEN)
Short Title: SOCIALIZATION THROUGH SPORTS
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This seminar investigates the social function of sports, its importance to society, and how sports shape our understanding of self and others. Readings and viewings address sports as it relates to social theory, youth and aging, identity formation, high school and college, race, class, gender, deviance, bodily capital, activism.
COLL 154 - INSIGHTS INTO MODERN ANIME: A CHARACTER STUDY (HANSZEN)
Short Title: INSIGHTS INTO MODERN ANIME
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will focus on the analysis of characters and identity throughout anime. Students will watch five shows, including Neon Genesis Evangelion and Madoka Magica, and draw conclusions about the characters and the world in the shows from a philosophical, psychological and sociological viewpoint.

COLL 155 - PERFORMING THE CLASSICAL ARTS OF SOUTH INDIA (WIESS/LOVETT)
Short Title: SOUTH INDIAN PERFORMING ARTS
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Performing arts are part of a long-standing tradition in South Indian communities for expressing identity, faith, mythology, and social issues. This course examines the performance of classical arts, specifically Carnatic music and bharathanatyam dance. Students will choose avenues of performance (dance/vocal/instrumental) to develop, culminating in a short group piece.

COLL 156 - KNITS AND PIECES (JONES)
Short Title: KNITS AND PIECES
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Ready, set, cast on! Through beginner projects, tutorials, and knitting circles, master the basic components of knitting and learn how to tackle any pattern. Weekly practice, along with discussions on the cultural relevance and benefits of knitting, will build your skills and appreciation for this yarn art.

COLL 157 - THE ART OF MAKING A VISUAL NOVEL (MCMURTRY)
Short Title: VISUAL NOVEL ANALYSIS
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Visual novels are the chimera children of books, comics, movies, games, and choose-your-own-adventures. Through playing a variety of visual novels, students will analyze the anatomy of the visual novel for how components work together to seize the reader’s attention and make it stand out among others.

COLL 158 - HOW MUSIC PLAYS THE BRAIN - THE NEUROSCIENCE OF A UNIVERSAL HUMAN OBSESSION (LOVETT)
Short Title: HOW MUSIC PLAYS THE BRAIN
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: What can music teach us about the human brain? In this course, students will examine music through the lens of neuroscience by studying how music influences human behavior and brain function. Students will constantly be engaged in dialogues between an age-old art and a budding field of science.

COLL 159 - POLICY AND THE PATIENT: UNDERSTANDING AND CRAFTING HEALTH POLICY (WILL RICE)
Short Title: POLICY AND THE PATIENT
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Performing arts are part of a long-standing tradition in South Indian communities for expressing identity, faith, mythology, and social issues. This course examines the performance of classical arts, specifically Carnatic music and bharathanatyam dance. Students will choose avenues of performance (dance/vocal/instrumental) to develop, culminating in a short group piece.

COLL 160 - SCREWTAPE AND THE ART OF SELF-REFLECTION (HANSZEN)
Short Title: SCREWTAPE AND SELF-REFLECTION
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Why do I do the things I do, and how does it affect who I am and who I will be? In this class, students interact with C.S. Lewis’ The Screwtape Letters, short articles, classmates, and pens on a self-reflective, psychological, and spiritual journey into their own minds and souls.

COLL 161 - TAELOR'S DECLASSIFIED, FITNESS SURVIVAL GUIDE (HANSZEN)
Short Title: FITNESS PROGRAMMING
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Student’s will acquire the knowledge necessary for creating effective workout and nutrition programs intended to achieve various fitness goals including general health, endurance improvement, muscle gain, and strength gain.
COLL 162 - NARRATIVE THEORY OF DISNEY (BAKER)
Short Title: DISNEY & NARRATIVE THEORY
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction to narrative theory using Disney films as explanatory texts. Each week we will examine the narrative inner-workings of a different Disney animated film, discussed in conjunction with the history of the corporation, our experiences with the Disney brand, and our own storytelling intuitions.

COLL 163 - CONTEMPORARY SOCIAL MOVEMENTS (MCMURTRY)
Short Title: CONTEMPORARY SOCIAL MOVEMENTS
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is about the social and political conditions recent social movements respond to, and how they respond using legal, media, or protest tactics.

COLL 164 - CRITICISM AND PROFESSIONAL WRESTLING (SID RICH)
Short Title: CRITICISM AND PRO WRESTLING
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will introduce students to professional wrestling from an academic standpoint. Students will learn to think and write critically about wrestling through various academic lenses, including philosophy, psychology, race, gender, sexuality, and drama.

COLL 165 - SKATEBOARDING ON FILM (WIESS)
Short Title: SKATE FILM
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will provide students with a basic knowledge of how to create skateboarding films, as well as explore a brief history of the development of skateboarding. Students will learn how to ride a skateboard and how to edit videos.

COLL 166 - X-MEN AS SOCIAL COMMENTARY (MCMURTRY)
Short Title: X-MEN AS SOCIAL COMMENTARY
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: X-Men is a Marvel comic book series featuring allegorical depictions of discrimination and “otherness”, such as the 60’s Civil Rights Movement, the Holocaust, and homophobia. Students will read highlights from X-Men’s 50 years of publication and related essays, as well as contemplate the ethics and occasional hypocrisy of such depictions.

COLL 167 - ISSA CLASS: HISTORY OF HIP HOP (JONES)
Short Title: THE HISTORY OF HIP HOP
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will examine the development of hip-hop and its power to create counter-narratives to the prevailing misrepresentations of oppressed groups. Students will analyze primary and secondary sources to examine the arc of hip hop in America.

COLL 168 - INTRODUCTION TO THE SKIN WE LIVE IN (BAKER)
Short Title: INTRO TO SKIN
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Skin problems aren't limited to acne; we sometimes get eczema, warts, and rashes. There's a sea of intriguing skin conditions just waiting to be understood and treated! This course will cover the integumentary system, ingredients in the skin care/dermatological industry, skin care habits, and skin diseases and treatments!

COLL 169 - STRATEGIC THINKING AND TACTICS IN CARL CHUDYK’S INNOVATION (HANSZEN)
Short Title: STRAT & TACTICS IN INNOVATION
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The course will be on in-depth study of Carl Chudyk's innovation.
COLL 170 - THE HISTORY OF BASKETBALL (JONES)
Short Title: THE HISTORY OF BASKETBALL
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This class should serve as an entertaining way for students to learn about the rarely discussed historical figures and evolution of basketball, as well as the impact these figures have had greater than basketball.

COLL 171 - INTRODUCTION TO MODERN HEBREW (BAKER)
Short Title: INTRO TO MODERN HEBREW
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: We will explore the basic vocabulary, structure, and grammar of Modern Hebrew, as well as the culture that envelops it.

COLL 172 - DEATH IN PERSPECTIVES (MARTEL)
Short Title: DEATH IN PERSPECTIVES
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This class will examine perspectives on death and dying—through the lens of history, sociology, psychology, philosophy, economics, and culture. Students will discover the taboo subject of death in relation to the human experience through interactive learning methods, such as engaging class discussions, debates, articles, speakers, and field trips.

COLL 173 - HOW TO THINK LIKE A DISNEY IMAGINEER (BROWN)
Short Title: INTRO TO IMAGINEERING
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: In this course, students will develop their imagination and curiosity for the purpose of problem-solving by delving into the history and design process of Walt Disney Imagineering. Students will be challenged with completing skill-based assessments that foster an environment of imaginative thinking, developing creative solutions for problems, and rediscovering their curiosity. Students will learn and apply important Imagineering skills and techniques, building upon a semester long project that showcases their own Imagineering-style solution.

COLL 174 - PERSIAN LANGUAGE FOR SUFI POETRY (MCMURTRY)
Short Title: PERSIAN LANGUAGE FOR POETRY
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: In this course, students will learn the basics of the Persian language and apply it to reading and analyzing selections of poetry from classical poets.

COLL 175 - DREAMWORK THROUGH DOTA (WILL RICE)
Short Title: DREAMWORK THROUGH DOTA
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Dreamwork through Dota presents a long-term group project that focuses on building a team dynamic, and offering numerous opportunities for teams to test what they have learned. Students will be assigned to teams of five and learn, as a team, to play Dota 2, an arena free-to-play ‘e-sport’ that is conceptually very similar to traditional sports like soccer and basketball. This course will provide a low-pressure environment for all students (regardless of prior gaming experience) to become comfortable communicating with others and working in groups.

COLL 176 - RISK AND REWARD: GAME THEORY APPLICATIONS IN MELEE (DUNCAN)
Short Title: GAME THEORY APPS IN MELEE
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Students learn about risk/reward and various dilemmas in game theory. There is an emphasis on application, particularly to Super Smash Bros. Melee.

COLL 177 - INTRODUCTION TO DISABILITIES AND DISORDERS (BAKER)
Short Title: DISABILITIES AND DISORDERS
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Explore various disabilities and mental disorders, with an emphasis on integration and acceptance.
COLL 178 - BLOCKCHAIN BEYOND BITCOIN: HARNESSING DISRUPTIVE TECHNOLOGICAL POTENTIAL (DUNCAN)
Short Title: BLOCKCHAIN BEYOND BITCOIN
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: How will blockchains empower positive and radical change in our increasingly globalized and data-driven society?

COLL 179 - GETTING SCHOOLED: COLLEGE SOCIAL CULTURE (WILL RICE)
Short Title: COLLEGE SOCIAL CULTURE
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This class will study the college social experience primarily through the disciplines of sociology and history. Students will examine how perceptions and reality of college life differ. The class will ultimately seek to help students understand their own experiences better by discovering the context behind them in an academic manner.

COLL 180 - THE ANATOMY OF MEDICAL-DECISION MAKING (MCMURTRY)
Short Title: MEDICAL-DECISION MAKING
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Students will explore how medical professionals decide the best courses of action when faced with different ethical dilemmas. Through this course, students will be acclimated to ethical issues in medicine and how professionals make these seemingly impossible decisions.

COLL 181 - VISUAL DESIGN: PRINCIPLES AND APPLICATIONS (DUNCAN)
Short Title: VISUAL DESIGN
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An inherently human-centered activity, design brings in interdisciplinary concepts to solve the ever-present question: how do we communicate intent effectively through visual, interactive, and physical interfaces? In this course, we will explore the various psychology principles behind design and apply those principles to real-life, iterative prototyping.

COLL 182 - VIDEO GAMES AS A VEHICLE FOR PHILOSOPHY (SID RICH)
Short Title: VIDEO GAMES & PHILOSOPHY
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Video Games can place us in interesting philosophical scenarios. Using the medium of Video Games, this course will run through a survey of Philosophy, focusing primarily on Ethics and Free Will.

COLL 183 - CULTURE OF TEA (LOVETT)
Short Title: CULTURE OF TEA
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Tea can mean many different things to many people. Students will be exposed to different teas as they develop their own personal ‘culture of tea’.

COLL 184 - THE ART OF TRASH CINEMA (DUNCAN)
Short Title: THE ART OF TRASH CINEMA
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: What is trash cinema? With this course, students will analyze the wide spread fascination with and appreciation for ‘bad movies’ through study of these films’ evolution and diversification over time.

COLL 185 - THE CROSSROADS BETWEEN COGNITIVE NEUROSCIENCE AND THEATRE (BAKER)
Short Title: COG NEUROSCIENCE AND THEATRE
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: How does neuroscience influence theatrical practices, and how do theatrical practices influence and address topics within neuroscience? This course will examine the exciting interplay between these two fields of study.
COLL 187 - AN INTRODUCTION TO THE MODERN GREEK LANGUAGE (MCURTRRY)
Short Title: INTRODUCTION TO MODERN GREEK
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is designed to teach students the fundamentals of speaking, reading, and writing Modern Greek. The course will cover the Greek alphabet, pronunciation, and basic expressions. Further, it will cover useful vocabulary for various situations including family, food, restaurants, shopping, etc. Simple grammatical concepts will also be discussed.

COLL 188 - THE COST OF CONSUMING: HOW OUR CHOICES AFFECT OUR FELLOW HUMANS AND THE ENVIRONMENT (BAKER)
Short Title: THE COST OF CONSUMING
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course provides a basic overview of Hawaiian history and culture. Students will learn to appreciate Hawai'i beyond its superficial beauty by investigating topics such as mythology, western contact, statehood, food, and more.

COLL 189 - ENGINEERING BIOLOGY FOR REAL-WORLD APPLICATIONS (MCURTRRY)
Short Title: ENGINEERING BIOLOGY
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: How can we engineer living organisms to develop solutions to serious environmental, medical, or nutritional challenges? During this course, students will learn how to apply principles of synthetic biology to design biological systems for addressing important real-world problems.
COLL 200 - TEACHING PRACTICUM
Short Title: TEACHING PRACTICUM
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Student instructors gain mastery of their subject of interest by practical application in teaching a course. Students are supervised by the faculty sponsor as approved by the Dean of Undergraduates. Students must have taken COLL 300 in developing the course. Instructor Permission Required. Repeatable for Credit.

COLL 202 - COOKING WITH CHEF ROGER (DUNCAN)
Short Title: COOKING WITH CHEF ROGER
Department: College Courses
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Cooking with Chef Roger teaches the students the fundamentals of cooking and help them to cook healthy delicious meals. The class also gives the students a clear idea about shopping for fresh ingredients and how to host successful parties.

COLL 203 - CYBERCRIME (LOVETT)
Short Title: CYBERCRIME
Department: College Courses
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This class will introduce students to the current issues in cybercrime. It will include topics such as auction fraud, hacking, and identity theft. Students will read and discuss the statutes and cases that govern each area. Each class will have a fact scenario that will be analyzed using Federal and State law.

COLL 205 - PRACTICAL APPROACH TO PERSONAL FINANCE (HANSZEN)
Short Title: PERSONAL FINANCE
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Basic introduction to the framework for making informed personal financial decisions. Prior knowledge of accounting or finance is not required. The course will provide a practical approach to personal finance. Topics will include budgeting, tax issues, banking services, use of credit, housing selection and ownership, investments, insurance, retirement planning and legal documents.

COLL 212 - BLACK MEN WRITING ABOUT THEIR WORLD: DU BOIS, BALDWIN, AND THEIR HEIRS (WIESS)
Short Title: BLACK MEN WRITING
Department: College Courses
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: For Black men, what good are essays? This course explores the writerly activism, historical imagination, and the consequence of some of the best known work of W.E.B. Du Bois, James Baldwin, and several of their 21st century heirs. Taking cues from the subjects of the course, students will also get ample practice using the essay as a way to describe, analyze, and affect the contemporary black male condition. Permission of Instructor required. Instructor Permission Required.

COLL 214 - MASS INCARCERATION AND ITS DISCONTENTS: RACE, REFORM AND THE LAW (WIESS)
Short Title: MASS INCARCERATION
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A course about the origins of mass incarceration in the United States; about the consequences of the present carceral state; and about efforts to address injustices that have proceeded from the nation's relatively recent and nearly insatiable impetus to cage its poor, non-white population.

COLL 217 - BUSINESS WORKSHOP FOR HUMANITIES STUDENTS (BAKER)
Short Title: BUSINESS WRKSHP F HUM STUDENTS
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Companies are looking for candidates with the skills that Humanities students develop at Rice. This workshop provides an overview of how businesses work, which career prospects provide the most opportunity, and how to interview successfully. NOTE: This course has a varied meeting schedule, as outlined in the syllabus.
COLL 218 - TO SERVE: LIVING A LIFE OF PUBLIC AND CIVIC SERVICE (BAKER)
Short Title: PUBLIC AND CIVIC SERVICE
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Young Americans today are drawn to service—just not to public service. When so many people shrink from (or are repelled by) ‘politics’ and ‘politicians’, there has never been a better time to seek and exert leadership at every level. ‘Real Leaders, Real People’ will draw practical lessons from the lives of leaders who overcame obstacles of various kinds.

COLL 219 - BORDER WALL: STATUS AND SYMBOL OF AMERICAN BOUNDARIES (BAKER)
Short Title: BORDER WALL
Department: College Courses
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: President Trump swept to power on a promise to “Build a Wall” and to deport the undocumented, and these promises and their fulfillment have dominated media and political attention for several years. The border is in “crisis,” the United States in a “state of emergency.” Taught by a civil rights lawyer, this course surveys the real and imagined elements of this crisis: patterns of and responses to contemporary migration, border enforcement and the militarization of border communities, the promises and failures of immigration courts and immigrant detention, and the goals, costs and efficacy of a border wall.

COLL 220 - WILLIAM MARSH RICE & SLAVERY (DUNCAN)
Short Title: WILLIAM MARSH RICE & SLAVERY
Department: College Courses
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This seminar will meet every other week and will enable students to engage in original historical research about William Marsh Rice and his world, with a specific focus on slavery and its aftermath in Texas. The research will aid the work of the Task Force on Slavery, Segregation, and Racial Injustice.

COLL 221 - THE BLACK EXPERIENCE AT RICE UNIVERSITY (WIESS)
Short Title: BLACK EXPERIENCE AT RICE
Department: College Courses
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: What does it mean, and what has it meant to be black at Rice? This seminar is focused on documenting and recovering the experience of black staff, students, and faculty at the university. The class is associated with the work of the Task Force on Slavery, Segregation, and Racial Injustice.

COLL 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

COLL 299 - SCIENTIA: LECTURES IN SCIENCE AND CULTURE
Short Title: SCIENTIA SCIENCE & CULTURE
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Annual lecture series, panel discussions and discussion talks on topics bridging science, culture and art. 4 lectures plus 2 discussion talks. Lectures are on specified dates, usually Tuesdays. Discussion talks scheduled at semester beginning. Topics vary year to year. Repeatable for Credit.

COLL 300 - PEDAGOGY FOR STUDENT INSTRUCTORS
Short Title: PEDAGOGY FOR STDTN INSTRUCTORS
Department: College Courses
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: In the first three weeks we will guide each student in the development of a proposal for a Student Taught Course. In the remaining four weeks we will learn and practice techniques of effective instruction.
Course URL: www.caam.rice.edu/~cox/coll300 (http://www.caam.rice.edu/~cox/coll300/)
Communication (COMM)

COMM 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Program Writing Communication
Grade Mode: Standard Letter
Course Type: Independent Study, Internship/Practicum, Laboratory, Lecture, Seminar, Lecture/Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

COMM 239 - A QUESTION OF STYLE, RHETORIC AND POPULAR WRITING
Short Title: RHETORIC AND POPULAR WRITING
Department: Program Writing Communication
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course examines the rhetoric of popular writing in outlets such as National Geographic and Sports Illustrated. Through critical reading and writing workshops, students will acquire a nuanced understanding of available stylistic choices as they build the skills they need to develop their own voice with clarity, confidence, and style.

COMM 300 - COMMUNICATION IN THE DIGITAL AGE
Short Title: COMMUNICATION IN DIGITAL AGE
Department: Program Writing Communication
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Students will develop writing skills by maintaining a blog, generating Webpage content, and using social media. We will also produce video and audio content while remaining aware of how the form the work impacts its content.

COMM 415 - MEDICAL COMMUNICATION
Short Title: MEDICAL COMMUNICATION
Department: Program Writing Communication
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Junior or Senior. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course introduces students to key issues, theories, and debates related to medical communication, while also helping students develop and reflect on their own communication strategies, and skills as future health care professionals. Sophomores and Freshmen who have fulfilled Rice’s First-year Writing-Intensive Seminar requirement for graduation may register by a Special Registration Form. Recommended Prerequisite(s): MATH 101.

Comp. & Applied Mathematics (CAAM)

CAAM 210 - INTRODUCTION TO ENGINEERING COMPUTATION
Short Title: INTRO TO ENG COMPUTATION
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Model, Simulate, and Visualization using MATLAB. Numerical methods: Newton's method in one and several dimensions. Gaussian elimination and optimization. Application to problems in science and engineering. Lectures are held Monday and Wednesdays. In a laboratory component held on Fridays, students work in small groups on computational projects led by a Rice Learning Assistant. Recommended Prerequisite(s): MATH 101.

CAAM 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Laboratory, Seminar
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

CAAM 334 - MATRIX ANALYSIS FOR DATA SCIENCE
Short Title: MATRIX ANALYSIS DATA SCIENCE
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 212 or (MATH 222 and CAAM 210) or COMP 140 or STAT 405
Description: Solution of linear systems and linear least squares problems. Eigenvalue problem and singular value decomposition. Introduction to gradient based methods. Applications to data science. Mutually Exclusive: Cannot register for CAAM 334 if student has credit for CAAM 335.
CAAM 335 - MATRIX ANALYSIS
Short Title: MATRIX ANALYSIS
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Fundamentals of matrix analysis. Topics include eigenvalues, eigenvectors, singular value decomposition, and applications to least squares problems. Recommended Prerequisite(s): (MATH 212 or MATH 222) AND CAAM 210. Mutually Exclusive: Cannot register for CAAM 335 if student has credit for CAAM 334.

CAAM 336 - DIFFERENTIAL EQUATIONS IN SCIENCE AND ENGINEERING
Short Title: DIFF EQUATIONS SCI & ENG
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Classical and numerical solution techniques for ordinary and partial differential equations. Fourier series and the finite element method for initial and boundary value problems arising in diffusion and wave propagation phenomena. Recommended Prerequisite(s): (MATH 212 or MATH 222) AND CAAM 210.

CAAM 337 - INTRODUCTION TO OPTIMIZATION
Short Title: INTRO TO O.R. AND OPTIMIZATION
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Formulation and solution of mathematical models in management, economics, engineering and science applications in which one seeks to minimize or maximize an objective function subject to constraints, including models in linear, nonlinear and integer programming; basic solution methods for these optimization models; problem solving using a modeling language and optimization software. Recommended Prerequisite(s): MATH 212 and (CAAM 335 OR MATH 211 OR MATH 355).

CAAM 338 - THEORETICAL NEUROSCIENCE: FROM CELLS TO LEARNING SYSTEMS
Short Title: THEORETICAL NEUROSCIENCE
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: We present the theoretical foundations of cellular and systems neuroscience from distinctly quantitative point of view. We develop the mathematical and computational tools as they are needed to model, analyze, visualize and interpret a broad range of experimental data. Cross-list: ELEC 488, NEUR 415. Graduate/Undergraduate Equivalency: CAAM 615. Recommended Prerequisite(s): CAAM 210 or MATH 211 or CAAM 335 or MATH 355. Mutually Exclusive: Cannot register for CAAM 415 if student has credit for CAAM 615.

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Short Title: THEORETICAL NEUROSCIENCE
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
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Short Title: THEORETICAL NEUROSCIENCE
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
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Course Level: Undergraduate Upper-Level
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Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
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Short Title: THEORETICAL NEUROSCIENCE
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
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Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
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Department: Computational & Applied Math
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Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
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Course Level: Undergraduate Upper-Level
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CAAM 423 - PARTIAL DIFFERENTIAL EQUATIONS I  
**Short Title:** PARTIAL DIFFERENTIAL EQNS I  
**Department:** Computational & Applied Math  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  

CAAM 435 - DYNAMICAL SYSTEMS  
**Short Title:** DYNAMICAL SYSTEMS  
**Department:** Computational & Applied Math  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Existence and uniqueness for solutions of ordinary differential equations and difference equations, linear systems, nonlinear systems, stability, periodic solutions, bifurcation theory. Theory and theoretical examples are complemented by computational, model driven examples from biological and physical sciences. Cross-list: MATH 435. Recommended Prerequisite(s): (MATH 212 or MATH 221) and (CAAM 335 or MATH 355 or MATH 354) and (MATH 302 or MATH 321 or MATH 331)  
**Course URL:** math.rice.edu (http://math.rice.edu)

CAAM 436 - MODELING MATHEMATICAL PHYSICS  
**Short Title:** MODELING MATHEMATICAL PHYSICS  
**Department:** Computational & Applied Math  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Derivation and properties of solutions of the partial differential equations of continuum physics. Basic concepts of continuum mechanics, ideal fluids, Navier-Stokes equations, linear elasticity, acoustics, basic principles of thermodynamics, Newtonian heat flow, porous flow, Maxwell’s equations, electrical circuits. Graduate/Undergraduate Equivalency: CAAM 535. Recommended Prerequisite(s): CAAM 336. Mutually Exclusive: Cannot register for CAAM 436 if student has credit for CAAM 535.

CAAM 440 - APPLIED MATRIX ANALYSIS  
**Short Title:** APPLIED MATRIX ANALYSIS  
**Department:** Computational & Applied Math  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** A second course in matrix analysis that presents advanced theoretical results alongside motivating applications. Topics include: properties of Hermitian, positive definite, nonnegative and stochastic matrices; Perron-Frobenius Theorem; spectral perturbation theory; singular value inequalities; generalized eigenvalue problems; functions of matrices; Lyapunov, Sylvester, and Riccati matrix equations. Applications include dynamical systems, control theory, and Markov chains.

CAAM 452 - NUMERICAL METHODS FOR PARTIAL DIFFERENTIAL EQUATIONS  
**Short Title:** NUMERICAL METHODS FOR PDES  
**Department:** Computational & Applied Math  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Credit Hours:** 3  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course covers various numerical methods for solving partial differential equations: aspects of finite difference methods, finite element methods, finite volume methods, mixed methods, discontinuous Galerkin methods, and meshless methods. Both theoretical convergence and practical implementation of the methods are studied for elliptic and parabolic problems. Cross-list: CEVE 455. Graduate/Undergraduate Equivalency: CAAM 536. Recommended Prerequisite(s): CAAM 336 Mutually Exclusive: Cannot register for CAAM 452 if student has credit for CAAM 536.

CAAM 453 - NUMERICAL ANALYSIS I  
**Short Title:** NUMERICAL ANALYSIS I  
**Department:** Computational & Applied Math  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** (CAAM 334 or CAAM 335) and CAAM 336  
CAAM 454 - NUMERICAL ANALYSIS II  
Short Title: NUMERICAL ANALYSIS II  
Department: Computational & Applied Math  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Iterative methods for linear systems of equations including Krylov subspace methods; Newton and Newton-like methods for nonlinear systems of equations; Gradient and Newton-like methods for unconstrained optimization and nonlinear least squares problems; techniques for improving the global convergence of these algorithms; linear programming duality and primal-dual interior-point methods.  
Graduate/Undergraduate Equivalency: CAAM 554. Recommended Prerequisite(s): CAAM 453. Mutually Exclusive: Cannot register for CAAM 454 if student has credit for CAAM 554.

CAAM 471 - LINEAR AND INTEGER PROGRAMMING  
Short Title: LINEAR AND INTEGER PROGRAMMING  
Department: Computational & Applied Math  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Linear and integer programming involve formulating and solving fundamental optimization models widely used in practice. This course introduces the basic theory, algorithms, and software of linear and integer programming. Topics studied in the linear programming part include polyhedron concepts, simplex methods, duality, sensitivity analysis and decomposition techniques. Building on linear programming, the second part of this course introduces modeling with integer variables and solution methodologies in integer programming including branch-and-bound and cutting-plane techniques. This course will provide a basis for further studies in convex and combinatorial optimization. Recommended Prerequisite(s): CAAM 335 and CAAM 378 Mutually Exclusive: Cannot register for CAAM 471 if student has credit for CAAM 571.

CAAM 477 - SPECIAL TOPICS  
Short Title: SPECIAL TOPICS  
Department: Computational & Applied Math  
Grade Mode: Standard Letter  
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory  
Credit Hours: 1-4  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

CAAM 480 - PEDAGOGY FOR CAAM 210 RICE LEARNING ASSISTANTS  
Short Title: PEDAGOGY FOR RLA's  
Department: Computational & Applied Math  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 2  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This course is designed to support Rice Learning Assistants (RLAs) as they instruct their own lab sections of CAAM 210. Topics include analysis of computational science and engineering concepts, issues of problem-based learning (PBL), theories of learning, and fundamental teaching skills. Required for CAAM 210 RLAs. Instructor Permission Required. Repeatable for Credit.

CAAM 490 - UNDERGRAD RESEARCH PROJECTS  
Short Title: UNDERGRAD RESEARCH PROJECTS  
Department: Computational & Applied Math  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Research  
Credit Hours: 1-6  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Semester-long undergraduate-level research on a topic in Computational and Applied Mathematics. Instructor Permission Required. Repeatable for Credit.

CAAM 491 - UNDERGRAD RESEARCH PROJECTS  
Short Title: UNDERGRAD RESEARCH PROJECTS  
Department: Computational & Applied Math  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Research  
Credit Hours: 1-6  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Semester-long undergraduate-level research on a topic in Computational and Applied Mathematics. Instructor Permission Required. Repeatable for Credit.

CAAM 495 - SENIOR DESIGN PROJECT I  
Short Title: SENIOR DESIGN PROJECT I  
Department: Computational & Applied Math  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 2  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Students engage in team-oriented year-long design projects that utilize modeling, analysis, and scientific computing skills to solve a problem motivated by an application in engineering or the physical, biological, or social sciences. Participants attend regular seminars addressing research techniques and effective written and verbal presentation of mathematics.
CAAM 496 - SENIOR DESIGN PROJECT II  
Short Title: SENIOR DESIGN PROJECT II  
Department: Computational & Applied Math  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 2  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): CAAM 495  
Description: Continuation of CAAM 495. Seminars focus on the presentation of results from design groups and provide guidance on the composition of a substantial project report.  

CAAM 498 - RESEARCH THEMES IN THE MATHEMATICAL SCIENCES  
Short Title: RESEARCH THEMES IN MATH. SCI.  
Department: Computational & Applied Math  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 1-3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: A seminar course that will cover a selected theme of general research in the mathematical sciences from the perspectives of mathematics, computational and applied mathematics and statistics. The course may be repeated multiple times for credit. Cross-list: MATH 498, STAT 498. Graduate/Undergraduate Equivalency: CAAM 698. Mutually Exclusive: Cannot register for CAAM 498 if student has credit for CAAM 698. Repeatable for Credit.

CAAM 499 - COMPUTATIONAL AND APPLIED MATHEMATICS SEMINAR  
Short Title: COMP & APPLIED MATH SEMINAR  
Department: Computational & Applied Math  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 1-6  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This course prepares a student for research in the mathematical sciences on a specific topic. Each section is dedicated to a different topic. Current topics include eigenvalues, model reduction, combinatorial optimization, optimization algorithms, scientific computing, and numerical analysis. The topics may vary each semester. Graduate/Undergraduate Equivalency: CAAM 699. Mutually Exclusive: Cannot register for CAAM 499 if student has credit for CAAM 699. Repeatable for Credit.

CAAM 501 - ANALYSIS I  
Short Title: ANALYSIS I  
Department: Computational & Applied Math  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Real numbers, completeness, sequences and convergence, compactness, continuity, the derivative, the Riemann integral, fundamental theorem of calculus. Vector spaces, dimension, linear maps, inner products and norms, derivatives in R^n, inverse function theorem, implicit function theorem, multiple integration, change of variable theorem. Instructor Permission Required. Recommended Prerequisite(s): CAAM 501 Mutually Exclusive: Cannot register for CAAM 501 if student has credit for CAAM 401.

CAAM 502 - ANALYSIS II  
Short Title: ANALYSIS II  
Department: Computational & Applied Math  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Vector spaces of functions, sequences and series, convergence. Continuity and differentiability of functions of several variables, the derivative as a linear map, the contraction mapping principle, fundamental theorems on differential equations, multivariable integration, Stoke's theorem and relatives. Instructor Permission Required. Recommended Prerequisite(s): CAAM 501. Mutually Exclusive: Cannot register for CAAM 502 if student has credit for CAAM 402.

CAAM 508 - NONLINEAR SYSTEMS: ANALYSIS AND CONTROL  
Short Title: NONLINEAR SYSTEMS  
Department: Computational & Applied Math  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
| Course Code | Course Title | Description | Course Type | Department | Grade Mode | Credit Hours | Course Level | Restrictions | Credit Hours | Grade Mode | Restrictions |
|-------------|--------------|-------------|-------------|------------|------------|--------------|---------------|--------------|--------------|-------------|-------------|---------------|
| CAAM 519    | COMPUTATIONAL SCIENCE I | Scientific programming using high level languages, including C, Fortran, and C++. Emphasis on use of numerical libraries. Basic techniques of project planning, source management, documentation, program construction, i/o, visualization. Object-oriented design for numerical computing. Recommended Prerequisite(s): (CAAM 210 and CAAM 335) or CAAM 453. Mutually Exclusive: Cannot register for CAAM 519 if student has credit for CAAM 420. | Graduate | Computational & Applied Math | Standard Letter | 3 | Graduate | Enrollment is limited to Graduate level students. | 3 | Graduate | Enrollment is limited to Graduate level students. |
| CAAM 520    | COMPUTATIONAL SCIENCE II | Theory and application of the message passing interface for programming scientific computing applications. Introduction to the architecture and programming of multicore and massively parallel processors, including general purpose graphics processing units, Insight for designing efficient numerical algorithms to improve parallelization of memory access and utilization of non-uniform memory architectures. Application interfaces include OpenMP, MPI, CUDA, OpenCL, and parallel numerical algorithm libraries. Instructor Permission Required. Recommended Prerequisite(s): CAAM 519 | Graduate | Computational & Applied Math | Standard Letter | 3 | Graduate | Enrollment is limited to Graduate level students. | 3 | Graduate | Enrollment is limited to Graduate level students. |
| CAAM 523    | PARTIAL DIFFERENTIAL EQUATIONS I | First order of partial differential equations. The method of characteristics. Analysis of the solutions of the wave equation, heat equation and Laplace's equation. Integral relations and Green's functions. Potential theory, Dirichlet and Neumann problems. Asymptotic methods: the method of stationary phase, geometrical optics, regular and singular perturbation methods. Additional course work is required beyond the undergraduate course requirements. Cross-list: MATH 513. Graduate/Undergraduate Equivalency: CAAM 423. Recommended Prerequisite(s): MATH 321 AND MATH 322 Mutually Exclusive: Cannot register for CAAM 523 if student has credit for CAAM 423. | Graduate | Computational & Applied Math | Standard Letter | 3 | Graduate | Enrollment is limited to Graduate level students. | 3 | Graduate | Enrollment is limited to Graduate level students. |
| CAAM 535    | MODELING MATHEMATICAL PHYSICS | Introduction to computational principles of modeling mathematical physics. This course covers various numerical methods for solving partial differential equations: aspects of finite difference methods, finite element methods, finite volume methods, mixed methods, discontinuous Galerkin methods, and meshless methods. Both theoretical convergence and practical implementation of the methods are studied for elliptic and parabolic problems. May receive credit for only one of the following courses: CAAM 452/CEVE 455/CAAM 536/CEVE 555. Cross-list: CEVE 555. Graduate/Undergraduate Equivalency: CAAM 452. Recommended Prerequisite(s): CAAM 336 Mutually Exclusive: Cannot register for CAAM 536 if student has credit for CAAM 452. | Graduate | Computational & Applied Math | Standard Letter | 3 | Graduate | Enrollment is limited to Graduate level students. | 3 | Graduate | Enrollment is limited to Graduate level students. |
| CAAM 540    | APPLIED FUNCTIONAL ANALYSIS | This course covers various numerical methods for solving partial differential equations: aspects of finite difference methods, finite element methods, finite volume methods, mixed methods, discontinuous Galerkin methods, and meshless methods. Both theoretical convergence and practical implementation of the methods are studied for elliptic and parabolic problems. May receive credit for only one of the following courses: CAAM 452/CEVE 455/CAAM 536/CEVE 555. Cross-list: CEVE 555. Graduate/Undergraduate Equivalency: CAAM 452. Recommended Prerequisite(s): CAAM 336 Mutually Exclusive: Cannot register for CAAM 536 if student has credit for CAAM 452. | Graduate | Computational & Applied Math | Standard Letter | 3 | Graduate | Enrollment is limited to Graduate level students. | 3 | Graduate | Enrollment is limited to Graduate level students. |
CAAM 542 - DISCONTINUOUS GALERKIN METHODS FOR SOLVING ENGINEERING PROBLEMS  
Short Title: DISCONTINUOUS GALERKIN METHODS  
Department: Computational & Applied Math  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: The course will present the theory and implementation of discontinuous Galerkin methods for partial differential equations common in engineering applications. Two main classes of problems are covered: steady-state and time-dependent elliptic/parabolic and hyperbolic equations. These include (but are not limited to) the Poisson and heat equations, linear wave equations, and nonlinear conservation laws. Recommended Prerequisite(s): CAAM 453 or CAAM 553

CAAM 550 - NUMERICAL ANALYSIS I  
Short Title: NUMERICAL ANALYSIS I  
Department: Computational & Applied Math  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Mutually Exclusive: Cannot register for CAAM 550 if student has credit for CAAM 453.

CAAM 551 - NUMERICAL LINEAR ALGEBRA  
Short Title: NUMERICAL LINEAR ALGEBRA  
Department: Computational & Applied Math  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): CAAM 453 or CAAM 553 or CAAM 550  
Description: Direct methods for large, sparse linear systems; regularization of ill-conditioned least squares problems; backward error analysis of basic algorithms for linear equations and least squares, sensitivity and conditioning of linear systems and least square problems; condition estimation. Preconditioned iterative methods for linear systems (CG, GMRES, BiCGstab, QMR); multigrid methods. Matrix theory including spectral decompositions, Schur form, eigenvalue perturbation theory, and the geometry of subspaces. Eigenvalue algorithms, Sylvester and Lyapunov equations, the implicitly shifted QR algorithm, computation of the SVD, generalized eigenvalue problems. Introduction to large scale eigenvalue algorithms. Proficiency in MATLAB and acquaintance with one or more of C, F77, C++, F90 is required.

CAAM 552 - FOUNDATIONS OF FINITE ELEMENT METHODS  
Short Title: FINITE ELEMENT METHODS  
Department: Computational & Applied Math  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course addresses the theory and implementation of finite element methods. Topics include weak solutions of partial differential equations, Sobolev spaces, approximation theory, convergence and reliability of the numerical methods. Continuous and discontinuous finite element methods are considered.

CAAM 553 - ADVANCED NUMERICAL ANALYSIS I  
Short Title: ADV NUMERICAL ANALYSIS I  
Department: Computational & Applied Math  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): CAAM 401 (may be taken concurrently) or CAAM 501 (may be taken concurrently)  
Description: Construction and analysis of numerical algorithms for root finding, interpolation and approximation of functions, quadrature, and the solution of differential equations; fundamentals of computer arithmetic; solution of linear systems, least squares problems, and eigenvalue problems via matrix factorizations; the singular value decomposition (SVD) and basic sensitivity analysis. Computer programming in MATLAB is required. This course covers fewer topics than CAAM 453 with greater theoretical depth. Prerequisite CAAM 501 may be taken concurrently with CAAM 553. Instructor Permission Required.

CAAM 554 - NUMERICAL ANALYSIS II  
Short Title: NUMERICAL ANALYSIS II  
Department: Computational & Applied Math  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): CAAM 454. Recommended Prerequisite(s): CAAM 550 or CAAM 553  
Description: This course covers the same lecture material as CAAM 454, but fosters greater theoretical sophistication through more challenging problem sets and exams. Graduate/Undergraduate Equivalency: CAAM 454. Recommended Prerequisite(s): CAAM 550 or CAAM 553.  
Mutually Exclusive: Cannot register for CAAM 554 if student has credit for CAAM 454.
CAAM 558 - INTRO TO PARTIAL DIFFERENTIAL EQUATION BASED SIMULATION AND OPTIMIZATION
Short Title: PDE SIMULATION AND OPTIM
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): CAAM 501 and CAAM 553
Description: Introduction to the theory and numerical methods for the solution of elliptic partial differential equations (PDEs) and optimization problems governed by these PDEs. Topics include functional analysis, well-posedness of elliptic problems, optimality conditions for PDE constrained optimization problems and finite element discretizations. Recommended Prerequisite(s): CAAM 554

CAAM 560 - OPTIMIZATION THEORY
Short Title: OPTIMIZATION THEORY
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Derivation and application of necessity conditions and sufficiency conditions for constrained optimization problems.

CAAM 564 - NUMERICAL OPTIMIZATION
Short Title: NUMERICAL OPTIMIZATION
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Numerical algorithms for constrained optimization problems in engineering and sciences, including simplex and interior-point methods for linear programming, penalty, barrier, augmented Lagrangian and SQP methods for nonlinear programming. Recommended Prerequisite(s): CAAM 560 (may be taken concurrently) and CAAM 454.

CAAM 565 - CONVEX OPTIMIZATION
Short Title: CONVEX OPTIMIZATION
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Convex optimization problems arise in communication, system theory, VLSI, CAD, finance, inventory, network optimization, computer vision, learning, statistics, etc., even though oftentimes convexity may be hidden and unrecognized. Recent advances in interior-point methodology have made it much easier to solve these problems and various solvers are now available. This course will introduce the basic theory and algorithms for convex optimization, as well as its many applications to computer science, engineering, management science and statistics. Biennial; Offered in Odd Years. Recommended Prerequisite(s): CAAM 335 and MATH 321.

CAAM 557 - SIGNAL RECOVERY: THEORY AND SIMULATION
Short Title: SIGNAL RECOVERY
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course introduces the theory and numerical algorithms for several fundamental signal recovery tasks. Topics include L1 minimization, sparse regression, compressed sensing, orthogonal matching pursuit, proximal operators, ADMM algorithms, Iterative Reweighted Least Squares. Nuclear norm minimization, matrix completion, robust Principal Component Analysis. Recommended Prerequisite(s): CAAM 378 or MATH 302 or STAT 310.

CAAM 570 - GRAPH THEORY
Short Title: GRAPH THEORY
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of the structure and properties of graphs, together with a variety of applications. Includes paths, cycles, trees, connectivity, matchings, colorings, planarity, directed graphs, and algorithms. Some knowledge of linear algebra is recommended. Mutually Exclusive: Cannot register for CAAM 570 if student has credit for CAAM 470.

CAAM 571 - LINEAR AND INTEGER PROGRAMMING
Short Title: LINEAR AND INTEGER PROGRAMMING
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers the same lecture material as CAAM 471, but fosters greater theoretical sophistication through more challenging problem sets and exams. Mutually Exclusive: Cannot register for CAAM 571 if student has credit for CAAM 471.

CAAM 574 - COMBINATORIAL OPTIMIZATION
Short Title: COMBINATORIAL OPTIMIZATION
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: General theory and approaches for solving combinatorial optimization problems are studied. Specific topics include basic polyhedral theory, minimum spanning trees, shortest paths, network flow, matching and matroids. The course also covers the traveling salesman problem. A student may not receive credit for both CAAM 474 and CAAM 574. Mutually Exclusive: Cannot register for CAAM 574 if student has credit for CAAM 474.
CAAM 581 - MATHEMATICAL PROBABILITY I
Short Title: MATHEMATICAL PROBABILITY I
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

CAAM 583 - INTRODUCTION TO RANDOM PROCESSES AND APPLICATIONS
Short Title: INTRO RANDOM PROCESSES & APPL
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Review of basic probability; Sequences of random variables; Random vectors and estimation; Basic concepts of random processes; Random processes in linear systems, expansions of random processes; Wiener filtering; Spectral representation of random processes, and white-noise integrals. Cross-list: ELEC 533, STAT 583.

CAAM 585 - STOCHASTIC OPTIMIZATION
Short Title: STOCHASTIC OPTIMIZATION
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Corequisite: CAAM 571
Description: Stochastic optimization models arise in many contexts. This course focuses on stochastic programs, including stochastic integer programs and multi-stage stochastic programs. It will emphasize the interplay between theory and computational approaches.

CAAM 589 - INDEPENDENT STUDY
Short Title: GRADUATE RESEARCH PROJECTS
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Semester-long graduate-level research on a topic in Computational and Applied Mathematics. Instructor Permission Required. Repeatable for Credit.

CAAM 591 - GRADUATE RESEARCH PROJECTS
Short Title: GRADUATE RESEARCH PROJECTS
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Semester-long graduate-level research on a topic in Computational and Applied Mathematics. Instructor Permission Required. Repeatable for Credit.

CAAM 600 - THESIS WRITING
Short Title: THESIS WRITING
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Assists the student in preparation of the CAAM MA/PhD thesis and in other writing projects. Structure of a scientific paper, effective approaches to technical writing, building literature review, results, and discussion sections, how to write a good abstract, oral presentation skills. Prerequisite: Advisor approval of topic and consent of the instructor(s). Instructor Permission Required. Repeatable for Credit.

CAAM 615 - THEORETICAL NEUROSCIENCE: FROM CELLS TO LEARNING SYSTEMS
Short Title: THEORETICAL NEUROSCIENCE
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: We present the theoretical foundations of cellular and systems neuroscience from distinctly quantitative point of view. We develop the mathematical and computational tools as they are needed to model, analyze, visualize and interpret a broad range of experimental data. Additional course work required beyond the undergraduate course requirements. Cross-list: ELEC 588, NEUR 615. Graduate/Undergraduate Equivalency: CAAM 415. Mutually Exclusive: Cannot register for CAAM 615 if student has credit for CAAM 415.

CAAM 620 - TOPICS IN COMPUTATIONAL SCIENCE
Short Title: TOPICS IN COMPUTATIONAL SCIENCE
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Content varies from year to year. Instructor Permission Required. Repeatable for Credit.

CAAM 640 - OPTIMIZATION WITH SIMULATION CONSTRAINTS
Short Title: OPTIMIZATION W/SIM CONSTRAINTS
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Content varies from year to year. Recommended Prerequisite(s): CAAM 564. Repeatable for Credit.

2019-2020 General Announcements
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CAAM 641 - TOPICS IN INVERSE PROBLEMS
Short Title: TOPICS IN INVERSE PROBLEMS
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Theoretical, computational and practical issues for inverse problems in science and engineering. Selected topics will vary depending on instructor and student interests. Instructor Permission Required. Repeatable for Credit.

CAAM 642 - TOPICS IN SEISMIC IMAGING
Short Title: TOPICS IN SEISMIC IMAGING
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Content varies from year to year. Instructor Permission Required. Repeatable for Credit.

CAAM 643 - TOPICS IN GEOMATHEMATICS
Short Title: TOPICS IN GEOMATHEMATICS
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Content varies from year to year. Instructor Permission Required. Cross-list: ESCI 643. Recommended Prerequisite(s): CAAM 335 and CAAM 336 Repeatable for Credit.

CAAM 651 - TOPICS IN NUMERICAL LINEAR ALGEBRA
Short Title: TOPICS IN NUM LINEAR ALGEBRA
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Selected topics will vary depending on instructor and student interests. Derivation and analysis of Krylov and subspace iteration methods for large eigenvalue problems (Lanczos, Arnoldi, Jacobi-Davidson algorithms); preconditioning for linear systems and eigenvalue problems (incomplete LU, domain decomposition, multigrid); convergence analysis including potential theory and pseudospectra. Applications: regularization of discrete inverse problems; dimension reduction for large dynamical control systems; effects on non-normality on behavior of dynamical systems and iterative processes. Recommended Prerequisite(s): CAAM 551. Repeatable for Credit.

CAAM 652 - TOPICS IN NUMERICAL DIFFERENTIAL EQUATIONS
Short Title: TOPICS IN NUM DIFF EQNS
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Content varies from year to year. Instructor Permission Required. Repeatable for Credit.
COMP 100 - INTRODUCTION TO COMPUTING AND INFORMATION SYSTEMS
Short Title: INTRO COMPUTING & INFO SYS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An introduction to organizing, analyzing, and presenting information using databases and spreadsheets. No programming involved, and no computing background expected.
Course URL: www.clear.rice.edu/comp100/ (http://www.clear.rice.edu/comp100/)

COMP 105 - AP/OTH CREDIT COMPUTER SCIENCE
Short Title: AP/OTH CREDIT COMPUTER SCIENCE
Department: Computer Science
Grade Mode: Transfer Courses
Course Type: Transfer
Credit Hours: 3
Course Level: Undergraduate Lower-Level
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation.
Course URL: www.clear.rice.edu/comp105/ (http://www.clear.rice.edu/comp105/)

COMP 130 - ELEMENTS OF ALGORITHMS AND COMPUTATION
Short Title: ELEMENTS OF ALGORITHMS & COMP
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An introduction to computational problem solving designed to give an overview of computer science using real-world problems across a broad range of disciplines. Students learn how to think about these problems and how to structure effective solutions to them using computation. No programming knowledge is required or expected; students learn how to implement their solutions in Python. If you register for fully online section, you must have a webcam and you must take the exams in person.
Course URL: www.clear.rice.edu/comp130 (http://www.clear.rice.edu/comp130/)

COMP 140 - COMPUTATIONAL THINKING
Short Title: COMPUTATIONAL THINKING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An introduction to computational problem solving designed to give an overview of computer science using real-world problems across a broad range of disciplines. Students learn how to think about these problems and how to structure effective solutions to them using computation. No programming knowledge is required or expected; students learn how to implement their solutions in Python. If you register for fully online section, you must have a webcam and you must take the exams in person.
Course URL: www.clear.rice.edu/comp140 (http://www.clear.rice.edu/comp140/)

COMP 160 - INTRODUCTION TO GAME PROGRAMMING IN PYTHON
Short Title: INTRO TO GAME PROG IN PYTHON
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 4
Restrictions: Students with a class of Junior or Senior may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course covers the basics of Python Programming with a focus on building simple games in a web-based environment. The class includes an introduction to event-driven programming and trains the students in the specifics of a Python GUI system designed to support creating to support creating applications that run in a web browser. This course is limited to first-year students only. Continuing Students may register with an approved Special Registration Form. Recommended Prerequisite(s): Java Experience.
Course URL: www.clear.rice.edu/comp160/ (http://www.clear.rice.edu/comp160/)
COMP 162 - INTRODUCTION TO GAME CONTENT CREATION

Short Title: INTRO TO GAME CONTENT CREATION

Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Explore how modern game content is created, and how it interacts with the underlying technology. Beginning with an explanation of how games are developed and what role content plays in the process, the class will learn to use 3D Studio Max, Photoshop, and game-native scripting as they create working content for an established game project.
Course URL: www.owlnet.rice.edu/~comp162

COMP 180 - PRINCIPLES OF COMPUTING

Short Title: PRINCIPLES OF COMPUTING

Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): COMP 130 or COMP 140 or COMP 160
Description: This class is designed for non-majors interested in a broader understanding of Computer Science and focuses on intermediate-level programming in Python as well as the basics of discrete math. The class concludes with an introduction to the process of Algorithmic Thinking. Note that COMP 180 cannot be substituted for COMP 182 as a pre-requisite for upper level CS classes. Instructor Permission Required.

COMP 182 - ALGORITHMIC THINKING

Short Title: ALGORITHMIC THINKING

Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): COMP 130 or COMP 140 or COMP 160
Description: Algorithms are the engines of a great majority of systems, natural and artificial alike. This course introduces algorithmic thinking as a discipline for reasoning about systems, taming their complexities, and elucidating their properties. Algorithmic techniques, along with their correctness and efficiency, will be taught through reasoning about systems of interactions, such as markets, that are ubiquitous in our highly connected world.

COMP 200 - ELEMENTS OF COMPUTER SCIENCE

Short Title: ELEMENTS OF COMPUTER SCIENCE

Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Broad introduction to major topics in computer science. Includes algorithms, mathematical models of computation, machine organization and design, programming languages, communication, and artificial intelligence. This course is intended for majors outside of Science and Engineering.
Course URL: www.clear.rice.edu/comp200/
COMP 290 - COMPUTER SCIENCE PROJECTS
Short Title: COMPUTER SCIENCE PROJECTS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Theoretical and experimental investigations under staff direction. Credit cannot be received for both COMP 290 and COMP 390. Instructor Permission Required. Equivalency: COMP 390. Mutually Exclusive: Cannot register for COMP 290 if student has credit for COMP 390. Repeatable for Credit.

COMP 300 - SOCIETY IN THE INFORMATION AGE
Short Title: SOCIETY IN THE INFORMATION AGE
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: We will review the remarkable technology of the Information Age and examine its effects on the ways in which we live, work and think about the world around us. We will consider, for example, how the pervasive use of computers and networks is changing our ideas about property, privacy, authority, social relations, knowledge and identity. And we will discuss what further changes we might see as technology continues to advance.

COMP 301 - ETHICS AND ACCOUNTABILITY IN COMPUTER SCIENCE
Short Title: ETHICS & ACCOUNTABILITY IN CS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Given their growing power in the twenty-first century, computer scientists have duties both to society and their own profession to wield that power wisely and responsibly. In this discussion-and reflection-oriented course students will apply fundamentals of moral philosophy and social responsibility to current issues in computer science.

COMP 310 - ADVANCED OBJECT-ORIENTED PROGRAMMING AND DESIGN
Short Title: ADV OBJECT-ORIENTED PROG
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 211 or COMP 215
Description: Discover how state-of-the-art object-oriented programming and design techniques can create globe-spanning software systems that are both flexible and scalable. Learn how software design patterns are used in multiple programming paradigms. Explore highly decoupled systems with dynamically configurable behaviors. Highly recommended for anyone interested in building large systems and software engineering. Mutually Exclusive: Cannot register for COMP 310 if student has credit for COMP 504.
Course URL: www.clear.rice.edu/comp310 (http://www.clear.rice.edu/comp310/)

COMP 311 - FUNCTIONAL PROGRAMMING
Short Title: FUNCTIONAL PROGRAMMING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 211 or COMP 215
Description: An introduction to concepts, principles, and approaches of functional programming. Functional programming is a style of programming where the key means of computation is the application of functions to arguments (which themselves might be functions). This style of programming has become increasingly popular in recent years because it offers important advantages in designing, maintaining, and reasoning about programs in many modern contexts such as web services, multicore programming, and cluster computing. Course work consists of a series of programming assignments in the Scala programming language and various library extensions such as Apache Spark. Graduate/Undergraduate Equivalency: COMP 544. Mutually Exclusive: Cannot register for COMP 311 if student has credit for COMP 544.
Course URL: wiki.rice.edu/confluence/display/PARPROG/COMP311 (http://wiki.rice.edu/confluence/display/PARPROG/COMP311/)
COMP 316 - VIRTUAL RECONSTRUCTION OF HISTORICAL CITIES
Short Title: VIRTl RECONSTR HISTORCL CITIES
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course, part of the HRC's Digital Humanities Initiative, is devoted to the virtual reconstruction of ancient urban landscapes with focus on individual buildings in their urban settings. All course activities will be based around interdisciplinary student teams who will work together through the semesters to complete a virtual reconstruction project. Instructor Permission Required. Cross-list: ANTH 346, ARCH 310, HART 316.

COMP 321 - INTRODUCTION TO COMPUTER SYSTEMS
Short Title: INTRO TO COMPUTER SYSTEMS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 220 and (COMP 211 or COMP 215)
Description: This course introduces computer systems from the programmer’s perspective. Topics include data representation, the compilation process, and system-level programming concepts such as interrupts and concurrency. Formerly COMP 221. Mutually Exclusive: Cannot register for COMP 321 if student has credit for COMP 221.

COMP 322 - PRINCIPLES OF PARALLEL PROGRAMMING
Short Title: FUNDAMENTALS OF PARALLEL PROG
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 211 or COMP 215
Description: Fundamentals of parallel programming: abstract models of parallel computers, parallel algorithms and data structures, and common parallel programming patterns including task parallelism, undirected and directed synchronization, data parallelism, divide-and-conquer parallelism, and map-reduce. Laboratory assignments will explore these topics through the use of parallel extensions to the Java language. Cross-list: ELEC 323.

COMP 323 - INTRODUCTION TO MATHEMATICAL CRYPTOGRAPHY
Short Title: INTRO TO MATH. CRYPTOGRAPHY
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 182 or COMP 448 or MATH 448 or MATH 365
Description: The course introduces students to modern cryptographic techniques, focusing mainly on mathematical tools. The course covers topics such as Diffie-Hellman key exchange, the ElGamal public key crypto system, integer factorization and RSA, and elliptic curves and lattices in cryptography.

COMP 326 - DIGITAL LOGIC DESIGN
Short Title: DIGITAL LOGIC DESIGN
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 220
Description: Study of gates, flip-flops, combinational and sequential switching circuits, registers, logical and arithmetic operations, introduction to the Verilog hardware description language. Cross-list: ELEC 326.

COMP 327 - INTRODUCTION TO COMPUTER SECURITY
Short Title: INTRO TO COMPUTER SECURITY
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 310 or COMP 314 or ELEC 322
Description: This elective course covers a wide variety of topics in computer security, including hands-on experience with breaking software and engineering software to be harder to break. For example, students will perform buffer overflow attacks and exploit web application vulnerabilities, while also learning how to defend against them. Grades will be based on a series of in-class projects. Graduate/Undergraduate Equivalency: COMP 427, COMP 541. Mutually Exclusive: Cannot register for COMP 327 if student has credit for COMP 427/COMP 541.
COMP 330 - TOOLS AND MODELS FOR DATA SCIENCE
Short Title: TOOLS & MODELS - DATA SCIENCE
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (MATH 211 or MATH 221) and COMP 215
Description: This course is an introduction to modern data science. Data science is the study of how to extract actionable, non-trivial knowledge from data. The proposed course will focus both on the software tools used by practitioners of modern data science, as well as the mathematical and statistical models that are employed in conjunction with such software tools. On the tools side, we will cover the basics of relational database systems, as well as modern systems for distributed computing based on MapReduce. On the models side, the course will cover standard supervised and unsupervised models for data analysis and pattern discovery. Graduate/Undergraduate Equivalency: COMP 543. Mutually Exclusive: Cannot register for COMP 330 if student has credit for COMP 543.

COMP 340 - STATISTICAL MODELS AND ALGORITHMS FOR DATA SCIENCE
Short Title: STATISTICAL MODELS FOR DS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 140 and (MATH 212 or MATH 222)
Description: The course is an intermediate level course in data science for students at the sophomore level with some experience in programming and background in mathematics (calculus). The course teaches students to “do” data science in Python using six modules to illustrate fundamental data science operations, data cleaning, model exploration, model formulation, model visualization, model communication. Recommended Prerequisite(s): COMP 182.

COMP 347 - COMPUTATIONAL GENOMICS FOR MICROBIAL FORENSICS
Short Title: COMP MICROBIAL FORENSICS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 182 and (STAT 310 or ECON 307 or STAT 315 or DSCI 301)
Description: We will review, critique, and discuss computational methods and approaches for microbial forensics and infectious disease monitoring in the genomics era. The seminar will be divided into topic-specific sessions, focusing on emerging research trends and open challenges in the field. Graduate/Undergraduate Equivalency: COMP 547. Mutually Exclusive: Cannot register for COMP 347 if student has credit for COMP 547.

COMP 360 - COMPUTER GRAPHICS
Short Title: COMPUTER GRAPHICS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (COMP 221 or COMP 321) and (COMP 182 or COMP 280) and (MATH 211 or MATH 212 or MATH 221 or MATH 222) and (MATH 354 or MATH 355)
Description: 2D graphics techniques including fast line and curve drawing and polygon filling. 3D graphics problems including representation of solids, shading, and hidden surface elimination. Fractals, graphics standards. Graduate/Undergraduate Equivalency: COMP 560. Mutually Exclusive: Cannot register for COMP 360 if student has credit for COMP 560.
Course URL: www.owlnet.rice.edu/~comp360/ (http://www.owlnet.rice.edu/~comp360/)

COMP 361 - GEOMETRIC MODELING
Short Title: GEOMETRIC MODELING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (MATH 101 or MATH 105) and (MATH 102 or MATH 106) and COMP 182 and COMP 215
Description: Exploration of curves and surfaces (e.g. parametric form, implicit form, and conversion between forms), the representation of solid (e.g., wireframes, octrees, boundary representations, and constructive solid geometry), and applications (e.g., graphics, motion planning, simulation, and finite element mesh generation. Graduate/Undergraduate Equivalency: COMP 561. Repeatable for Credit.

COMP 370 - EVOLUTIONARY BIOINFORMATICS
Short Title: EVOLUTIONARY BIOINFORMATICS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Large accessible data sets have opened new frontiers in evolutionary biology, and many fields. Learn to write computer programs to test hypotheses and discover patterns in diverse data. Understand the most common strategies in evolutionary bioinformatics, including dynamic programming, hidden Markov models, and graphical algorithms. No previous programming experience required. Cross-list: EBIO 333. Recommended Prerequisite(s): MATH 101 and MATH 102.
COMP 380 - PRACTICAL PROBLEM-SOLVING
Short Title: PRACTICAL PROBLEM-SOLVING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 182
Description: We introduce algorithms, algorithmic techniques, and some discrete math with a decidedly practical bent. This will improve anyone's programming skills, but with specific application towards programming contests and programming-oriented job interviews. This also provides optional additional preparation for COMP 380. Features both individual and small-group exercises in a hands-on class.

COMP 382 - REASONING ABOUT ALGORITHMS
Short Title: REASONING ABOUT ALGORITHMS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 182
Description: Writing algorithms is fun, but how are you sure that the algorithm you wrote is flawless? Are there computing tasks for which it is impossible to produce an efficient algorithm, or, for that matter, any algorithm? To answer these questions, you have to learn to perform mathematical reasoning about algorithmic problems and solutions. COMP 382 is an introduction to such reasoning techniques. Topics covered would include elementary logic, analysis of the correctness and efficiency of algorithms, and formal computational models like finite automata and Turing machines. On the way, you are also going to learn some new algorithm design techniques.

COMP 390 - COMPUTER SCIENCE PROJECTS
Short Title: COMPUTER SCIENCE PROJECTS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Theoretical and experimental investigations under staff direction. Credit cannot be received for both COMP 290 and COMP 390. Instructor Permission Required. Equivalency: COMP 290. Mutually Exclusive: Cannot register for COMP 390 if student has credit for COMP 290. Repeatable for Credit.

COMP 402 - PRODUCTION PROGRAMMING
Short Title: PRODUCTION PROGRAMMING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 310 or COMP 411 or COMP 510 or COMP 511
Description: This course focuses on the principles and practices of test-driven software development, which have been popularized under the banner of 'Extreme Programming.' To provide students with practical experience, the course engages students in the development of open source production programs written in JAVA or C#. The DRJAVA programming courses was developed by students in this course. Some of the major topics covered in course lectures include design patterns for controlling concurrency and refactoring transformations to improve legacy code. Graduate/Undergraduate Equivalency: COMP 501. Mutually Exclusive: Cannot register for COMP 402 if student has credit for COMP 501.

COMP 403 - REASONING AND SOFTWARE
Short Title: REASONING AND SOFTWARE
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (COMP 382 and COMP 215) or COMP 482 or COMP 409 or COMP 509
Description: Our reliance on software of all forms is increasing by the day. As a result, it is more important than ever to ensure that programs function correctly and cannot be exploited by hostile adversaries. The field of formal methods takes on this challenge, developing algorithms and programming methodologies that can be used to formally reason about what happens when software executes on arbitrary inputs, often without actually executing the program. Such reasoning can be used, for example, to identify subtle bugs and vulnerabilities in programs, or to give mathematical proofs of program correctness. This is a hands-on introduction to the field of formal methods. In this class, you will learn the theoretical foundations of these systems; you will also implement a series of systems that can be used to reason about the correctness of C programs. Graduate/Undergraduate Equivalency: COMP 503. Mutually Exclusive: Cannot register for COMP 403 if student has credit for COMP 503.
COMP 405 - ADVANCED TOPICS IN OBJECT-ORIENTED DESIGN
Short Title: ADV TOP OBJECT/ORIENTED DESIGN
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 310
Description: A topics-driven exploration of cutting-edge object oriented design issues and concepts including mutable recursive data frameworks, design patterns for sorting, parsing and games, service-oriented architectures and cloud computing. Detailed knowledge and practice in abstract structure and behavioral representations, delegation model programming, design patterns and Java are required. Graduate/Undergraduate Equivalency: COMP 505. Mutually Exclusive: Cannot register for COMP 405 if student has credit for COMP 505.

COMP 408 - VERIFIED PROGRAMMING
Short Title: VERIFIED PROGRAMMING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The course will explore the mathematical underpinnings of reliable software. The students will learn how to use proof assistants to construct software along with a machine-checkable proof of its correctness. Basic concepts of logic, functional programming, static type systems and deductive verification will be covered. Graduate/Undergraduate Equivalency: COMP 548.

COMP 409 - ADVANCED LOGIC IN COMPUTER SCIENCE
Short Title: ADV LOGIC IN COMPUTER SCIENCE
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (COMP 211 or COMP 215) and (COMP 182 or COMP 280)
Description: Logic has been called the calculus of computer science. The argument is that logic plays a fundamental role in computer science, similar to that played by calculus in the physical sciences and traditional engineering disciplines. Indeed, logic plays an important role in areas of Computer Science as disparate as artificial intelligence (automated reasoning), architecture (logic gates), software engineering (specification and verification), programming languages (semantics, logic programming), databases (relational algebra and SQL), algorithms (complexity and expressiveness), and theory of computation (general notions of computability). Graduate/Undergraduate Equivalency: COMP 509. Mutually Exclusive: Cannot register for COMP 409 if student has credit for COMP 509.

COMP 410 - SOFTWARE ENGINEERING METHODOLOGY
Short Title: SOFTWARE ENGINEER METHODOLOGY
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 310 or COMP 314
Description: COMP 410 is a pure discovery-based learning course designed to give students real-life, hands-on training in a wide variety of software engineering issues that arise in creating large-scale, state-of-the-art software systems. The class forms a small software development 'company' that works to deliver a product to a customer. The topics encountered include and are not limited to, dealing with new technologies (e.g. C#, .NET, distributed computing), advanced object-oriented programming and design, interacting with customers, problem specification and testing, individual and group communications, human resource management, group leadership, testing, integration and documentation. Traditional development cycle methodologies will be compared to recent, agile techniques. Graduate/Undergraduate Equivalency: COMP 539. Mutually Exclusive: Cannot register for COMP 410 if student has credit for COMP 539.

COMP 411 - PRINCIPLES OF PROGRAMMING LANGUAGES
Short Title: PRINCIPLES OF PROG LANGUAGES
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 211 or COMP 310
Description: The design, definition and abstract implementation of programming languages including methods for precisely specifying syntax and semantics. Graduate/Undergraduate Equivalency: COMP 511. Mutually Exclusive: Cannot register for COMP 411 if student has credit for COMP 511.

COMP 412 - COMPILER CONSTRUCTION FOR UNDERGRADUATE STUDENTS
Short Title: COMPILER CONSTRUCTION - UG
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (COMP 314 or ELEC 322 or COMP 310 or COMP 215) and (COMP 221 or COMP 321)
Description: Topics in the design of programming language translators, including parsing, run-time storage management, error recovery, code generation and optimization. Graduate/Undergraduate Equivalency: COMP 506. Recommended Prerequisite(s): COMP 412 or COMP 506. Mutually Exclusive: Cannot register for COMP 412 if student has credit for COMP 506.

Course URL: www.clear.rice.edu/~vardi/comp409/ (http://www.clear.rice.edu/~vardi/comp409/)
Course URL: www.bandgap.cs.rice.edu/classes/comp410 (http://www.bandgap.cs.rice.edu/classes/comp410/)
Course URL: www.clear.rice.edu/comp412 (http://www.clear.rice.edu/comp412/)
COMP 413 - DISTRIBUTED PROGRAM CONSTRUCTION
Short Title: DISTRIBUTED PROGRAM CONSTRUCTION
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 310
Description: This course focuses on modern principles for the construction of distributed programs, with an emphasis on design patterns, modern programming tools, and distributed object systems. The material will be applied in a substantial software design/construction project.

COMP 414 - OPTIMIZATION: ALGORITHMS, COMPLEXITY AND APPROXIMATIONS
Short Title: ALGORITHMS, COMPLEX. & APPROX
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The main focus of the course will be on smooth optimization techniques, with applications in machine learning and artificial intelligence. The course will introduce the basics of algorithms on continuous optimization, starting from the classical gradient descent algorithm in convex optimization, towards more sophisticated approaches in non-convex scenarios. The course will explore the fundamental theory, algorithms, complexity and approximations in nonlinear optimization. Graduate/Undergraduate Equivalency: COMP 514.
Mutually Exclusive: Cannot register for COMP 414 if student has credit for COMP 514.

COMP 415 - REAL-WORLD SOFTWARE DEVELOPMENT
Short Title: REAL-WORLD SOFTWARE DEVELOPMT
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 410
Description: Experience real customers, software, and situations. The class will be contracted by an industrial customer to design build, and deliver a product. Negotiate to finalize specifications, updates, and delivery schedules. Encounter real-life issues such as team management, intellectual property, and vagueness and specification changes while developing a state-of-the-art software application.
Course URL: www.bandgap.cs.rice.edu/classes/comp415 (http://www.bandgap.cs.rice.edu/classes/comp415/)

COMP 416 - GENOME-SCALE ALGORITHMS AND DATA STRUCTURES
Short Title: GENOME-SCALE ALGORITHMS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 182
Description: Since the advent of Sanger Sequencing in 1977, computer scientists have been devising algorithms and software tools to interpret and analyze DNA sequences. The field of bioinformatics focuses on computational approaches to solving biological questions. This course will serve as an introduction to widely used algorithms in bioinformatics used for pattern searching, genome assembly, sequence alignment, and clustering of biological data. No prior knowledge of biology is assumed. The class involves several programming assignments. Graduate/Undergraduate Equivalency: COMP 519.

COMP 417 - ADVANCED OPERATING SYSTEMS AND SECURITY
Short Title: ADVANCED OPERATING SYSTEMS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 421 or ELEC 421
Description: In this seminar, we will investigate advanced topics in the design and implementation of operating systems, including; OS structure (includingWeb Browsers), concurrency and synchronization, memory management, file systems and storage, virtual machines, and information protection. We will explore both fundamental and hot topics through reading, discussing, and presenting key research findings. This course will also cover methods for critiquing, writing, and presenting research findings through a course long project. Graduate/Undergraduate Equivalency: COMP 517. Mutually Exclusive: Cannot register for COMP 417 if student has credit for COMP 517.

COMP 420 - INTRODUCTION TO DISTRIBUTED COMPUTER SYSTEMS
Short Title: INTRO TO DISTRIBUTED COMP SYS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 421 or ELEC 421
Description: Introduction to distributed computer systems. The course covers concepts, architecture, algorithms, protocols, and implementation, focusing on distribution, scale, robustness in the face of failure, and security. Graduate/Undergraduate Equivalency: COMP 532. Mutually Exclusive: Cannot register for COMP 420 if student has credit for COMP 532.
Course URL: www.clear.rice.edu/comp420 (http://www.clear.rice.edu/comp420/)
COMP 421 - OPERATING SYSTEMS AND CONCURRENT PROGRAMMING
Short Title: OP SYS/CONCURRENT PROGRAMMING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 215 and (COMP 221 or COMP 321)
Description: Introduction to the design, construction, and analysis of concurrent programs with an emphasis on operating systems, including filing systems, schedulers, and memory allocators. Specific attention is devoted to process synchronization and communication within concurrent programs. Cross-list: ELEC 421. Graduate/Undergraduate Equivalency: COMP 521. Mutually Exclusive: Cannot register for COMP 421 if student has credit for COMP 521.
Course URL: www.clear.rice.edu/comp421/ (http://www.clear.rice.edu/comp421/)

COMP 422 - PARALLEL COMPUTING
Short Title: PARALLEL COMPUTING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 221 or COMP 321
Description: COMP 422 is an undergraduate version of this course. COMP 422 students will have four programming assignments. COMP 534 students will have five. As part of their assignments, both COMP 422 and COMP 534 students will analyze the scalability and parallel efficiency of parallel programs they write. COMP 534 students will additionally use tools to qualify the root causes of scaling losses in their programs and document their findings. Graduate/Undergraduate Equivalency: COMP 534. Mutually Exclusive: Cannot register for COMP 422 if student has credit for COMP 534.

COMP 424 - MOBILE AND EMBEDDED SYSTEM DESIGN AND APPLICATION
Short Title: MOBILE & EMBEDDED SYSTEM
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 220
Description: ELEC 424 introduces mobile and embedded system design and applications to undergraduate students and provides them hands-on design experience. It consists of three interleaving parts: lectures, student project, and student presentations. Cross-list: ELEC 424.
Course URL: www.ruf.rice.edu/~mobile/elec424/ (http://www.ruf.rice.edu/~mobile/elec424/)

COMP 425 - COMPUTER SYSTEMS ARCHITECTURE
Short Title: COMPUTER SYSTEMS ARCHITECTURE
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 326 or COMP 326
Description: Evolution of key architecture concepts found in advanced uniprocessor systems. Fundamental and advanced pipelining techniques and associated issues for improving processor performance. Illustrated with RISC processors such as the ARM processor. Examine several metrics for processor performance, such as Amdahl’s law. Key concepts of data and program memory systems found in modern systems with memory hierarchies and caches. Perform experiments in cache performance analysis. Influence of technology trends, such as Moore’s law, on processor implementation Approaches for exploiting instruction level parallelism, such as VLIW. Introduction to parallel and multicore architectures. Introduction to processor architectures targeted for imbedded applications. Cross-list: ELEC 425. Graduate/Undergraduate Equivalency: COMP 554. Mutually Exclusive: Cannot register for COMP 425 if student has credit for COMP 554.

COMP 427 - INTRODUCTION TO COMPUTER SECURITY
Short Title: INTRO TO COMPUTER SECURITY
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 310 and COMP 321
Description: This elective course covers a wide variety of topics in computer security, including hands-on experience with breaking software & engineering software to be harder to break. For example, students will perform buffer overflow attacks & exploit web application vulnerabilities, while also learning how to defend against them. Graduate/Undergraduate Equivalency: COMP 327, COMP 541. Mutually Exclusive: Cannot register for COMP 427 if student has credit for COMP 327/COMP 541.

COMP 429 - INTRODUCTION TO COMPUTER NETWORKS
Short Title: INTRO TO COMPUTER NETWORKS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 221 or COMP 321
Course URL: www.clear.rice.edu/comp429/ (http://www.clear.rice.edu/comp429/)
COMP 430 - INTRODUCTION TO DATABASE SYSTEMS  
Short Title: INTRO TO DATABASE SYSTEMS  
Department: Computer Science  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 4  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): (COMP 211 or COMP 215) and (COMP 182 or COMP 280)  
Description: Introduction to relational and other database systems, SQL programming, Database application programming, and Database design. Graduate/Undergraduate Equivalency: COMP 533. Mutually Exclusive: Cannot register for COMP 430 if student has credit for COMP 533.

COMP 431 - WEB DEVELOPMENT  
Short Title: WEB DEVELOPMENT  
Department: Computer Science  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: In this project-based course, students create multi-user Web applications involving all aspects of application development from front-end and back-end programming to interfacing client-server communications technologies. Class time includes discussions of topics in Web development, structural frameworks, test driven development, and time for students to develop their Web applications. Graduate/Undergraduate Equivalency: COMP 531. Recommended Prerequisite(s): COMP 310 or COMP 321 Mutually Exclusive: Cannot register for COMP 431 if student has credit for COMP 531.

COMP 435 - ELECTION SYSTEMS, TECHNOLOGIES, AND ADMINISTRATION  
Short Title: ELECTION SYSTEMS  
Department: Computer Science  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group III  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This multidisciplinary course will consider how elections are conducted to enhance participation, to accurately measure the will of the electorate, and to be sufficiently rigorous to convince all parties that the results are legitimate. This course will consider the design and evaluation of election technologies, ranging from voter registration through the polling booth and vote tabulation. This course will consider three questions: how do individual voters interact with the voting technology, how are voting technologies engineered to be accurate and secure, and how do the social aspects of voting fulfill democratic goals for elections? A central requirement for this course will be group research projects, many operating in our community, built around the November election. Cross-list: POLI 420, PSYC 420.

COMP 436 - SECURE AND CLOUD COMPUTING  
Short Title: SECURE & CLOUD COMPUTING  
Department: Computer Science  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): COMP 327 or COMP 427 or COMP 541 or COMP 429 or COMP 556 or ELEC 429 or ELEC 556 or COMP 421 or COMP 521 or ELEC 421 or ELEC 552 or ELEC 437 or ELEC 539  
Description: What is “cloud computing”? How do we build cloud-scale systems and components that are secure against malicious attacks, and scale to millions of users? Many of today’s services run inside the cloud – a set of geographically distributed data centers running heterogeneous software stacks. Cloud systems must scale across tens of thousands of machines, support millions of concurrent requests, and they must do so with high security guarantees. This course will start with the fundamentals of cloud computing, introduce key techniques in building scalable and secure systems and expose students to state-of-the-art research advances as well as emerging security threats and defenses in today’s cloud systems. Graduate/Undergraduate Equivalency: COMP 536. Mutually Exclusive: Cannot register for COMP 436 if student has credit for COMP 536.

COMP 440 - ARTIFICIAL INTELLIGENCE  
Short Title: ARTIFICIAL INTELLIGENCE  
Department: Computer Science  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 4  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): COMP 310 and (STAT 310 or ECON 382 or STAT 312 or STAT 331 or ELEC 331 or ELEC 303) and (MATH 354 or MATH 355 or CAAM 335)  
Description: This is a foundational course in artificial intelligence, the discipline of designing intelligent agents. The course will cover the design and analysis of agents that do the right thing in the face of limited information and computational resources. The course revolves around two main questions: how does an agent decide what to do, and how do they learn from experience. Tools from computer science, probability theory, and game theory will be used. Interesting examples of intelligent agents will be covered, including poker playing programs, bots for various games (e.g. WoW), DS1 – the spacecraft that performed an autonomous flyby of Comet Borrely in 2001, Stanley – the Stanford robot car that won the Darpa Grand Challenge, Google Maps and how it calculates driving directions, face and handwriting recognizers, Fedex package delivery planners, airline fare prediction sites, and fraud detectors in financial transactions. Cross-list: ELEC 440. Graduate/Undergraduate Equivalency: COMP 557. Mutually Exclusive: Cannot register for COMP 440 if student has credit for COMP 557.  
Course URL: www.owlnet.rice.edu/~comp440 (http://www.owlnet.rice.edu/~comp440/)
COMP 441 - LARGE-SCALE MACHINE LEARNING
Short Title: LARGE-SCALE MACHINE LEARNING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 440 or ELEC 440
Description: Learning from large dataset is becoming a ubiquitous phenomena in all applications spanning robotics, medical decisions, internet, communication, biology, etc. Designed to give senior UG students a thorough grounding in the theory and algorithms needed for research and practical applications in machine learning for modern massive datasets. Topics draw from machine learning, classical statistics, algorithms and information theory. Graduate/Undergraduate Equivalency: COMP 542. Mutually Exclusive: Cannot register for COMP 441 if student has credit for COMP 542.

COMP 446 - MOBILE DEVICE APPLICATIONS
Short Title: MOBILE DEVICE APPLICATIONS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Connected mobile devices require updated programming models and design concepts to take advantage of their capabilities. We will explore applications primarily on the Apple iPhone and iPad but will also cover smart watches, Google Android and intelligent voice assistants like Amazon Echo and Google Home. We will briefly touch on the development of web services to support mobile applications. The course culminates with a large project taking up most of the second half of the semester. Although the curriculum centers around and teaches iOS and Xcode, final projects may be completed in any major mobile system including Android and Alexa, etc. Cross-list: ELEC 446. Recommended Prerequisite(s): COMP 310 or prior Object Oriented Programming experience highly recommended.

COMP 447 - INTRODUCTION TO COMPUTER VISION
Short Title: INTRO TO COMPUTER VISION
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 301 or ELEC 475 or COMP 314 or ELEC 322 or COMP 330
Description: An introduction to the basic concepts, algorithms and applications in computer vision. Topics include: cameras, camera models and imaging pipeline, low-level vision/image processing methods such as filtering and edge detection; mid-level vision topics such as segmentation and clustering; shape reconstruction from stereo, introduction to high-level vision tasks such as object recognition and face recognition. The course will involve programming and implementing basic computer vision algorithms in Matlab. Cross-list: ELEC 447. Graduate/Undergraduate Equivalency: COMP 546. Mutually Exclusive: Cannot register for COMP 447 if student has credit for COMP 345/COMP 546.

COMP 448 - CONCRETE MATHEMATICS
Short Title: CONCRETE MATHEMATICS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 182
Description: Concrete mathematics is a blend of continuous and discrete mathematics. Major topics include sums, recurrences, integer functions, elementary number theory, binomial coefficients, generating functions, discrete probability and asymptotic methods. Cross-list: MATH 448.

COMP 449 - APPLIED MACHINE LEARNING AND DATA SCIENCE PROJECTS
Short Title: DATA SCIENCE PROJECTS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: In this project-based course, student teams will complete semester-long data science research or analysis projects selected from a variety of disciplines and industries. Students will also learn best practices in data science. Instructor Permission Required. Cross-list: DSCI 435. Graduate/Undergraduate Equivalency: COMP 549. Mutually Exclusive: Cannot register for COMP 449 if student has credit for COMP 549. Repeatable for Credit.

COMP 450 - ALGORITHMIC ROBOTICS
Short Title: ALGORITHMIC ROBOTICS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (COMP 221 or COMP 321) and COMP 215
Description: Robots have fascinated people for generations. Today, robots are built for applications as diverse as exploring remote planets, de-mining war zones, cleaning toxic waste, assembling cars, inspecting pipes in industrial plants and mowing lawns. Robots are also interacting with humans in a variety of ways: robots are museum guides, robots assist surgeon sin life threatening operations, and robotic cars can drive us around. The field of robotics studies not only the design of new mechanisms but also the development of artificial intelligence frameworks to make these mechanism useful in the physical world, integrating computer science, engineering, mathematics and more recently biology and sociology, in a unique way. This class will present fundamental algorithmic advances that enable today's robots to move in real environments and plan their actions. It will also explore fundamentals of the field of Artificial Intelligence through the prism of robotics. The class involves a significant programming project. Cross-list: ELEC 450, MECH 450. Graduate/Undergraduate Equivalency: COMP 550. Mutually Exclusive: Cannot register for COMP 450 if student has credit for COMP 550.
COMP 451 - DESIGN AND ANALYSIS OF CYBER-PHYSICAL SYSTEMS  
**Short Title:** DESIGN&ANALYSIS CYBER/PHYSICAL  
**Department:** Computer Science  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 4  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course is an introduction to cyber-physical systems, engineering artifacts in which computational components interact with and typically control physical components. Some common examples of cyber-physical systems include robots, Segways and lane-departure warning, LDW, systems in automobiles. Graduate/Undergraduate Equivalency: COMP 555. Mutually Exclusive: Cannot register for COMP 451 if student has credit for COMP 555.  
**Course URL:** [www.owlnet.rice.edu/~comp451](http://www.owlnet.rice.edu/~comp451)

COMP 460 - ADVANCED COMPUTER GAME CREATION  
**Short Title:** ADV COMPUTER GRAPHICS  
**Department:** Computer Science  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Credit Hours:** 4  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This project-based class involves teams of 2-4 CS and Visual Arts students designing and building computer games suitable for Xbox Live Arcade using C# and XNA. For CS students, Comp 160 or Comp 360 is recommended as a prerequisite. For Visual Arts students, previous experience in drawing using Photoshop is suggested. Instructor Permission Required. Cross-list: ARTS 460. Repeatable for Credit.  
**Course URL:** [www.owlnet.rice.edu/~comp460](http://www.owlnet.rice.edu/~comp460)

COMP 477 - SPECIAL TOPICS  
**Short Title:** SPECIAL TOPICS  
**Department:** Computer Science  
**Grade Mode:** Standard Letter  
**Course Type:** Internship/Practicum, Lecture, Laboratory, Seminar  
**Credit Hours:** 1-4  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Topics/requirements/credit hours may vary each semester. Contact Department for current semester’s topic(s). Repeatable for Credit.

COMP 480 - PROBABLISTIC ALGORITHMS AND DATA STRUCTURE  
**Short Title:** PROBABLISTIC ALGORITHMS AND D  
**Department:** Computer Science  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 4  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course will be ideal for someone wanting to build a strong foundation in the theory and practice of algorithms for processing Big-Data. We will discuss advanced data structures and algorithms going beyond deterministic setting and emphasize the role of randomness in getting significant, often exponential, improvements in computations and memory. Graduate/Undergraduate Equivalency: COMP 580. Recommended Prerequisite(s): COMP 382

COMP 481 - AUTOMATA, FORMAL LANGUAGES, AND COMPUTABILITY  
**Short Title:** AUTOMATA/FORMAL LANG/COMPUTING  
**Department:** Computer Science  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Finite automata, regular expressions, regular languages, pushdown automata, context-free languages, Turing machines, recursive languages, computability, and solvability. It is strongly recommended that students complete three semesters of Mathematics before enrolling in this course. Graduate/Undergraduate Equivalency: COMP 581. Mutually Exclusive: Cannot register for COMP 481 if student has credit for COMP 581.

COMP 485 - FUNDAMENTALS OF MEDICAL IMAGING I  
**Short Title:** FUND MEDICAL IMAGING I  
**Department:** Computer Science  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course will introduce basic principles of image acquisition, formation and processing of several medical imaging modalities such as X-Ray, CT, MRI, and US that are used to evaluate the human anatomy. The course also includes visits to a clinical site to gain experience with the various imaging modalities covered in class. Cross-list: BIOE 485, ELEC 485. Recommended Prerequisite(s): MATH 211 and MATH 212.

COMP 486 - FUNDAMENTALS OF MEDICAL IMAGING II  
**Short Title:** FUND MEDICAL IMAGING II  
**Department:** Computer Science  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** ELEC 485 or BIOE 485 or COMP 485  
**Description:** This course focuses on functional imaging modalities used specifically in nuclear medicine such as Gamma cameras, SPECT, and PET imaging. The course will introduce the basic principles of image acquisition, formation, processing and the clinical applications of these imaging modalities and lays the foundations for understanding the principles of radiotracer kinetic modeling. A trip to a clinical site in also planned to gain experience with nuclear medicine imaging. Cross-list: BIOE 486, ELEC 486.
COMP 487 - COMPUTATIONAL COMPLEXITY
Short Title: COMPUTATIONAL COMPLEXITY
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 382 or COMP 409 or COMP 509 or COMP 481 or COMP 581
Description: In Computational Complexity we study the computational resources (time, space, communication, etc.) that are required to solve computational problems via various computational models. Specifically, we are interested in classifying computational problems with classes of other problems that require similar amount of resources to solve. Graduate/Undergraduate Equivalency: COMP 587. Mutually Exclusive: Cannot register for COMP 487 if student has credit for COMP 587.

COMP 490 - COMPUTER SCIENCE PROJECTS
Short Title: COMPUTER SCIENCE PROJECTS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Theoretical and experimental investigation under staff direction. Instructor Permission Required. Repeatable for Credit.

COMP 491 - COMPUTER SCIENCE TEACHING
Short Title: COMPUTER SCIENCE TEACHING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A combination of in-service teaching and a seminar. Department Permission Required. Repeatable for Credit.

COMP 496 - RTG CROSS-TRAINING IN DATA SCIENCE
Short Title: RTG CROSS-TRAINING IN DATA SCI
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to students with a major in Computer Science or Statistics. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A seminar course to introduce students to topics in Data Science at the interface between Statistics and Computer Science. Students participate in the process of preparing, delivering and critiquing talks. Topics change each semester. Instructor Permission Required. Cross-list: STAT 496. Graduate/Undergraduate Equivalency: COMP 696. Mutually Exclusive: Cannot register for COMP 496 if student has credit for COMP 696. Repeatable for Credit.

COMP 498 - INTRODUCTION TO ROBOTICS
Short Title: INTRODUCTION TO ROBOTICS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 310 or COMP 411 or COMP 510 or COMP 511
Description: This course focuses on the principles and practices of test-driven software development, which have been popularized under the banner of 'Extreme Programming.' To provide students with practical experience, the course engages students in the development of open source production programs written in JAVA or#. The DRJAVA programming courses was developed by students in this course. Some of the major topics covered in course lectures include design patterns for controlling concurrency and refactoring transformations to improve legacy code. Graduate/Undergraduate Equivalency: COMP 402. Mutually Exclusive: Cannot register for COMP 501 if student has credit for COMP 402.

COMP 501 - PRODUCTION PROGRAMMING
Short Title: PRODUCTION PROGRAMMING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 310 or COMP 411 or COMP 510 or COMP 511
Description: This course focuses on the principles and practices of test-driven software development, which have been popularized under the banner of 'Extreme Programming.' To provide students with practical experience, the course engages students in the development of open source production programs written in JAVA or#. The DRJAVA programming courses was developed by students in this course. Some of the major topics covered in course lectures include design patterns for controlling concurrency and refactoring transformations to improve legacy code. Graduate/Undergraduate Equivalency: COMP 402. Mutually Exclusive: Cannot register for COMP 501 if student has credit for COMP 402.

COMP 502 - NEURAL MACHINE LEARNING I
Short Title: NEURAL MACHINE LEARNING I
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Review of major neural machine learning (Artificial Neural Network) paradigms. Analytical discussion of supervised and unsupervised neural learning algorithms and their relation to information theoretical methods. Practical applications to data analysis such as pattern recognition, clustering, classification, function approximation/regression, non-linear PCA, projection pursuit, independent component analysis, with lots of examples from image and digital processing. Details are posted at www.ece.rice.edu/~erzsebet/ANNcourse.html. Cross-list: ELEC 502, STAT 502. Recommended Prerequisite(s): ELEC 430 and ELEC 431 or equivalent or permission of instructor.
Course URL: www.ece.rice.edu/~erzsebet/ANNcourse.html (http://www.ece.rice.edu/~erzsebet/ANNcourse.html)
COMP 503 - REASONING AND SOFTWARE
Short Title: REASONING ABOUT SOFTWARE
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (COMP 382 and COMP 215) or COMP 482 or COMP 409 or COMP 509
Description: Our reliance on software of all forms is increasing by the day. As a result, it is more important than ever to ensure that programs function correctly and cannot be exploited by hostile adversaries. The field of formal methods takes on this challenge, developing algorithms and programming methodologies that can be used to formally reason about what happens when software executes on arbitrary inputs, often without actually executing the program. Such reasoning can be used, for example, to identify subtle bugs and vulnerabilities in programs, or to give mathematical proofs of program correctness. This is a hands-on introduction to the field of formal methods. In this class, you will learn the theoretical foundations of these systems; you will also implement a series of systems that can be used to reason about the correctness of C programs. Graduate/Undergraduate Equivalency: COMP 403. Mutually Exclusive: Cannot register for COMP 503 if student has credit for COMP 403.

COMP 504 - GRADUATE OBJECT-ORIENTED PROGRAMMING AND DESIGN
Short Title: GR OBJ-ORIENTED PROG & DESIGN
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Discover how state-of-the-art object-orient programming and design techniques can create globe-spanning software systems that are both flexible and scalable. Learn how software design patterns are used in multiple programming paradigms. Explore highly decoupled systems with dynamically configurable behaviors. Highly recommended for anyone interested in building large systems and software engineering. Basic proficiency in Java is required. Students may not receive credit for both COMP 310/510 and COMP 404/504. Mutually Exclusive: Cannot register for COMP 504 if student has credit for COMP 310/COMP 404/COMP 510.

COMP 505 - ADVANCED TOPICS IN OBJECT-ORIENTED DESIGN
Short Title: ADV TOP OBJECT/ORIENTED DESIGN
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 404 or COMP 504 or COMP 310
Description: A topics-driven exploration of cutting-edge object oriented design issues and concepts including mutable recursive data frameworks, design patterns for sorting, parsing and games, service-oriented architectures and cloud computing. Detailed knowledge and practice in abstract structure and behavioral representations, delegation model programming, design patterns and Java are required. Graduate/Undergraduate Equivalency: COMP 405. Mutually Exclusive: Cannot register for COMP 505 if student has credit for COMP 405.

COMP 506 - COMPILER CONSTRUCTION FOR GRADUATE STUDENTS
Short Title: COMPILER CONSTRUCTION - GR
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics in the design of programming language translators, including parsing, run-time storage management, error recovery, code generation and optimization. Graduate/Undergraduate Equivalency: COMP 412. Mutually Exclusive: Cannot register for COMP 506 if student has credit for COMP 412.

COMP 507 - COMPUTER-AIDED PROGRAM DESIGN
Short Title: COMPUTER-AIDED PROGRAM DESIGN
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (COMP 482 or ELEC 420) or COMP 481
Description: This course is a graduate-level introduction to computer-aided program design, a field that studies logical and algorithmic techniques for formally verifying programs, and mechanized derivation of programs that are correct by construction. Topics covered will include classical automated program verification in particular abstract interpretation and model checking - as well as recent developments in algorithmic program synthesis.

COMP 508 - DESIGN AND ANALYSIS OF SECURE EMBEDDED SYSTEMS FOR IoT ERA
Short Title: SECURE EMBEDDED SYS FOR IoT
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course emphasizes the security of small embedded devices that are central to the Internet of Things (IoT) Era. We discuss the practical security attacks, challenges, constraints, and opportunities that arise in the IoT domain. Covered topics include security engineering, real world attacks, practical and side channel attacks, and hands-on lab/projects. Cross-list: ELEC 511. Repeatable for Credit.
COMP 509 - ADVANCED LOGIC IN COMPUTER SCIENCE
Short Title: ADV LOGIC IN COMPUTER SCIENCE
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Logic has been called 'the calculus of computer science'. The argument is that logic plays a fundamental role in computer science, similar to that played by calculus in the physical sciences and traditional engineering disciplines. Indeed, logic plays an important role in areas of Computer Science as disparate as artificial intelligence (automated reasoning), architecture (logic gates), software engineering (specification and verification), programming languages (semantics, logic programming), databases (relational algebra and SQL), algorithms (complexity and expressiveness), and theory of computation (general notions of computability). Graduate/Undergraduate Equivalency: COMP 409. Mutually Exclusive: Cannot register for COMP 509 if student has credit for COMP 409.

COMP 511 - PRINCIPLES OF PROGRAMMING LANGUAGES
Short Title: PRINCIPLES OF PROG LANGUAGES
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 211 or COMP 310
Description: The design, definition and abstract implementation of programming languages including methods for precisely specifying syntax and semantics. Graduate/Undergraduate Equivalency: COMP 411. Mutually Exclusive: Cannot register for COMP 511 if student has credit for COMP 411.

COMP 512 - ADVANCED COMPILER CONSTRUCTION
Short Title: ADVANCED COMPILER CONSTRUCTION
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced topics in the design of an optimizing compiler. This course will focus on analysis and optimization of programs for uniprocessor machines, including program analysis (data-flow analysis, construction of static single-assignment form) and program transformation (redundancies, constant values, strength reduction, etc.). The course uses a variety of readings from the literature and includes an implementation project. Recommended Prerequisite(s): COMP 412 or COMP 506.
Course URL: www.cs.rice.edu/~keith/512 (http://www.cs.rice.edu/~keith/512/)

COMP 513 - COMPLEXITY IN MODERN SYSTEMS
Short Title: COMPLEXITY IN MODERN SYSTEMS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A modern computer is a system with enormous complexity in both software and hardware. The course presents the principles for managing such complexity using examples from modern computing systems. It covers emergent issues from system complexity such as energy efficiency, bug finding, and heterogeneous hardware. It also covers designing experiments and writing systems papers. The course consists of lectures, student presentation of classic papers, and a final project. Cross-list: ELEC 513.

COMP 514 - OPTIMIZATION: ALGORITHMS, COMPLEXITY, AND APPROXIMATIONS
Short Title: ALGORITHMS, COMPLEX & APPROX
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The main focus of the course will be on smooth optimization techniques, with applications in machine learning and artificial intelligence. The course will introduce the basics of algorithms on continuous optimization, starting from the classical gradient descent algorithm in convex optimization, towards more sophisticated approaches in non-convex scenarios. The course will explore the fundamental theory, algorithms, complexity and approximations in nonlinear optimization. Graduate/Undergraduate Equivalency: COMP 414. Mutually Exclusive: Cannot register for COMP 514 if student has credit for COMP 414.

COMP 515 - ADVANCED COMPIIATION FOR VECTOR PARALLEL PROCESSORS
Short Title: ADV COMPILATION VECTOR PARALEL
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 412
Description: Advanced compilation techniques for vector and parallel computer systems, including the analysis of program dependence, program transformations to enhance parallelism, compiler management of the memory hierarchy, interprocedural data flow analysis, and parallel debugging. Recommended Prerequisite(s): COMP 412.
COMP 516 - CLOUD COMPUTING PRACTICUM
Short Title: CLOUD COMPUTING PRACTICUM
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 413 or COMP 420 or (COMP 520 or ELEC 520)
Description: This is a project-based class that provides students with the opportunity to apply their knowledge of distributed computing principles to designed and develop a single, large distributed application that utilizes the public cloud. Students will learn about the basic services for computing, storage, and commination that are supported by the new generation of ‘public utilities’ that provide the infrastructure for the public cloud, and how to utilize these services to engineer a robust, scalable application.

COMP 517 - ADVANCED OPERATING SYSTEMS AND SECURITY
Short Title: ADVANCED OPERATING SYSTEMS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this seminar, we will investigate advanced topics in the design and implementation of operating systems, including: OS structure (including Web Browsers), concurrency and synchronization, memory management, file systems and storage, virtual machines, and information protection. We will explore both fundamental and hot topics through reading, discussing, and presenting key research findings. This course will also cover methods for critiquing, writing, and presenting research findings through a course long project. Graduate/Undergraduate Equivalency: COMP 417. Mutually Exclusive: Cannot register for COMP 517 if student has credit for COMP 417.

COMP 519 - GENOME-SCALE ALGORITHMS AND DATA STRUCTURES
Short Title: GENOME-SCALE ALGORITHMS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Since the advent of Sanger Sequencing in 1977, computer scientists have been devising algorithms and software tools to interpret and analyze DNA sequences. The field of bioinformatics focuses on computational approaches to solving biological questions. This course will serve as an introduction to widely used algorithms in bioinformatics used for pattern searching, genome assembly, sequence alignment, and clustering of biological data. No prior knowledge of biology is assumed. The class involves several programming assignments. Graduate/Undergraduate Equivalency: COMP 416.

COMP 520 - DISTRIBUTED SYSTEMS
Short Title: DISTRIBUTED SYSTEMS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Course URL: www.cs.rice.edu/~alc/comp520/ (http://www.cs.rice.edu/~alc/comp520/)

COMP 521 - OPERATING SYSTEMS AND CONCURRENT PROGRAMMING
Short Title: OP SYS/CONCURRENT PROGRAMMING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 215 and (COMP 221 or COMP 321)
Description: Introduction to the design, construction, and analysis of concurrent programs with an emphasis on operating systems, including filing systems, schedulers, and memory allocators. Specific attention is devoted to process synchronization and communication within concurrent programs. Additional coursework required beyond the undergraduate course requirements. Cross-list: ELEC 552. Graduate/Undergraduate Equivalency: COMP 421. Mutually Exclusive: Cannot register for COMP 521 if student has credit for COMP 421.

COMP 522 - MULTI-CORE COMPUTING
Short Title: MULTI-CORE COMPUTING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (COMP 221 or COMP 321) and COMP 425
Description: Multi-core microprocessors are becoming the norm. The course will focus on emerging multi-core processor architectures and challenges to using them effectively. Topics include multi-core microprocessors, memory hierarchy, synchronization, programming systems, scheduling, and transactional memory.
Course URL: www.cs.rice.edu/~johnmc/comp522/ (http://www.cs.rice.edu/~johnmc/comp522/)
COMP 523 - INTRODUCTION TO MATHEMATICAL CRYPTOGRAPHY
Short Title: INTRO TO MATH CRYPTOGRAPHY
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 182 or COMP 448 or MATH 448 or MATH 365
Description: The course introduces students to modern cryptographic techniques, focusing mainly on mathematical tools. The course covers topics such as Diffie-Hellman key exchange, the ElGamal public key crypto system, integer factorization and RSA, and elliptic curves and lattices in cryptography.

COMP 524 - MOBILE AND WIRELESS NETWORKING
Short Title: MOBILE AND WIRELESS NETWORKING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 429 or ELEC 429
Description: Study of network protocols for mobile and wireless networking, particularly at the media access control, network, and transport protocol layers. Focus is on the unique problems and challenges presented by the properties of wireless transmission and host or router mobility. Cross-list: ELEC 524. Recommended Prerequisite(s): COMP 421 OR ELEC 421.

COMP 525 - VIRTUALIZATION AND CLOUD RESOURCE MANAGEMENT
Short Title: VIRTUAL & CLOUD RESOURCE MGMT
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (ELEC 425 or COMP 425)

COMP 526 - HIGH PERFORMANCE COMPUTER ARCHITECTURE
Short Title: HIGH PERFORM COMPUTER ARCH
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Design of high performance computer systems, including shared-memory and message-passing multiprocessors and vector systems. Hardware and software techniques to tolerate and reduce memory and communication latency. Case studies and performance simulation of high-performance systems. Cross-list: ELEC 526. Recommended Prerequisite(s): ELEC 425 or COMP 425

COMP 527 - COMPUTER SYSTEMS SECURITY
Short Title: COMPUTER SYSTEMS SECURITY
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This class will focus on computer security in real systems. We will cover theory and practice for the design of secure systems (formal modeling, hardware and compiler-enforced safety, software engineering processes, tamper-resistant and tamper-reactive hardware, firewalls, cryptography, and more). Recommended Prerequisite(s): (COMP 311 or COMP 412) and (COMP 421 or COMP 429).

COMP 528 - INTRODUCTION TO VIRTUALIZATION
Short Title: INTRODUCTION TO VIRTUALIZATION
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 421 or COMP 521
Description: System-level virtualization is an integral part of modern computer systems, spanning both hardware and software. This course will explore the various types of system-level virtualization and the hardware and software mechanisms that support them. The course will explore the interplay among hypervisors, operating systems, processors, memory, and I/O devices in modern virtualized systems.

COMP 529 - ADVANCED COMPUTER NETWORKS
Short Title: ADVANCED COMPUTER NETWORKS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 429 or ELEC 429
Description: This course explores advanced solutions in computer networks that are driven by the need to go beyond the best-effort capabilities of the Internet. Topics include network fault tolerance, traffic engineering, scalable data center network architectures, network support for big data processing, network support for cloud computing, extensible network control via software defined networking, denial-of-service-attack defense mechanisms. Readings from original research papers. Also include design project and oral presentation components. This course assumes students already have a good understanding of the best-effort Internet. Cross-list: ELEC 529. Repeatable for Credit.
Course URL: www.clear.rice.edu/comp529/ (http://www.clear.rice.edu/comp529/)
COMP 530 - DATABASE SYSTEM IMPLEMENTATION
Short Title: DATABASE SYSTEM IMPLEMENTATION
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3-4
Restrictions: Enrollment is limited to Graduate level students.
Prerequisite(s): COMP 321 and COMP 430
Description: This course covers database management system architecture, query processing and optimization, transaction processing, concurrent control and recover, storage, indexing structures and related topics. Students will build a database system from the ground up. Graduate students who have not had an introductory database course should enroll for 4 credits: all others should enroll for 3 credits.

COMP 531 - WEB DEVELOPMENT AND DESIGN
Short Title: WEB DEVELOPMENT AND DESIGN
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This project-based course explores Web application creation and design. Students are involved in the development of front-end and back-end systems while interfacing client-server communications technologies. Students will evaluate Web structural frameworks, Web development technologies, apply test driven development, and create multi-user Web applications. Graduate/Undergraduate Equivalency: COMP 431. Recommended Prerequisite(s): COMP 310 or COMP 321
Mutually Exclusive: Cannot register for COMP 531 if student has credit for COMP 431.

COMP 532 - INTRODUCTION TO DISTRIBUTED COMPUTER SYSTEMS
Short Title: INTRO TO DISTRIBUTED COMP SYS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 421 or COMP 521
Description: Introduction to distributed computer systems. The course covers concepts, architecture, algorithms, protocols, and implementation, focusing on distribution, scale, robustness in the face of failure, and security. Additional coursework required beyond the UG course requirements. Graduate/Undergraduate Equivalency: COMP 420. Mutually Exclusive: Cannot register for COMP 532 if student has credit for COMP 420.
Course URL: www.clear.rice.edu/comp420 (http://www.clear.rice.edu/comp420/)

COMP 533 - INTRODUCTION TO DATABASE SYSTEMS
Short Title: INTRO TO DATABASE SYSTEMS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to relational and other database systems, SQL programming, Database application programming, and Database design. Graduate/Undergraduate Equivalency: COMP 430. Mutually Exclusive: Cannot register for COMP 533 if student has credit for COMP 430.

COMP 534 - PARALLEL COMPUTING
Short Title: PARALLEL COMPUTING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (COMP 221 or COMP 321)
Description: COMP 422 is an undergraduate version of this course. COMP 422 students will have four programming assignments. COMP 534 students will have five. As part of their assignments, both COMP 422 and COMP 534 students will analyze the scalability and parallel efficiency of parallel programs they write. COMP 534 students will additionally use tools to qualify the root causes of scaling losses in their programs and document their findings. Graduate/Undergraduate Equivalency: COMP 422. Mutually Exclusive: Cannot register for COMP 534 if student has credit for COMP 422.

COMP 535 - APPROXIMATE COMPUTING SYSTEM FOR BIG DATA, SUPERCOMPUTING AND EMBEDDED SYSTEMS
Short Title: APPROX COMP SYS FOR BIG DATA
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Survey this radical concept of approximate (or inexact) computing with the goal of understanding both of the challenges and opportunities at all layers of the computing system ranging over programming languages, compilers and run-time, and architecture.
COMP 536 - SECURE AND CLOUD COMPUTING
Short Title: SECURE & CLOUD COMPUTING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 327 or COMP 427 or COMP 541 or COMP 429 or COMP 556 or ELEC 429 or ELEC 556 or COMP 421 or COMP 521 or ELEC 421 or ELEC 552 or ELEC 437 or ELEC 539
Description: What is “cloud computing?” How do we build cloud-scale systems and components that are secure against malicious attacks, and scale to millions of users? Many of today’s services run inside the cloud – a set of geographically distributed data centers running heterogeneous software stacks. Cloud systems must scale across tens of thousands of machines, support millions of concurrent requests, and they must do so with high security guarantees. This course will start with the fundamentals of cloud computing, introduce key techniques in building scalable and secure systems and expose students to state-of-the-art research advances as well as emerging security threats and defenses in today’s cloud systems. Cross-list: ELEC 510. Graduate/Undergraduate Equivalency: COMP 436. Mutually Exclusive: Cannot register for COMP 536 if student has credit for COMP 436.

COMP 538 - SECURITY OF HW EMBEDDED SYSTEMS
Short Title: EMBEDDED HW SYSTEMS SECURITY
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course covers a wide range of topics pertaining to security of Hardware Embedded system, including cryptographic processors, secure memory access, hardware IT protection by monitoring and watermarking FPGA security, physical and side-charmed attacks, Trojan horses. Cross-list: ELEC 528. Repeatable for Credit.

COMP 539 - SOFTWARE ENGINEERING METHODOLOGY
Short Title: SOFTWARE ENGINEER METHODOLOGY
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 404 or COMP 504
Description: COMP 539 is a pure discovery-based learning course designed to give students real-life, hands-on training in a wide variety of software engineering issues that arise in creating large-scale, state-of-the-art software systems. The class forms a small software development 'company' that works to deliver a product to a customer. The topics encountered include and are not limited to, dealing with new technologies (e.g. C#, .NET, distributed computing), advanced object-oriented programming and design, interacting with customers, problem specification and testing, individual and group communications, human resource management, group leadership, testing, integration and documentation. Traditional development cycle methodologies will be compared to recent, 'agile' techniques. Graduate/Undergraduate Equivalency: COMP 410. Recommended Prerequisite(s): COMP 505 Mutually Exclusive: Cannot register for COMP 539 if student has credit for COMP 410.
Course URL: www.bandgap.cs.rice.edu/classes/comp410 (http://www.bandgap.cs.rice.edu/classes/comp410/)

COMP 540 - STATISTICAL MACHINE LEARNING
Short Title: STATISTICAL MACHINE LEARNING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (STAT 331 or STAT 310 or ECON 307) and (MATH 355 or CAAM 335)
Description: COMP 540 is about learning models from data. The course is designed to give students a foundational understanding of modern algorithms in learning and data mining, as well as hands-on experience with its applications in science and engineering.

COMP 541 - INTRODUCTION TO COMPUTER SECURITY
Short Title: INTRO TO COMPUTER SECURITY
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 310
Description: This elective course covers a wide variety of topics in computer security, including hands-on experience w/breaking software & engineering software to be harder to break. For example, students will perform buffer overflow attacks & exploit web application vulnerabilities, while also learning how to defend against them. Graduate/Undergraduate Equivalency: COMP 327, COMP 427. Mutually Exclusive: Cannot register for COMP 541 if student has credit for COMP 327/COMP 427.
COMP 542 - LARGE-SCALE MACHINE LEARNING  
**Short Title:** LARGE-SCALE MACHINE LEARNING  
**Department:** Computer Science  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Learning from large dataset is becoming a ubiquitous phenomena in all applications spanning robotics, medical decisions, internet, communication, biology, etc. Designed to give senior UG students a thorough grounding in the theory and algorithms needed for research and practical applications in machine learning for modern massive datasets. Topics draw from machine learning, classical statistics, algorithms and information theory. Graduate/Undergraduate Equivalency: COMP 441. Mutually Exclusive: Cannot register for COMP 542 if student has credit for COMP 441.

COMP 543 - GRADUATE TOOLS AND MODELS - DATA SCIENCE  
**Short Title:** GR TOOLS & MODELS - DATA SCI  
**Department:** Computer Science  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 4  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This course is an introduction to modern data science. Data science is the study of how to extract actionable, non-trivial knowledge from data. The course will focus on the software tools used by practitioners of modern data science, the mathematical and statistical models that are employed in conjunction with such software tools and the applications of these tools and systems to different problems and domains. On the tools side, we will cover the basics of relational database systems, as well as modern systems for manipulating large data sets such as Hadoop MapReduce, Apache Spark, and Google's TensorFlow. On the model side, the course will cover standard supervised and unsupervised models for data analysis and pattern discovery. Mathematical sophistication (calculus, statistics) and programming skills that would be acquired in an undergraduate computer science program are expected. Most programming will be in Python and SQL. (SQL is covered in the course) with some Java. Graduate/Undergraduate Equivalency: COMP 330. Mutually Exclusive: Cannot register for COMP 543 if student has credit for COMP 330.

COMP 544 - FUNCTIONAL PROGRAMMING  
**Short Title:** FUNCTIONAL PROGRAMMING  
**Department:** Computer Science  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 4  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** An introduction to concepts, principles, and approaches of functional programming. Functional programming is a style of programming where the key means of computation is the application of functions to arguments (which themselves might be functions). This style of programming has become increasingly popular in recent years because it offers important advantages in designing, maintaining, and reasoning about programs in many modern contexts such as web services, multicore programming, and cluster computing. Course work consists of a series of programming assignments in the Scala programming language and various library extensions such as Apache Spark. Graduate/Undergraduate Equivalency: COMP 311. Mutually Exclusive: Cannot register for COMP 544 if student has credit for COMP 311.

COMP 545 - ADVANCED TOPICS IN OPTIMIZATION: FROM SIMPLE TO COMPLEX ML SYSTEMS  
**Short Title:** ADV TOPICS IN OPTIMIZATION  
**Department:** Computer Science  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** COMP 545 is a graduate-level course on optimization techniques and algorithms, as these are used in modern ML/AI/SP tasks. During this course, we will learn and study the above topics (both in depth and breadth). The course i) will focus on different objective classes (convex vs. non-convex objectives, with constraints or not, etc.), ii) will cover different optimization strategies within each class, iii) will study algorithmic choices based on computational resources (e.g., use of low-dimensional structures (when/why), asynchronous vs. synchronous algorithms, distributed algorithms, etc.) and iv) lastly, will study schemes that handle some specific, but well-spread optimization constraints (sparsity, low-rankness). The main objective of the course is to highlight optimization as a vital part of contemporary research in ML/AI/SP, and draw the attention of students to open-questions in related topics. In particular, the aim for students is to i) learn how to distinguish differences in research papers of related fields, ii) understand the connection between them and how researchers advance each area, and iii) be able to consider possible extensions of these works, as part of the final (open-ended) project of the course. Repeatable for Credit.
**COMP 546 - INTRODUCTION TO COMPUTER VISION**  
*Short Title:* INTRO TO COMPUTER VISION  
*Department:* Computer Science  
*Grade Mode:* Standard Letter  
*Course Type:* Lecture/Laboratory  
*Credit Hours:* 3  
*Restrictions:* Enrollment is limited to Graduate level students.  
*Course Level:* Graduate  
*Description:* An introduction to the basic concepts, algorithms and applications in computer vision. Topics include: cameras, camera models and imaging pipeline, low-level vision/image processing methods such as filtering and edge detection; mid-level vision topics such as segmentation and clustering; shape reconstruction from stereo, introduction to high-level vision tasks such as object recognition and face recognition. The course will involve programming and implementing basic computer vision algorithms in Matlab. Additional coursework required beyond the undergraduate course requirements. Cross-list: ELEC 546. Graduate/Undergraduate Equivalency: COMP 447. Mutually Exclusive: Cannot register for COMP 546 if student has credit for COMP 345/COMP 447.

**COMP 547 - COMPUTATIONAL GENOMICS FOR MICROBIAL FORENSICS**  
*Short Title:* COMP MICROBIAL FORENSICS  
*Department:* Computer Science  
*Grade Mode:* Satisfactory/Unsatisfactory  
*Course Type:* Seminar  
*Credit Hours:* 3  
*Restrictions:* Enrollment is limited to Graduate level students.  
*Course Level:* Graduate  
*Description:* We will review, critique, and discuss computational methods and approaches for microbial forensics and infectious disease monitoring in the genomics era. The seminar will be divided into topic-specific sessions, focusing on emerging research trends and open challenges in the field. Graduate/Undergraduate Equivalency: COMP 347. Mutually Exclusive: Cannot register for COMP 547 if student has credit for COMP 347.

**COMP 548 - VERIFIED PROGRAMMING**  
*Short Title:* VERIFIED PROGRAMMING  
*Department:* Computer Science  
*Grade Mode:* Standard Letter  
*Course Type:* Lecture  
*Credit Hours:* 3  
*Restrictions:* Enrollment is limited to Graduate level students.  
*Course Level:* Graduate  
*Description:* The course will explore the mathematical underpinnings of reliable software. The students will learn how to use proof assistants to construct software along with a machine-checkable proof of its correctness. Basic concepts of logic, functional programming, static type systems and deductive verification will be covered. Graduate/Undergraduate Equivalency: COMP 408.

**COMP 549 - APPLIED MACHINE LEARNING AND DATA SCIENCE PROJECTS**  
*Short Title:* DATA SCIENCE PROJECTS  
*Department:* Computer Science  
*Grade Mode:* Standard Letter  
*Course Type:* Lecture/Laboratory  
*Credit Hours:* 4  
*Course Level:* Graduate  
*Description:* In this project-based course, student teams will complete semester-long data science research or analysis projects selected from a variety of disciplines and industries. Students will also learn best practices in data science. Instructor Permission Required. Cross-list: DSCI 535. Graduate/Undergraduate Equivalency: COMP 449. Mutually Exclusive: Cannot register for COMP 549 if student has credit for COMP 449. Repeatable for Credit.

**COMP 550 - ALGORITHMIC ROBOTICS**  
*Short Title:* ALGORITHMIC ROBOTICS  
*Department:* Computer Science  
*Grade Mode:* Standard Letter  
*Course Type:* Lecture  
*Credit Hours:* 4  
*Restrictions:* Enrollment is limited to Graduate level students.  
*Course Level:* Graduate  
*Prerequisite(s):* (COMP 221 or COMP 321) and COMP 215  
*Description:* Robots have fascinated people for generations. Today, robots are built for applications as diverse as exploring remote planets, de-mining war zones, cleaning toxic waste, assembling cars, inspecting pipes in industrial plants and mowing lawns. Robots are also interacting with humans in a variety of ways: robots are museum guides, robots assist surgeon in life threatening operations, and robotic cars can drive us around. The field of robotics studies not only the design of new mechanisms but also the development of artificial intelligence frameworks to make these mechanism useful in the physical world, integrating computer science, engineering, mathematics and more recently biology and sociology, in a unique way. This class will present fundamental algorithmic advances that enable today's robots to move in real environments and plan their actions. It will also explore fundamentals of the field of Artificial Intelligence through the prism of robotics. The class involves a significant programming project. Cross-list: ELEC 550, MECH 550. Graduate/Undergraduate Equivalency: COMP 450. Mutually Exclusive: Cannot register for COMP 550 if student has credit for COMP 450.
COMP 554 - COMPUTER SYSTEMS ARCHITECTURE
Short Title: COMPUTER SYSTEMS ARCHITECTURE
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Evolution of key architecture concepts found in advanced uniprocessor systems. Fundamental and advanced pipelining techniques and associated issues for improving processor performance. Illustrated with RISC processors such as the ARM processor. Examine several metrics for processor performance, such as Amdahl's law. Key concepts of data and program memory systems found in modern systems with memory hierarchies and caches. Perform experiments in cache performance analysis. Influence of technology trends, such as Moore's law, on processor implementation. Approaches for exploiting instruction level parallelism, such as VLIW. Introduction to parallel and multicore architectures. Introduction to processor architectures targeted for embedded applications. Additional coursework required beyond the undergraduate course requirements. Cross-list: ELEC 554. Graduate/Undergraduate Equivalency: COMP 425. Mutually Exclusive: Cannot register for COMP 554 if student has credit for COMP 425.

COMP 555 - DESIGN AND ANALYSIS OF CYBER-PHYSICAL SYSTEMS
Short Title: DESIGN&ANALYSIS CYBER/PHYSICAL
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is an introduction to cyber-physical systems, engineering artifacts in which computational components interact with and typically control physical components. Some common examples of cyber-physical systems include robots, Segways and lane-departure warning, LDW, systems in automobiles. Graduate/Undergraduate Equivalency: COMP 451. Mutually Exclusive: Cannot register for COMP 555 if student has credit for COMP 451.

COMP 556 - INTRODUCTION TO COMPUTER NETWORKS
Short Title: INTRO TO COMPUTER NETWORKS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 221 or COMP 321

COMP 557 - ARTIFICIAL INTELLIGENCE
Short Title: ARTIFICIAL INTELLIGENCE
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 310 and (STAT 310 or ECON 307 or ECON 382 or STAT 312 or STAT 331 or ELEC 331 or ELEC 303) and (MATH 354 or MATH 355 or CAAM 335)
Description: This is a foundational course in artificial intelligence, the discipline of designing intelligent agents. The course will cover the design and analysis of agents that do the right thing in the face of limited information and computational resources. The course revolves around two main questions: how agents decide what to do, and how they learn from experience. Tools from computer science, probability theory, and game theory will be used. Interesting examples of intelligent agents will be covered, including poker playing programs, bots for various games (e.g. WoW), DS1 -- the spacecraft that performed an autonomous flyby of Comet Borrely in 2001, Stanley -- the Stanford robot car that won the Darpa Grand Challenge, Google Maps and how it calculates driving directions, face and handwriting recognizers, FedEx package delivery planners, airline fare prediction sites, and fraud detectors in financial transactions. Additional coursework required beyond the undergraduate course requirements. Cross-list: ELEC 557. Graduate/Undergraduate Equivalency: COMP 440. Mutually Exclusive: Cannot register for COMP 557 if student has credit for COMP 440.
Course URL: www.owlnet.rice.edu/~comp440 (http://www.owlnet.rice.edu/~comp440/)

COMP 560 - COMPUTER GRAPHICS AND GEOMETRIC MODELING
Short Title: COMPUTER GRAPHICS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A survey of core topics in Computer Graphics and Geometric Modeling, including fractals, ray tracing, hidden surface Algorithmic, Bezier, B-spline, blossoming techniques and subdivision procedures. Graduate/Undergraduate Equivalency: COMP 360. Mutually Exclusive: Cannot register for COMP 560 if student has credit for COMP 360.

COMP 561 - GEOMETRIC MODELING
Short Title: GEOMETRIC MODELING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Exploration of curves and surfaces (e.g. parametric form, implicit form, and conversion between forms), the representation of solid (e.g., wireframes, octrees, boundary representations, and constructive solid geometry), and applications (e.g., graphics, motion planning, simulation, and finite element mesh generation. Graduate/Undergraduate Equivalency: COMP 361. Repeatable for Credit.
COMP 571 - BIOINFORMATICS: SEQUENCE ANALYSIS
Short Title: BIOINFORMATICS: SEQUENCE
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers computational aspects of biological network analysis, a major theme in the area of systems biology. The course discusses protein-protein interaction, signaling, metabolic, and functional networks, and covers issues related to constructing, analyzing various types of networks, as well as how they can be used for downstream applications. Cross-list: BIOC 572, BIOE 564.

COMP 572 - BIOINFORMATICS: NETWORK ANALYSIS
Short Title: BIOINFORMATICS: NETWORKS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers computational aspects of biological network analysis, a major theme in the area of systems biology. The course discusses protein-protein interaction, signaling, metabolic, and functional networks, and covers issues related to constructing, analyzing various types of networks, as well as how they can be used for downstream applications. Cross-list: BIOC 572, BIOE 564.

COMP 573 - PROFESSIONAL DEVELOPMENT FOR BIOMEDICAL INFORMATICS
Short Title: BIOMEDICAL INFORMATICS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar introduces pre- and postdoctoral students in biomedical informatics to topics relevant to professional development in the discipline, which is no longer concentrated in labs as it was in its early days, but is now important in hospitals, outpatient clinics, companies and even the community. In these settings, researchers and practitioners are likely to encounter not only difficult technical challenges, but vexing problems of organizational change and development as well. We will consider some of these challenges, drawing on the insights of experts in psychology, organizational change, management and communications along with industry representatives and entrepreneurs. The seminar mixes lectures and readings with group and individual exercises. Instructor Permission Required. Repeatable for Credit.

COMP 576 - A PRACTICAL INTRODUCTION TO DEEP MACHINE LEARNING
Short Title: INTRODUCTION TO DEEP LEARNING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Deep Machine Learning has recently made many advances in difficult perceptual tasks, including object and phoneme recognition, and natural language processing. However, the field has a steep learning curve, both conceptually and practically. The point of this course is to engage students by jumping into the deep end, and building their own architectures and algorithms. Cross-list: ELEC 576.

COMP 580 - PROBABILISTIC ALGORITHMS AND DATA STRUCTURE
Short Title: PROBABILISTIC ALGORITHMS AND DATA STRUCTURE
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will be ideal for someone wanting to build a strong foundation in the theory and practice of algorithms for processing Big-Data. We will discuss advanced data structures and algorithms going beyond deterministic setting and emphasize the role of randomness in getting significant, often exponential, improvements in computations and memory. Graduate/Undergraduate Equivalency: COMP 480.

COMP 581 - AUTOMATA, FORMAL LANGUAGES, AND COMPUTABILITY
Short Title: AUTOMATA/FORMAL LANG/COMPUTING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Finite automata, regular expressions, regular languages, pushdown automata, context-free languages, Turing machines, recursive languages, computability, and solvability. It is strongly recommended that students complete three semesters of Mathematics before enrolling in this course. Graduate/Undergraduate Equivalency: COMP 481. Mutually Exclusive: Cannot register for COMP 581 if student has credit for COMP 481.

COMP 582 - GRADUATE DESIGN AND ANALYSIS OF ALGORITHMS
Short Title: GR DESGN ANALY OF ALGORITHMS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 310 or ECON 307 or STAT 331 or ELEC 331 or ELEC 303 or STAT 312
Description: Methods for designing and analyzing computer algorithms and data structures. The focus of this course will be on the theoretical and mathematical aspects of algorithms and data structures. Cross-list: ELEC 512.
COMP 587 - COMPUTATIONAL COMPLEXITY
Short Title: COMPUTATIONAL COMPLEXITY
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 382 or COMP 409 or COMP 509 or COMP 481 or COMP 581
Description: In Computational Complexity we study the computational resources (time, space, communication, etc.) that are required to solve computational problems via various computational needs. Specifically, we are interested in classifying computational problems with classes of other problems that require similar amount of resources to solve. Graduate/Undergraduate Equivalency: COMP 487. Mutually Exclusive: Cannot register for COMP 587 if student has credit for COMP 487.

COMP 590 - COMPUTER SCIENCE PROJECTS
Short Title: COMPUTER SCIENCE PROJECTS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced theoretical and experimental investigations under staff direction. The student must have a full-time internship to receive 4 credits for this course. Instructor Permission Required. Repeatable for Credit.

COMP 591 - GRADUATE COMPUTER SCIENCE TEACHING
Short Title: GRAD COMPUTER SCIENCE TEACHING
Department: Computer Science
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Independent Study
Credit Hours: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A combination of in-service teaching and a seminar. Instructor Permission Required. Repeatable for Credit.

COMP 598 - INTRODUCTION TO ROBOTICS
Short Title: INTRODUCTION TO ROBOTICS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the kinematics, dynamics, and control of robot manipulators and to applications of artificial intelligence and computer vision in robotics. Additional work required for Graduate course. Cross-list: ELEC 598, MECH 598. Graduate/Undergraduate Equivalency: COMP 498. Mutually Exclusive: Cannot register for COMP 598 if student has credit for COMP 498.

COMP 600 - GRADUATE SEMINAR IN COMPUTER SCIENCE
Short Title: GRADUATE SEMINAR
Department: Computer Science
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Doctor of Philosophy or Master of Science degrees.
Course Level: Graduate
Description: The seminar course meets weekly to discuss current research results by graduate students in the Computer Science Department. Senior Ph.D. Students are expected to present their research results. This course is open ONLY to MS and Ph.D. Students. MCS students may NOT take this course for credit without the consent of the instructor. Repeatable for Credit.
Course URL: www.clear.rice.edu/comp600/ (http://www.clear.rice.edu/comp600/)

COMP 601 - WRITING AND EDITING CONFERENCE PAPERS
Short Title: WRITING & EDITING CONF PAPERS
Department: Computer Science
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is a seminar on technical writing and preparing publications for peer review. The focus is on conference papers, around 6-10 pages in length. The main topics are: 1) The structure of a conference publication, with guest lectures from the faculty. 2) Good daily writing habits with a group accountability system. 3) Editing techniques and the development a departmental 'writing community' with interactive editing sessions. This course will cover a few topics from ENGI 600, but the main focus will be on short computer science conference documents and interactive peer editing. ENGI 600 is still the correct course to take for writing in general, thesis preparation, or journal publications. This course will complement COMP 600, and to develop the same community for writing as this class does for presentations. Repeatable for Credit.

COMP 602 - NEURAL MACHINE LEARNING AND DATA MINING II
Short Title: NEURAL MACHINE LEARNING II
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ELEC 502 or COMP 502 or STAT 502
Description: Advanced topics in ANN theories, with a focus on learning high-dimensional complex manifolds with neural maps (Self-Organizing Maps, Learning Vector Quantizers and variants). Application to data mining, clustering, classification, dimension reduction, sparse representation. The course will be a mix of lectures and seminar discussions with active student participation, based on most recent research publications. Students will have access to professional software environment to implement theories. Cross-list: ELEC 602, STAT 602. Repeatable for Credit.
Course URL: www.ece.rice.edu/~erzsebet/NMLcourseII.html (http://www.ece.rice.edu/~erzsebet/NMLcourseII.html)
COMP 607 - AUTOMATED PROGRAM VERIFICATION

Short Title: AUTOMATED PROGRAM VERIFICATION
Department: Computer Science
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Methods, tools and theories for the computer-aided verification of concurrent systems. Repeatable for Credit.
Course URL: www.cs.rice.edu/~vardi/comp607/ (http://www.cs.rice.edu/~vardi/comp607/)

COMP 610 - SOFTWARE CONSTRUCTION

Short Title: SOFTWARE CONSTRUCTION
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment limited to students in the OMCS program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 613
Description: This course focuses on modern principles for the construction of large-scale programs, with an emphasis on design patterns, modern programming tools, and team management. The material will be applied in a substantial software design/construction project. The course has a significant oral and written communication component where students will be required to document and present their software design.

COMP 611 - TOPICS IN PROGRAMMING LANGUAGES AND FORMAL METHODS

Short Title: PROGRAMMING & FORMAL METHODS
Department: Computer Science
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 613 and COMP 613
Description: This course will cover a selection of topics from the areas of programming languages and formal methods. All students will read classical and recent papers on the selected topics and give presentations on them. A student may elect to perform a semester-long project on a topic related to the content of the course and write a short report on their findings. Repeatable for Credit.

COMP 613 - PROGRAMMING LANGUAGES AND DESIGN

Short Title: PROGRAMMING LANGUAGES
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to students in the MCS or OMCS programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers important concepts of programming languages that are critical to understanding and constructing software artifacts. These concepts will be studied in the context of multiple programming paradigms, including functional and object-oriented programming. By using different paradigms, you will learn to think more deeply than in terms of a single approach or the syntax of one language. This course aims to provide a framework for understanding how to use language constructs effectively and how to design correct and elegant programs in any language.

COMP 620 - GRADUATE SEMINAR IN COMPUTER SYSTEMS

Short Title: GRAD SEMINAR COMP SYSTEMS
Department: Computer Science
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Content varies at discretion of instructor. Repeatable for Credit.

COMP 621 - SYSTEMS SOFTWARE

Short Title: SYSTEMS SOFTWARE
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the OMCS program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 625 and COMP 613
Description: Modern computer systems are designed and implemented in a layered fashion, wherein each layer builds upon those beneath it, providing abstractions for processing, memory, and I/O that are progressively more abstracted from the hardware and easier to use than those of the underlying layers. While this layered architecture has made building systems easier, it has also made understanding their behavior and performance more difficult. Every layer from the managed run-time environments used by modern programming languages to the hypervisor play a role in processor scheduling, memory management, and I/O, making it oftentimes difficult to pinpoint which layer of the system is interacting poorly with a program. This class will teach students about the fundamental characteristics of the abstractions for processing, memory, and I/O at each layer of a modern computer system, so that they might understand the functionality provided by each layer, and instruct them on the use of modern debugging, profiling, and tracing tools, so that they are equipped to characterize the behavior and performance of their programs.
COMP 625 - COMPUTER ARCHITECTURE
Short Title: COMPUTER ARCHITECTURE
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the OMCS program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: It has become increasingly important to understand the underlying properties of modern computer architectures. System organization, including memory hierarchies, parallel processor organization, and interconnection networks can have a large impact on the performance of software systems. This course aims to provide a foundational understanding of key computer architecture concepts and their impact on performance.

COMP 628 - NETWORKS AND SECURITY
Short Title: NETWORKS AND SECURITY
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the OMCS program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Many modern web services, such as Facebook or YouTube, rely on a set of computers that coordinate across a network. A networked system raises unique challenges, not the least of which is security. As applications can send messages to or receive messages from other remote applications, it is important to ensure that such network-facing programs are secure, even if parts of the system may not be trustworthy. This course will teach the concepts, architecture, and implementation of network applications that have high security assurance in the presence of threats. We will cover typical attacks, such as denial-of-service, remote exploits, as well as security practices that developers can adopt to address these challenges.

COMP 630 - DATABASES
Short Title: DATABASES
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MCS or OMCS programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is an introduction to relational and other (NoSQL) database systems, SQL programming, and database design. This course will teach students how to understand trade-offs in database design, to create well-designed databases, and to develop proficiency in effectively managing data in a database. The course is focused on developing skills as a database designer and power-user. It also includes discussions of database implementation details to enable students to understand underlying system functionality and how that impacts decisions a database designer makes.

COMP 640 - GRADUATE SEMINAR IN MACHINE LEARNING
Short Title: GR SEM IN MACHINE LEARNING
Department: Computer Science
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A reading course covering the latest developments in statistical machine learning and pattern recognition. Recommended Prerequisite(s): COMP 440. Repeatable for Credit.

COMP 642 - MACHINE LEARNING
Short Title: MACHINE LEARNING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MCS or OMCS programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 682
Description: Machine learning is the process of automatically inferring a function from a set of data. In essence, machine learning techniques seek to automate the inductive learning process that humans do so well. Furthermore, the availability of large training sets combined with significant computing power has made machine learning an extremely important body of knowledge across a large range of application domains. A small sample of some of the application domains include robotics, medicine, speech/facial recognition, and driving autonomous vehicles. This course will focus on providing a foundational understanding of modern algorithms in machine learning, focusing on practical applications.

COMP 643 - BIG DATA
Short Title: BIG DATA
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the OMCS program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 630
Description: This course is an introduction to modern data science. Data science is the study of how to extract actionable, non-trivial knowledge from data. The course will focus on software tools used by practitioners of modern data science, the mathematical and statistical models that are employed in conjunction with such software tools and the applications of these tools and systems to different problems and domains. In particular, this class explores the use of these tools and models in the analysis of “big” data, that is datasets that are too large to be analyzed on a typical personal computer.
COMP 645 - ADVANCED TOPICS IN DISTRIBUTED SYSTEMS
Short Title: ADV TOPICS IN DISTRIBUTED SYST
Department: Computer Science
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: We will learn about and discuss recent advances in various areas in computer systems, including topics on security, distributed systems, networking, operating systems, and databases. The seminar will be divided into several sections, with each section focusing on one research trend. In each class, students will read one classic paper on the topic, and present two recent papers that describe the state of the art. Students can also team up and do a semester-long research project on any relevant topics. All students will need to make a final presentation at the end of the class on a potential project idea; for students that choose to do a semester-long project, they will also submit a six-page report on their project, in addition to giving a final presentation. Instructor Permission Required. Cross-list: ELEC 692. Repeatable for Credit.

COMP 650 - PHYSICAL COMPUTING
Short Title: PHYSICAL COMPUTING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Methods, tools and theories for reasoning about problems with physical constraints. The student may elect to perform a project to receive more than 1 credit hour. Instructor Permission Required. Repeatable for Credit.

COMP 655 - DATA VISUALIZATION
Short Title: DATA VISUALIZATION
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the OMCS program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Data is being generated by humans and algorithms at an astounding rate. Having the ability to analyze and interpret this data visually is a key technique for coping with this explosion. This class will cover the basic ways that various types of data can be visualized and what properties distinguish useful visualizations from not so useful ones. The class will use Python as both the primary tool for processing the data as well creating visualizations of this data. To enhance the students' depth of knowledge, the class will also cover some of the geometric algorithms used to create advanced visualizations.

COMP 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

COMP 680 - STATISTICS FOR COMPUTING AND DATA SCIENCE
Short Title: STATS COMPUTING DATA SCIENCE
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Probability and statistics are essential tools in computer science and data science. They are at the heart of areas such as efficiency analysis of algorithms and randomized algorithms and central to fields like bioinformatics, social informatics, and, of course, machine learning. Furthermore, probability and statistics are essential for data science, as they are the foundation for quantifying uncertainty and assessing support for hypotheses and derived models. This course covers topics in probability and statistics, including probability and random variables, basic stochastic processes, basic descriptive statistics, and various methods for statistical inference and measuring support.

COMP 682 - PRINCIPLES OF ALGORITHMS AND SOFTWARE AREA
Short Title: ALGORITHMS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the OMCS program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Algorithms are the recipes that underlie all computations executed by a computer. Designing new algorithms, proving their correctness, and analyzing their computational requirements are three foundational tasks in all areas of computer science. This course covers all these three aspects of algorithms. Topics covered include growth of functions, asymptotic notation and analysis, graphs and their properties, graph exploration, graph algorithms, greedy algorithms, divide-and-conquer algorithms, dynamic programming, NP-Completeness, and heuristic search algorithms.

COMP 690 - RESEARCH AND THESIS
Short Title: RESEARCH AND THESIS
Department: Computer Science
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-12
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.
COMP 693 - ADVANCED TOPICS-COMPUTER SYSTEMS
Short Title: ADV TOPICS - COMPUTER SYSTEMS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is a discussion based seminar about state of the art embedded and digital signal processing systems, with emphasis on both hardware architectures as well as software tools, programming models, and compilers. The seminar focuses on state of the art academic and commercial offerings in these areas. Cross-list: ELEC 693. Repeatable for Credit.

COMP 694 - HOW TO BE A CHIEF TECHNOLOGY OFFICER
Short Title: HOW TO BE A CTO
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A seminar course to introduce students to topics in Data Science at the interface between Statistics and Computer Science. Students participate in the process of preparing, delivering and critiquing talks. Topics change each semester. Instructor Permission Required. Cross-list: STAT 496. Repeatable for Credit.

COMP 696 - RTG CROSS-TRAINING IN DATA SCIENCE
Short Title: RTG CROSS-TRAINING IN DATA SCI
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1
Restrictions: Enrollment is limited to students with a major in Computer Science or Statistics. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A seminar course to introduce students to topics in Data Science at the interface between Statistics and Computer Science. Students participate in the process of preparing, delivering and critiquing talks. Topics change each semester. Instructor Permission Required. Cross-list: STAT 696. Graduate/Undergraduate Equivalency: COMP 496. Mutually Exclusive: Cannot register for COMP 496 if student has credit for COMP 696. Repeatable for Credit.

DSCI 301 - PROBABILITY AND STATISTICS FOR DATA SCIENCE
Short Title: STATISTICS FOR DATA SCIENCE
Department: Data Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 102 or MATH 106 or MATH 112
Description: An introduction to mathematical statistics and computation for applications to data science. Topics include probability, random variables expectation, sampling distributions, estimation, confidence intervals, hypothesis testing and regression. A weekly lab will cover the statistical package, R, and data projects. Cross-list: STAT 315. Recommended Prerequisite(s): MATH 212. Mutually Exclusive: Cannot register for DSCI 301 if student has credit for ECON 307/STAT 310.

DSCI 302 - INTRODUCTION TO DATA SCIENCE TOOLS AND MODELS
Short Title: DATA SCIENCE TOOLS AND MODELS
Department: Data Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 140 and (DSCI 301 or ECON 307 or STAT 310 or STAT 315)
Description: This course introduces key concepts in data management, preparation, and modeling and provides students with hands-on experience in performing these tasks using modern tools, including relational databases and Spark. Models covered include linear and logistic regression and gradient descent. For registration purposes, COMP 140 is a required prerequisite for this course. With instructor permission, students that have taken CAAM 210 (or another applicable course) may be allowed to special register for this course. Students seeking this instructor permission (to waive or substitute the COMP 140 prerequisite requirement) are expected to know the Python programming language, and may be required to demonstrate proficiency.

DSCI 303 - MACHINE LEARNING FOR DATA SCIENCE
Short Title: MACHINE LEARNING FOR DS
Department: Data Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): DSCI 301 and DSCI 302
Description: This course is an introduction to concepts, methods, best practices, and theoretical foundations of machine learning. Topics covered include regression, classification, kernels, dimensionality reduction, clustering, decision trees, ensemble learning, regularization, learning theory, and neural networks. Recommended Prerequisite(s): CAAM 334 or CAAM 335 or MATH 355 Mutually Exclusive: Cannot register for DSCI 303 if student has credit for ELEC 478/ELEC 578.
DSCI 304 - INTRODUCTION TO EFFECTIVE DATA VISUALIZATION
Short Title: DATA VISUALIZATION
Department: Data Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (DSCI 301 or ECON 307 or STAT 310 or STAT 315) and DSCI 302 (may be taken concurrently)
Description: This course teaches fundamental data visualization skills to undergraduate students in the Data Science minor. Students will learn how to create data visualizations in Python or R, how to design effective visualizations that account for visual perception, and how to explain and present data to technical and non-technical audiences.

DSCI 305 - DATA, ETHICS, AND SOCIETY
Short Title: DATA, ETHICS, AND SOCIETY
Department: Data Science
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An examination of the ethical implications and societal impacts of choices made by data science professionals. The course will provide practical guidance on evaluating ethical concerns, identifying the potential for harm, and applying best practices to protect privacy, design responsible algorithms, and increase the societal benefit of data science research.

DSCI 400 - DATA SCIENCE AND MACHINE LEARNING SELF-GUIDED CAPSTONE LABORATORY
Short Title: DATA SCIENCE CAPSTONE LAB
Department: Data Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (DSCI 301 or STAT 315 or STAT 310 or ECON 307) and (DSCI 302 or COMP 330) and (DSCI 303 or STAT 413 or COMP 540) and DSCI 304
Description: In this project-based course, student teams will complete semester-long data science and machine-learning research projects. These projects may be selected from a variety of disciplines and industries, where freedom is given in defining the projects. The course is about learning best practices in data science and machine learning while finding a suitable curiosity-driven project to build these methods and systems around.

DSCI 415 - DATA SCIENCE CONSULTING
Short Title: DATA SCIENCE CONSULTING
Department: Data Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): STAT 405 or COMP 140 or CAAM 210
Description: Students in this course will advise clients at Rice and beyond in a data science consulting clinic, learn best practices in consulting, and gain exposure to a variety of real data science problems. Instructor Permission Required. Graduate/Undergraduate Equivalency: DSCI 515. Mutually Exclusive: Cannot register for DSCI 415 if student has credit for DSCI 515. Repeatable for Credit.

DSCI 435 - APPLIED MACHINE LEARNING AND DATA SCIENCE PROJECTS
Short Title: DATA SCIENCE PROJECTS
Department: Data Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: In this project-based course, student teams will complete semester-long data science research or analysis projects selected from a variety of disciplines and industries. Students will also learn best practices in data science. Instructor Permission Required. Cross-list: COMP 449. Graduate/Undergraduate Equivalency: DSCI 535. Repeatable for Credit.

DSCI 515 - DATA SCIENCE CONSULTING
Short Title: DATA SCIENCE CONSULTING
Department: Data Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students in this course will advise clients from across this Rice community in a data science consulting clinic, learn best practices in consulting, and gain exposure to a variety of real data science problems. Instructor Permission Required. Graduate/Undergraduate Equivalency: DSCI 415. Mutually Exclusive: Cannot register for DSCI 515 if student has credit for DSCI 415. Repeatable for Credit.
DSCI 535 - APPLIED MACHINE LEARNING AND DATA SCIENCE
PROJECTS
Short Title: DATA SCIENCE PROJECTS
Department: Data Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this project-based course, student teams will complete semester-long data science research or analysis projects selected from a variety of disciplines and industries. Students will also learn best practices in data science. Instructor Permission Required. Cross-list: COMP 549. Graduate/Undergraduate Equivalency: DSCI 435. Repeatable for Credit.

Dissertation/Thesis Submission (DSRT)

DSRT 101 - HORIZONTAL PARKING
Short Title: HORIZONTAL PARKING
Department: Dean of Undergraduates
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Course Level: Undergraduate Lower-Level
Description: TEST COURSE - DO NOT REGISTER.

DSRT 999 - DISSERTATION/THESIS SUBMISSION
Short Title: DISSERTATION/THESIS SUBMISSION
Department: Dean Graduate/Postdoc Studies
Grade Mode: Study Away
Course Type: Independent Study
Credit Hours: 0
Restrictions: Enrollment is limited to Graduate level students.
Description: Repeatable for Credit.

Earth Science (ESCI)

ESCI 101 - THE EARTH
Short Title: THE EARTH
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Study of the nature of the Earth and its processes. Cross-list: ENST 101. Mutually Exclusive: Cannot register for ESCI 101 if student has credit for ESCI 115/ESCI 301.

ESCI 102 - HISTORY OF THE EARTH AND LIFE
Short Title: HISTORY OF THE EARTH & LIFE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Study of Earth's systems over the past 4.6 billion years. Topics include evolution of life, continents, ocean basins and climate. Cross-list: ENST 102.

ESCI 103 - FIELD TRIPS FOR THE ENVIRONMENT
Short Title: ENVIRONMENTAL FIELD TRIPS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Interested in the environment and earth? This class is an opportunity to see the Houston area from an environmental perspective. Class will meet every other Friday afternoon and will go on field trips to explore our local geological, biological, and built environments.

ESCI 106 - INVESTIGATING EARTH'S SURFACE
Short Title: INVESTIGATING EARTH'S SURFACE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will be investigation-based course covering processes on Earth’s surface, such as carbon cycling, ocean and atmospheric circulation, and climate change. Lectures will be minimal. Most work will be in-class assignments.

ESCI 107 - OCEANS AND GLOBAL CHANGE
Short Title: OCEANS AND GLOBAL CHANGE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Overview of the impact of the ocean and ocean evolution on the Earth's climate. Includes geological, physical, chemical, and biological aspects of change.
ESCI 108 - CRISES OF THE EARTH
Short Title: CRISES OF THE EARTH
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Geological and environmental crises have affected Earth throughout history. Included are meteorite impacts, global extinctions, volcanic eruptions, earthquakes, tsunamis, effect of humans on environment, as well as an overview of historical perspectives, scientific background, and development of these processes, the development of predictive scenarios, and society's adaptations to such hazards.

ESCI 109 - OCEANOGRAPHY
Short Title: OCEANOGRAPHY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction to the oceans, with an emphasis on how the physics, chemistry, geology, and biology of the oceans are linked.

ESCI 110 - THE EARTH SYSTEM, ENVIRONMENT, AND SOCIETY
Short Title: EARTH, ENVIRONMENT, & SOCIETY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course introduces the Earth system, and explores how the environment has changed over time, and the physical, chemical and biological processes responsible for these changes. The course places special emphasis on human-Earth interactions, in the past, present, and future. Topics will include Earth's ecosystems, oceans, and atmosphere, natural resources, natural hazards including catastrophic events, as well as climate change and the role of humans in modifying Earth's environment.

ESCI 111 - INHABITING PLANET EARTH
Short Title: INHABITING PLANET EARTH
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to students with a class of Freshman or Sophomore. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Why is Earth habitable? How do we sustain our existence on this unique planet? This freshmen-only course will introduce students to our species' interactions with Planet Earth. We will explore what makes a planet habitable, our planet's history, and how humans are altering Earth's future, along with an in-depth investigation into the geologic and paleoclimate history of the American Southwest. The course is designed around three case studies, each with a unique approach to interpreting the habitability of Earth. The first unit covers the building of Planet Earth and geologic factors that control habitability. The second unit covers the American Southwest and will involve a 3-4 day field trip to the Grand Canyon over the Fall Recess to put course objectives into practice in a field setting. The final segment of the course will focus on human impacts on our planet, environmental policy and reading the recently published National Climate Assessment.

ESCI 113 - ENVIRONMENTAL CRISIS SEMINAR
Short Title: ENVIRONMENTAL CRISIS SEMINAR
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level

ESCI 114 - DISCOVERIES IN EARTH, ENVIRONMENTAL AND PLANETARY SCIENCES SEMINAR
Short Title: DISCOVERIES IN EEPS SEMINAR
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Overview of exciting discoveries, research and recent advances in Earth, Environmental, and Planetary Sciences, facilitated through discussions with graduate students and faculty, as well as laboratory visits and demonstrations. Topics may vary. Distribution Credit for ESCI/ENST 114 no longer eligible beginning Fall 2019. Cross-list: ENST 114.
ESCI 115 - INTRODUCTION TO THE EARTH

Short Title: INTRODUCTION TO THE EARTH
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Lower-Level
Description: This course provides a comprehensive introduction to the Earth, its origins and composition, and the processes that change it, covering rock and mineral identification, geologic maps, plate tectonics and its causes, Earth structure and geophysics, sedimentology and stratigraphy, and surface processes. Mutually Exclusive: Cannot register for ESCI 115 if student has credit for ESCI 101/ESCI 301.

ESCI 201 - THE SCIENCE OF CLIMATE CHANGE

Short Title: SCIENCE OF CLIMATE CHANGE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Lower-Level
Description: This undergraduate course will introduce students to the fundamentals of natural and anthropogenic climate change. After briefly reviewing Earth’s composition and its fluid envelopes, we will cover the basic physics of the climate system, providing tools to understand weather and climate phenomena (e.g. monsoons, El Niño), the greenhouse effect, and climate feedbacks. Building on this understanding, a succinct tour of geologic history will help us paint a more complete picture of Earth's climate variations and how they affected human evolution and history. With this context, we will be able to judge the anomalous character of recent climate change, establish its anthropogenic nature, and discuss solutions to the current climate crisis. Students from any major are encouraged to enroll and engage on important topic. Cross-list: ENST 201.

ESCI 214 - THE PLANETS

Short Title: THE PLANETS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Lower-Level
Description: The physical, chemical, and geological development of the solar system from 4.6 billion years ago until today. All planets, their major satellites, comets, and asteroids will be discussed.

ESCI 238 - SPECIAL TOPICS

Short Title: SPECIAL TOPICS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Laboratory, Lecture, Seminar, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

ESCI 299 - EXPERIENTIAL EDUCATION IN EARTH, ENVIRONMENTAL, AND PLANETARY SCIENCES

Short Title: EXPERIENTIAL ED IN EARTH SCI
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Lower-Level
Description: This course is designed to allow currently enrolled undergraduate students to gain experience in a department/faculty-approved internship/practicum with the goal of further developing their professional skills. Repeatable for Credit.

ESCI 307 - ENERGY AND THE ENVIRONMENT

Short Title: ENERGY AND THE ENVIRONMENT
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level
Description: This course explores the physical principles of energy use and its impact on Earth’s environment and climate. Topics will include energy mechanics, climate change, and the environmental impacts and future prospects of various fossil fuel and alternative energy sources. Cross-list: CEVE 307, ENST 307.

ESCI 321 - EARTH SYSTEM EVOLUTION AND CYCLES

Short Title: EARTH SYSTEM EVOLUTION/CYCLES
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level
Prerequisite(s): ESCI 101 (may be taken concurrently) or ESCI 115 (may be taken concurrently) or ESCI 301 (may be taken concurrently)
Description: This course introduces the systems and processes that shape Earth’s surface including weathering, sediment transport, ocean and atmosphere circulation, accumulation of sedimentary material and organisms, including man. This course requires a once-a-week 3-hour lab. Prerequisites ESCI 101 or ESCI 115 or ESCI 301 can be taken concurrently or with permission of instructor. Recommended Prerequisite(s): MATH 101, 102, PHYS 101 or 111, CHEM 121 or 151.
ESCI 322 - EARTH CHEMISTRY AND MATERIALS
Short Title: EARTH CHEMISTRY & MATERIALS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ESCI 101 (may be taken concurrently) or ESCI 115 (may be taken concurrently) or ESCI 301 (may be taken concurrently)
Description: This course introduces rock-forming processes related to the chemical and physical differentiation of the solid Earth into its main reservoirs: continental crust, oceanic crust, mantle, and core. Beginning with the bulk Earth and an overview of the chemical and petrologic properties of the rocks that make up each of these reservoirs. The basic principles of igneous, metamorphic and sedimentary petrology will be presented in the context of the rock cycle, plate tectonics, as well as the origin of economically and societally important ore deposits. A laboratory and field trip, where students will see petrologic principles applied, will be required. Prerequisites ESCI 101, ESCI 115 or ESCI 301 can be taken concurrently or with permission of instructor. Recommended prerequisite(s): MATH 101 and MATH 102, CHEM 121 or CHEM 151.

ESCI 323 - EARTH STRUCTURE AND DEFORMATION
Short Title: EARTH STRUCTURE & DEFORMATION
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ESCI 101 (may be taken concurrently) or ESCI 115 (may be taken concurrently) or ESCI 301 (may be taken concurrently)
Description: Introduction to the mechanics and deformation of the Earth's crust and lithosphere, emphasizing rock strength and rheology, earthquakes and faulting, brittle and ductile deformation mechanisms and processes, and an introduction to tectonic systems. Lab will develop skills for recognition, interpretation, and analysis of deformation structures and processes on maps, cross-sections and seismograms. Prerequisites ESCI 101 or ESCI 115 or ESCI 301 can be taken concurrently or with permission of instructor. Recommended Prerequisite(s): MATH 101 and (PHYS 101 or PHYS 111). These may be taken concurrently. Mutually Exclusive: Cannot register for ESCI 323 if student has credit for ESCI 333.

ESCI 324 - EARTH'S INTERIOR
Short Title: EARTH'S INTERIOR
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ESCI 101 or ESCI 115
Description: Formation of Earth and solar system, Earth differentiation and geochronology. Structural seismology and the composition of Earth's interior. Density, Earth's gravity, and the geoid. Heat flow and Earth energetics. Earth's core and magnetic field. Mantle convection and plate tectonics. Oceanic and continental crust. Recommended Prerequisite(s): MATH 212 and (PHYS 101 or PHYS 111 or PHYS 125 or PHYS 141) or (PHYS 102 or PHYS 112 or PHYS 126 or PHYS 142).

ESCI 330 - GEOARCHAEOLOGY
Short Title: GEOARCHAEOLOGY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Anthropology or Earth Science. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Overview of the basics of the analysis of soils and sediments as related to archaeological deposits, and introducing the key concepts of surficial geology, site formation, landscape evolution, and the scope of depositional environments. Includes practical methods for describing stratigraphy, sediments and soil profiles in the field. Cross-list: ANTH 330.

ESCI 334 - GEOLOGICAL TECHNIQUES
Short Title: GEOLOGICAL TECHNIQUES
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Earth Science. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ESCI 322 and ESCI 323 (may be taken concurrently) and (ESCI 101 or ESCI 115 or ESCI 301)
Description: An introduction to the basic methods of description, recording, and interpretation of geologic features in the field, including rock and outcrop description, geologic mapping and cross-section construction. The course includes one or two required field trips during Saturdays, as well as a required seven day excursion either during Spring Break or during the semester. Taught every Spring. ESCI 323 may be taken concurrently with ESCI 334.
<table>
<thead>
<tr>
<th>Short Title</th>
<th>ESCI 340 - GLOBAL BIOGEOCHEMICAL CYCLES</th>
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<tbody>
<tr>
<td>Department</td>
<td>Earth/Environmnt/Planetary Sci</td>
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<tr>
<td>Grade Mode</td>
<td>Standard Letter</td>
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<tr>
<td>Course Type</td>
<td>Lecture/Laboratory</td>
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<tr>
<td>Distribution Group</td>
<td>Distribution Group III</td>
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<tr>
<td>Credit Hours</td>
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<tr>
<td>Restrictions</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
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<td>Course Level</td>
<td>Undergraduate Upper-Level</td>
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<tr>
<td>Description</td>
<td>This course introduces students to the coupled nature of the biosphere, atmosphere and hydrosphere using as focal points elemental cycles such as those of carbon and nitrogen. This is a writing-intensive class, and will include 3 required Saturday field trips. Cross-list: EBio 340, ENST 340.</td>
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<tr>
<th>Short Title</th>
<th>ESCI 380 - VISUALIZING NATURE</th>
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<tr>
<td>Department</td>
<td>Earth/Environmnt/Planetary Sci</td>
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<tr>
<td>Grade Mode</td>
<td>Standard Letter</td>
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<tr>
<td>Course Type</td>
<td>Lecture/Laboratory</td>
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<tr>
<td>Credit Hours</td>
<td>3</td>
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<td>Restrictions</td>
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<tr>
<td>Course Level</td>
<td>Undergraduate Upper-Level</td>
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<tr>
<td>Description</td>
<td>An experimental course combining the scientific disciplines of the earth sciences with the artistic disciplines of creative photography to study the natural landscape and related ecosystems. The course will combine classroom lectures and laboratory demonstrations in geoscience with classes in the use of digital and film-based cameras and illustrated lectures on recognized achievements in landscape photography. Extensive field trips will be scheduled. Students will travel frequently, at times in pairs, other times in larger groups and as a full class, accompanied by one or both professors. The budget for the course includes funding both for travel and for photography expenses. Instructor Permission Required. Cross-list: FOTO 390.</td>
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<tr>
<th>Short Title</th>
<th>ESCI 391 - EARTH SCIENCE FIELD EXPERIENCE</th>
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<tr>
<td>Department</td>
<td>Earth/Environmnt/Planetary Sci</td>
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<tr>
<td>Grade Mode</td>
<td>Satisfactory/Unsatisfactory</td>
</tr>
<tr>
<td>Course Type</td>
<td>Independent Study</td>
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<tr>
<td>Credit Hours</td>
<td>1-6</td>
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<tr>
<td>Restrictions</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
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<tr>
<td>Course Level</td>
<td>Undergraduate Upper-Level</td>
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<tr>
<td>Description</td>
<td>Comprises participating in an earth science expedition or research experience, follow-up analysis of some aspect of the data acquired, and a written report. Must be approved in advance by one of the department undergraduate advisors. Instructor Permission Required.</td>
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<tr>
<th>Short Title</th>
<th>ESI 401 - SEMINAR: UNDERGRADUATE HONORS THESIS</th>
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<tr>
<td>Department</td>
<td>Earth/Environmnt/Planetary Sci</td>
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<tr>
<td>Grade Mode</td>
<td>Satisfactory/Unsatisfactory</td>
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<tr>
<td>Course Type</td>
<td>Seminar</td>
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<tr>
<td>Credit Hour</td>
<td>1</td>
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<td>Restrictions</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
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<tr>
<td>Course Level</td>
<td>Undergraduate Upper-Level</td>
</tr>
<tr>
<td>Description</td>
<td>Introduction to and presentation of original undergraduate research for Earth Science Undergraduate Honors Thesis candidates. Students will be introduced to basic research protocols and approaches, and will learn how to give presentations on their research, and gain experience presenting their research. Repeatable for Credit.</td>
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<tr>
<th>Short Title</th>
<th>ESI 403 - SEMINAR: DEPARTMENT RESEARCH</th>
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<tr>
<td>Department</td>
<td>Earth/Environmnt/Planetary Sci</td>
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<tr>
<td>Grade Mode</td>
<td>Satisfactory/Unsatisfactory</td>
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<tr>
<td>Course Type</td>
<td>Seminar</td>
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<td>Credit Hour</td>
<td>1</td>
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<tr>
<td>Course Level</td>
<td>Undergraduate Upper-Level</td>
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<tr>
<td>Description</td>
<td>Introduction to current research in the Earth Science department. Students will learn how to give a presentation and will get experience presenting their research. Graduate/Undergraduate Equivalency. ESI 603. Repeatable for Credit.</td>
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<tr>
<th>Short Title</th>
<th>ESI 404 - SEMINAR: DEPARTMENT RESEARCH</th>
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<tr>
<td>Department</td>
<td>Earth/Environmnt/Planetary Sci</td>
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<tr>
<td>Grade Mode</td>
<td>Satisfactory/Unsatisfactory</td>
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<tr>
<td>Course Type</td>
<td>Seminar</td>
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<tr>
<td>Credit Hour</td>
<td>1</td>
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<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
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<tr>
<td>Course Level</td>
<td>Undergraduate Upper-Level</td>
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<tr>
<td>Description</td>
<td>Introduction to current research in the Earth Science department. Students will learn how to give a presentation and will get experience presenting their research. Graduate/Undergraduate Equivalency. ESI 604. Repeatable for Credit.</td>
</tr>
</tbody>
</table>
ESCI 405 - SEMINAR: CURRENT RESEARCH IN EARTH SCIENCE
Short Title: SEM:CURR RESRCH EARTH SCIENCE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A series of lectures and paper discussions in various areas of Earth science. Graduate/Undergraduate Equivalency: ESCI 605. Repeatable for Credit.

ESCI 406 - SEMINAR: CURRENT RESEARCH IN EARTH SCIENCE
Short Title: SEM:CURR RESRCH EARTH SCIENCE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A series of lectures and paper discussions in various areas of Earth science. Graduate/Undergraduate Equivalency: ESCI 606. Repeatable for Credit.

ESCI 407 - GEOCHEMISTRY OF EARTH’S SURFACE
Short Title: GEOCHEM EARTH’S SURFACE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will cover concepts in aqueous geochemistry in the context of chemical weathering and Earth’s major biogeochemical cycles. Central to this course will be weekly student-led discussions of scientific literature. Students will also learn basic numerical modeling and data analysis techniques using MATLAB, field methods, and basic analytical chemistry. Graduate/Undergraduate Equivalency: ESCI 607. Mutually Exclusive: Cannot register for ESCI 407 if student has credit for ESCI 607.

ESCI 409 - INTRODUCTION TO MATLAB AND NUMERICAL METHODS FOR EARTH SCIENCE
Short Title: INTRO TO PROGRAMMING IN MATLAB
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 102 or MATH 106
Description: The course introduces students to the Matlab programming language and topics may include: importing and exporting data; working with vectors and matrices; curve fitting; data smoothing and filtering; data regression; data visualization; optimization; solving differential equations. The course is built around progressive programming assignments. Graduate/Undergraduate Equivalency: ESCI 609. Recommended Prerequisite(s): Undergrad math through calculus. Mutually Exclusive: Cannot register for ESCI 409 if student has credit for ESCI 609.

ESCI 410 - OPTICAL MINERALOGY AND PETROGRAPHY
Short Title: OPTICAL MINERALOGY & PETROGRPH
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ESCI 322
Description: This is a lab course focused on the identification of minerals with petrographic microscopy. Principles of crystallography, mineral optics, and mineral chemistry will be covered in the first third of the course. The second third of the course will focus on the identification of minerals in igneous, metamorphic, and sedimentary rocks with emphasis on petrographic interpretation. The last third of the course will involve each student working on specific petrologic themes in the context of regional tectonics or magmatic processes. Taught every other Fall. Graduate/Undergraduate Equivalency: ESCI 610. Mutually Exclusive: Cannot register for ESCI 410 if student has credit for ESCI 610.

ESCI 411 - ADVANCED PETROLOGY II
Short Title: ADVANCED PETROLOGY II
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will bring together constraints from field geology, petrography, petrology, geochemistry, and geodynamics to tackle advanced A87 research questions of whole Earth processes that are relevant in the 21st century. The topics that may be covered include, but are not limited to, interplay between magmatic and tectonic processes, magma generation, migration, extraction, and dynamic stability in various settings, magmatic differentiation, volatiles and fluids exchange between various reservoirs and effects on long-term climate, ore genesis, and formation and modification of continents. Graduate/Undergraduate Equivalency: ESCI 611. Mutually Exclusive: Cannot register for ESCI 411 if student has credit for ESCI 611.
ESCI 412 - ADVANCED PETROLOGY
Short Title: ADVANCED PETROLOGY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ESCI 322
Description: Evaluation of the evolution of igneous rocks in the Earth's crust and mantle. Topics will include phase equilibria, experimental studies, and geochemistry. Labs will stress thin section petrography. Graduate/Undergraduate Equivalency: ESCI 612. Mutually Exclusive: Cannot register for ESCI 412 if student has credit for ESCI 612. Repeatable for Credit.

ESCI 415 - DECISION MAKING AND ECONOMICS IN THE ENERGY INDUSTRY
Short Title: DECISION MAKING AND ECONOMICS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will provide students with an understanding of how energy projects are evaluated. Topics include resource-size determination, geologic and economic risk, discounted cash-flow economics, and other common methods used in decision making. Emphasis will be placed on working in teams to understand basic concepts and sensitivities. Graduate/Undergraduate Equivalency: ESCI 615. Recommended Prerequisite(s): ESCI 321 and ESCI 323. Mutually Exclusive: Cannot register for ESCI 415 if student has credit for ESCI 615.

ESCI 416 - ECONOMIC GEOLOGY MINERAL DEPOSITS
Short Title: ECON GEOL MINERAL DEPOSITS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An overview of metallic and nonmetallic mineral deposits, theories of their origin, and classification. The impact of government regulation, economics, production practices, and exploration will be considered. Graduate/Undergraduate Equivalency: ESCI 616. Mutually Exclusive: Cannot register for ESCI 416 if student has credit for ESCI 616.

ESCI 417 - PETROLEUM INDUSTRY ECONOMICS AND MANAGEMENT
Short Title: PETROLEUM IND ECONOMICS MGMT
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics covered include resource size determination; geologic risk analysis; establishing minimum economic thresholds; economic chance factors; the concepts of present worth, investment efficiency, rates of return. Price forecasting, cost inflation are discussed. Graduate/Undergraduate Equivalency: ESCI 617. Recommended Prerequisite(s): ESCI 415. Mutually Exclusive: Cannot register for ESCI 417 if student has credit for ESCI 617.

ESCI 418 - QUANTITATIVE HYDROGEOLOGY
Short Title: QUANTITATIVE HYDROGEOLOGY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Advanced course that will provide a quantitative overview of groundwater hydrology. Emphasis will be placed on mastering concepts in fluid mechanics and applying these concepts to water supply, environmental, and geological problems. Cross-list: CEVE 418. Graduate/Undergraduate Equivalency: ESCI 618. Mutually Exclusive: Cannot register for ESCI 418 if student has credit for ESCI 618.

ESCI 419 - CHARACTERIZATION OF EARTH, ENVIRONMENTAL, AND PLANETARY MATERIALS
Short Title: EARTH MATERIALS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHEM 111 or CHEM 121 or CHEM 151
Description: This course will provide an overview of various characterization methods used in geological, chemical, material science and other natural science and engineering research. The techniques that will be discussed include but not limited to electron beam methods (imaging and spectroscopy), X-ray methods, ion-beam analysis, vibrational spectroscopies, and Synchrotron-based techniques. Graduate/Undergraduate Equivalency: ESCI 619. Mutually Exclusive: Cannot register for ESCI 419 if student has credit for ESCI 619.
ESCI 421 - PALEOCEANOGRAPHY
Short Title: PALEOCEANOGRAPHY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ESCI 321
Description: The evolution of the ocean, climate and the global carbon cycle over the last 100 million years as recorded by the biology, chemistry and composition of deep-sea sediment. Graduate/Undergraduate Equivalency: ESCI 621. Recommended Prerequisite(s): ESCI 109. Mutually Exclusive: Cannot register for ESCI 421 if student has credit for ESCI 621.

ESCI 422 - PALEOCLIMATE AND MODERN CLIMATE CHANGE
Short Title: PALEOCLIMATE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ESCI 101 or ESCI 115 or ESCI 301 or ESCI 321
Description: Climate change is a widely discussed and, often, debated topic in society today. This course will focus on scientific observations of Earth’s climate in the past, records of modern climate variability, and projections of future climate change as well as geologic and instrumental records of climate change and science communication. Graduate/Undergraduate Equivalency: ESCI 622. Mutually Exclusive: Cannot register for ESCI 422 if student has credit for ESCI 622.

ESCI 423 - ANTARCTIC MARINE GEOLOGY
Short Title: ANTARCTIC MARINE GEOLOGY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ESCI 101 or ESCI 115 or ESCI 301 or ESCI 321
Description: The study of marine geologic principles and processes using examples from the Southern Oceans. Graduate/Undergraduate Equivalency: ESCI 623. Recommended prerequisite(s): ESCI 321. Mutually Exclusive: Cannot register for ESCI 423 if student has credit for ESCI 623.

ESCI 424 - SEQUENCE STRATIGRAPHY
Short Title: SEQUENCE STRATIGRAPHY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ESCI 321
Description: The course is divided between classic sequence stratigraphy using cores, well-logs, and outcrop examples and seismic sequence stratigraphy. Graduate/Undergraduate Equivalency: ESCI 627. Mutually Exclusive: Cannot register for ESCI 427 if student has credit for ESCI 627.
ESCI 429 - MAGMATIC, VOLCANIC AND HYDROTHERMAL PROCESSES
Short Title: VOLCANIC PROCESSES
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Introduction to the physical processes governing magmatic hydrothermal and volcanic systems. Conceptual and quantitative discussion of topics such as magma generation, accumulation, dike propagation, magma chambers, volcano deformation, volcanic eruptions, magmatic gases, magma rheology and fragmentation, hydrothermal systems. A 3-6 day field trip may be required. Graduate/Undergraduate Equivalency: ESCI 629. Mutually Exclusive: Cannot register for ESCI 429 if student has credit for ESCI 629.

ESCI 430 - TRACE-ELEMENT AND ISOTOPE GEOCHEMISTRY FOR EARTH AND ENVIRONMENTAL SCIENCE
Short Title: TRACE-ELEMENTS& ISOPE GEOCHEM
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Introduction to the principles of trace-element and isotope geochemistry and their applications to high and low temperature processes in the earth. Topics to be covered are trace-element partitioning, basic quantum physics, radiogenic isotopic systems and stable isotope fractionation. Graduate/Undergraduate Equivalency: ESCI 630. Recommended Prerequisite(s): ESCI 322. Mutually Exclusive: Cannot register for ESCI 430 if student has credit for ESCI 630.

ESCI 431 - GEOMORPHOLOGY
Short Title: GEOMORPHOLOGY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ESCI 321
Description: This course will investigate physical, chemical, and biological processes that contribute to the development and shaping of Earth's surface across a continuum of subaerial and subaqueous environments. Mandatory 4-day field trip is associated with this class. Instructor Permission Required. Graduate/Undergraduate Equivalency: ESCI 631. Repeatable for Credit.

ESCI 433 - ISOTOPE GEOCHEMISTRY
Short Title: ISOPE GEOCHEMISTRY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An introduction to the principles and techniques of stable and radiogenic geochemistry in the geosciences. The course will begin by examining the fundamental physics relevant to isotope partitioning and decay, followed by a survey of different isotope systems and how they are used to study surface processes, element cycling, climate, and planetary science. Graduate/Undergraduate Equivalency: ESCI 633. Recommended Prerequisite(s): ESCI 322. Mutually Exclusive: Cannot register for ESCI 433 if student has credit for ESCI 633.

ESCI 435 - MECHANICS OF SEDIMENT TRANSPORT
Short Title: MECHANICS-SEDIMENT TRANSPORT
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Evaluation of sedimentary transport dynamics: physical interaction between fluid flow and sediment mobility, from grain to bedform scale; exploration of environments including rivers, estuaries, deltas, coastlines, and deserts. Examination of sediment transport for geology, environmental, and engineering applications; formation of diagnostic sedimentary features recognized in the stratigraphic record. Instructor Permission Required. Graduate/Undergraduate Equivalency: ESCI 635. Mutually Exclusive: Cannot register for ESCI 435 if student has credit for ESCI 635.

ESCI 436 - WELL LOGGING AND PETROPHYSICS
Short Title: WELL LOGGING AND PETROPHYSICS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Basics of wireline logging and logging while drilling including borehole environment, resistivity, radiation, thermal, and elastic wave measurements and measuring tools. Building from this introduction, basic interpretation of logging data and formation evaluation will be studied. Graduate/Undergraduate Equivalency: ESCI 636. Mutually Exclusive: Cannot register for ESCI 436 if student has credit for ESCI 636.
ESCI 440 - GEOPHYSICAL DATA ANALYSIS: DIGITAL SIGNAL PROCESSING
Short Title: GEOPHYSICAL DATA ANALYSIS
Department: Earth/Environment/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 101 and MATH 102
Description: Data sampling, aliasing, discrete Fourier transform, digital filter design techniques, z-transform, and discrete Hilbert transform are introduced. Deconvolution, velocity filters, polarization filter, stacking, beam forming and migration techniques will be taught together with their application in geophysical studies. Graduate/Undergraduate Equivalency: ESCI 640. Mutually Exclusive: Cannot register for ESCI 440 if student has credit for ESCI 640.

ESCI 441 - GEOPHYSICAL DATA ANALYSIS: INVERSE METHODS
Short Title: GEOPHYSICAL DATA ANALYSIS
Department: Earth/Environment/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 211
Description: Review of linear algebra and probability. Data fitting, model parameter estimation, inverse theory, linear and nonlinear methods, and global optimization. Graduate/Undergraduate Equivalency: ESCI 641. Mutually Exclusive: Cannot register for ESCI 441 if student has credit for ESCI 641.

ESCI 442 - EXPLORATION GEOPHYSICS
Short Title: EXPLORATION GEOPHYSICS
Department: Earth/Environment/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 101 and (PHYS 101 or PHYS 102 or PHYS 111 or PHYS 112)
Description: Study of the principles and procedures involved in geophysical exploration. Includes acquisition, processing, and interpretation of seismic, ground-penetrating radar, gravity, magnetic, and electrical data. Graduate/Undergraduate Equivalency: ESCI 642. Mutually Exclusive: Cannot register for ESCI 442 if student has credit for ESCI 642.

ESCI 444 - REFLECTION SEISMIC DATA PROCESSING
Short Title: REFLEC SEISMIC DATA PROCESSING
Department: Earth/Environment/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ESCI 442
Description: Experience with processing reflection seismic data. Includes seismic data organization, velocity analysis, stacking, filtering, deconvolution, migration, and display, using the Center for Computational Geophysics facility’s seismic processing system(s). Recommended Prerequisite(s): ESCI 442. Mutually Exclusive: Cannot register for ESCI 444 if student has credit for ESCI 564.

ESCI 450 - REMOTE SENSING
Short Title: REMOTE SENSING
Department: Earth/Environment/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Introduction to electromagnetic remote sensing of the earth and other planets using passive and active methods. The course includes a computer lab component involving processing and interpretation of remote sensing imagery, and an individual project. Cross-list: CEVE 450. Graduate/Undergraduate Equivalency: ESCI 650. Mutually Exclusive: Cannot register for ESCI 450 if student has credit for ESCI 650.

ESCI 452 - GIS FOR SCIENTISTS AND ENGINEERS
Short Title: GIS FOR SCIENTISTS
Department: Earth/Environment/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Basic principles of Geographic Information Systems, with a focus on effectively applying the technology to the geosciences. Main platform of the class will be ESRI’s ArcGIS, but a wide array of other tools will also be introduced. Material will be delivered via a blend of lecture and hands-on exercises. Graduate/Undergraduate Equivalency: ESCI 652. Mutually Exclusive: Cannot register for ESCI 452 if student has credit for ESCI 652.
ESCI 454 - GEOGRAPHIC INFORMATION SCIENCE
Short Title: GEOGRAPHIC INFORMATION SCIENCE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Introduction to Geographic Information Systems (GIS) technology, mapping sciences, and spatial analysis. The course will include extensive computer use and the completion of a major individual project on a topic selected by the student. Cross-list: CEVE 453.
Graduate/Undergraduate Equivalency: ESCI 654. Mutually Exclusive: Cannot register for ESCI 454 if student has credit for ESCI 654.

ESCI 456 - PLANETARY VOLCANISM
Short Title: PLANETARY VOLCANISM
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar will cover the broad range of volcanic phenomena in the solar system, via weekly readings of, and student presentations on, classic and recent papers. Topics include: Composition (basaltic, silicic, unusual, carbonatite), cryovolcanism, structure (caldera, rift zones, volcanic spreading radiating dike systems, magma chambers, and sill complexes), and dynamics (eruption mechanism, effusive vs. explosive, volatiles and atmospheres/oceans). The planetary settings to be considered include Earth, Venu, Mars, Mercury, Moon, large asteroids and outer planet satellites. Graduate/Undergraduate Equivalency: ESCI 656. Mutually Exclusive: Cannot register for ESCI 456 if student has credit for ESCI 656.

ESCI 460 - GEOLOGICAL AND GEOPHYSICAL FLUID DYNAMICS
Short Title: GEOL & GEOPHYS FLUID DYNAMICS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 211 and MATH 212
Description: Advanced course in the foundations of fluid mechanics and its application to Earth science. Aspects of continuum mechanics, heat and mass transfer, and the rheologic behavior of materials will be covered in developing the fundamental laws that describe fluid motion. Applications include atmospheric dynamics, mantle and lithospheric dynamics, and hydrogeology. Graduate/Undergraduate Equivalency: ESCI 660. Mutually Exclusive: Cannot register for ESCI 460 if student has credit for ESCI 660.

ESCI 461 - SEISMOLOGY I
Short Title: SEISMOLOGY I
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Principles of elastic wave propagation, the determination of Earth structure, and the understanding of earthquake physics. Graduate/Undergraduate Equivalency: ESCI 661. Mutually Exclusive: Cannot register for ESCI 461 if student has credit for ESCI 661.

ESCI 462 - TECTONOPHYSICS
Short Title: TECTONOPHYSICS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 102 or MATH 106 or PHYS 102 or PHYS 112
Description: Applications of continuum physics to the deformation, flexure, heat transfer, and gravity field of the lithosphere. Graduate/Undergraduate Equivalency: ESCI 662. Recommended Prerequisite(s): MATH 212. Mutually Exclusive: Cannot register for ESCI 462 if student has credit for ESCI 662.

ESCI 463 - STRUCTURE AND EVOLUTION OF TECTONIC SYSTEMS
Short Title: TECTONIC SYSTEMS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ESCI 323
Description: The distribution, origin, and evolution of various tectonic systems, and characterization of their structural and geophysical signatures, emphasizing crustal and lithospheric processes associated with tectonic deformation. Review of representative global examples of convergent and collisional margins, divergent and passive margins, and transform margins. Graduate/Undergraduate Equivalency: ESCI 663. Mutually Exclusive: Cannot register for ESCI 463 if student has credit for ESCI 663.
ESCI 464 - GLOBAL TECTONICS
Short Title: GLOBAL TECTONICS
Department: Earth/Environmtn/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Geometrical aspects of plate tectonics, the 3 traditional types of plate boundaries, instantaneous plate motions, earthquakes and faulting, space geodesy, geomagnetic reversals, paleomagnetic poles, hotspots, 'absolute' plate motion, true polar wander, driving forces, diffuse plate boundaries, plate nonrigidity, and rheology of the lithosphere. Graduate/Undergraduate Equivalency: ESCI 664. Mutually Exclusive: Cannot register for ESCI 464 if student has credit for ESCI 664.

ESCI 467 - GEOMECHANICS
Short Title: GEOMECHANICS
Department: Earth/Environmtn/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An examination of deformation and failure processes within the Earth's shallow crust, with a focus on rock and sediment mechanics, and associated fluid processes. Emphasis will be on geologic applications, including sediment consolidation, slope stability, fault mechanics, and earthquake nucleation and rupture. Graduate/Undergraduate Equivalency: ESCI 667. Mutually Exclusive: Cannot register for ESCI 467 if student has credit for ESCI 667.

ESCI 471 - EARTH SYSTEMS MODELING I: PHILOSOPHY AND FUNDAMENTALS
Short Title: EARTH SYSTEMS MODELING I
Department: Earth/Environmtn/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHEM 111 or CHEM 121 or PHYS 101 or PHYS 102
Description: A model is a simplified representation of something. Scientific models range from conceptual to physical to mathematical. In Earth and planetary science, one is often concerned with modeling interactions between physical, chemical, and biological components, i.e., with modeling systems. This class will cover the fundamentals of scientific modeling with a focus on Earth systems. Graduate/Undergraduate Equivalency: ESCI 671. Recommended Prerequisite(s): MATH 211. Mutually Exclusive: Cannot register for ESCI 471 if student has credit for ESCI 671. Repeatable for Credit.

ESCI 472 - EARTH SYSTEMS MODELING: NUMERICAL TECHNIQUES AND APPLICATIONS
Short Title: NUMERICAL METHODS EARTH SYSTEM
Department: Earth/Environmtn/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHEM 111 or CHEM 121 or PHYS 101 or PHYS 102
Description: Introduction to numerical methods with applications in Earth Science using Matlab and COMSOL. Much of the class is spent in the computer lab learning Matlab and COMSOL, followed by hands-on exercises. Graduate/Undergraduate Equivalency: ESCI 672. Recommended Prerequisite(s): MATH 211.

ESCI 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Earth/Environmtn/Planetary Sci
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Laboratory, Lecture, Lecture/Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

ESCI 481 - UNDERGRADUATE RESEARCH IN EARTH SCIENCE
Short Title: UNDERGR RESEARCH EARTH SCIENCE
Department: Earth/Environmtn/Planetary Sci
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Advanced work adapted to the needs of the individual undergraduate student reading. Instructor Permission Required. Repeatable for Credit.

ESCI 491 - SPECIAL STUDIES FOR UNDERGRADS
Short Title: SPECIAL STUDY FOR UNDERGRADS
Department: Earth/Environmtn/Planetary Sci
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Work in Earth Science adapted to the needs of individual undergraduate research. Instructor Permission Required. Repeatable for Credit.
### ESCI 495 - SEMINAR: TOPICS IN ENVIRONMENTAL SCIENCE  
**Short Title:** TOPICS: ENVIRONMENTAL SCIENCE  
**Department:** Earth/Environmnt/Planetary Sci  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment limited to students with a class of Senior. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course provides an integration of interdisciplinary topics that span environmental sciences. Topics will vary depending upon the interests and needs of both students and faculty. Only Seniors may register for this course without instructor permission. Cross-list: EBIO 495.

### ESCI 499 - GRAPHIC AND VISUAL DESIGN FOR SCIENTISTS  
**Short Title:** VISUAL DESIGN FOR SCIENTISTS  
**Department:** Earth/Environmnt/Planetary Sci  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** A significant portion of a scientists time is spent solving visual design problems (graphics for papers, visual layouts for seminars, posters, teaching). Effective communication of scientific information is part of a scientists skill set. This class is designed to enhance that skill set in terms of presenting visual information clearly, simply, and effectively. Instructor Permission Required. Graduate/Undergraduate Equivalency: ESCI 699. Mutually Exclusive: Cannot register for ESCI 499 if student has credit for ESCI 699. Repeatable for Credit.

### ESCI 501 - SPECIAL STUDIES FOR GRADUATE STUDENTS  
**Short Title:** SPECIAL STUDIES GRAD STUDENTS  
**Department:** Earth/Environmnt/Planetary Sci  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Independent Study  
**Credit Hours:** 1-15  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Advanced work in Earth science adapted to the needs of individual graduate students. Instructor Permission Required. Repeatable for Credit.

### ESCI 502 - FIELD TRIP FOR ADVANCED GEOLOGY AND PETROLOGY  
**Short Title:** FIELD TRIP-ADV GEOL & PETROL  
**Department:** Earth/Environmnt/Planetary Sci  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Prerequisite(s):** ESCI 322 and ESCI 334  
**Description:** A field trip course centered on weekly readings and several mapping projects carried out over the course of 1 week. The course will focus on western North American geology with emphasis on igneous and metamorphic petrology and structural geology in the context of regional tectonics. Field studies will be accompanied by quantitative data collection and analysis. Each student will be responsible for a small field-based project. Instructor Permission Required. Repeatable for Credit.

### ESCI 503 - CRYOSPHERE  
**Short Title:** CRYOSPHERE  
**Department:** Earth/Environmnt/Planetary Sci  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Prerequisite(s):** ESCI 321  
**Description:** The growth and decay of glaciers play a large role in modulating Earth's climate system. This course focuses on physical glaciology, glacial geomorphology, the geologic record of glaciation, and glacier-climate interactions in the past, present, and future.

### ESCI 504 - SILICICLASTIC DEPOSITIONAL SYSTEMS  
**Short Title:** SILICICLASTIC DEPOSITION SYST  
**Department:** Earth/Environmnt/Planetary Sci  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Study of modern and ancient sedimentary environments with emphasis on field work. Depositional models examined in relation to climatic, oceanographic, and tectonic influences.

### ESCI 505 - CARBONATE DEPOSITIONAL SYSTEMS  
**Short Title:** CARBONATE DEPOSITION SYST  
**Department:** Earth/Environmnt/Planetary Sci  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Prerequisite(s):** ESCI 321  
**Description:** Characterization of modern and ancient, shallow and deep sedimentary environments and facies. Includes examination of different depositional models in relation both to climate and to hydrographic and geographic settings, as well as three field trips. Meeting times will be determined after registration.

### ESCI 507 - APPLIED SEDIMENTOLOGY II  
**Short Title:** APPLIED SEDIMENTOLOGY II  
**Department:** Earth/Environmnt/Planetary Sci  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Prerequisite(s):** ESCI 321  
**Description:** Advanced field studies in sedimentary geology. This course is intended to provide graduate students with experience working in sedimentary rocks by working on projects of their own design.

### ESCI 508 - SEMINAR: GLOBAL SEISMOLOGY  
**Short Title:** SEM:GLOBAL SEISMOLOGY  
**Department:** Earth/Environmnt/Planetary Sci  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Seminar topics may vary. Repeatable for Credit.
ESCI 509 - SEMINAR: DEPARTMENT TYPE-LOCALE FIELD TRIPS
Short Title: SEM:DEPT-LOC-FIELD TRIPS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Repeatable for Credit.

ESCI 511 - PUTTING EARTH SCIENCE INTO ACTION
Short Title: SEM: EARTH SCIENCE INTO ACTION
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Repeatable for Credit.

ESCI 512 - SEMINAR: CARIBBEAN
Short Title: SEM: CARIBBEAN
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Repeatable for Credit.

ESCI 514 - ADVANCED BIOGEOCHEMISTRY
Short Title: ADVANCED BIOGEOCHEMISTRY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will explore carbon, nitrogen, and water cycling at the advanced level. Instructor Permission Required. Repeatable for Credit.

ESCI 515 - GEOPHYSICAL FIELD WORK FOR EDUCATORS
Short Title: GEOPHYS FLD WK FOR EDUCATORS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course consists of 2 weeks of geophysical field work and is designated for in-service K-12 teachers. Instructor Permission Required. Repeatable for Credit.

ESCI 516 - TOPICS ON CARBONATES
Short Title: TOPICS ON CARBONATES
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics may vary. 7-day field trip to Belize is required. Recommended Prerequisite(s): MATH 211. Repeatable for Credit.

ESCI 519 - SEMINAR: SEISMOLOGY
Short Title: SEM: SEISMOLOGY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Repeatable for Credit.

ESCI 520 - SEMINAR: SEISMOLOGY
Short Title: SEM: SEISMOLOGY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Repeatable for Credit.

ESCI 521 - SEMINAR: TECTONICS OF CONTINENTAL MARGINS
Short Title: SEM:TECTONICS-CONT-MARGINS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Repeatable for Credit.

ESCI 522 - SEMINAR: ADVANCED TOPICS IN GEOFLUIDS, GEOTHERMICS, AND PLANETARY EVOLUTION
Short Title: SEM:GEOFLUIDS/ THERMICS, PLANET
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Repeatable for Credit.

ESCI 523 - SEMINAR: SEISMIC MODELING AND INVERSE METHODS
Short Title: SEM:SEISMICMODEL&INVERSEMETHOD
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Repeatable for Credit.

ESCI 524 - SEMINAR: ADVANCED TOPICS IN EARTH STRUCTURE AND DEFORMATION
Short Title: SEM:ADV TOPICS EARTH STRUCTURE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Please contact the department for more details. Repeatable for Credit.
ESCI 526 - SEMINAR: DEVELOPMENTS IN STRUCTURAL GEOLOGY
Short Title: SEM:DEVELOPSTRUCTURALGEOLOGY
Department: Earth/Environmt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Repeatable for Credit.

ESCI 527 - SEMINAR: QUANTITATIVE PETROLEUM SYSTEMS ANALYSIS
Short Title: QUANT PETROLEUM SYS ANALYSIS
Department: Earth/Environmt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Course taught at the University of Houston. Repeatable for Credit.

ESCI 528 - SEMINAR: ADVANCED TOPICS IN HYDROGEOLOGY
Short Title: SEM:ADV TOPICS HYDROGEOLOGY
Department: Earth/Environmt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Repeatable for Credit.

ESCI 529 - THE MOON: ORIGIN AND EVOLUTION OF EARTH'S COMPANION
Short Title: THE MOON: ORIGIN & EVOLUTION
Department: Earth/Environmt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar course addresses fundamental issues in the origin and evolution of the Moon, spanning the disciplines of geology, geophysics, geochemistry and petrology. Sources range from classic studies to recent results from orbiting spacecraft and laboratory analysis. Readings will be supplemented by guest presentations from active researchers in the field. Repeatable for Credit.

ESCI 530 - DATA SCIENCE ENVIRONMENTAL AND GEOSCIENCES
Short Title: DATA SCIENCE GEO-HYDRO-ENV APP
Department: Earth/Environmt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course focuses on practical applications of common data science techniques to extract information from environmental, hydrologic and geological data. Lectures cover theories and examples with biweekly course work assignments. Students are required to complete a group project and presentation at the end of the course.

ESCI 531 - ADVANCED TECTONOPHYSICS/GLOBAL TECTONICS
Short Title: ADV TECTONOPHY/GLOBL TECTONICS
Department: Earth/Environmt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Repeatable for Credit.

ESCI 532 - SEMINAR: TOPICS IN SEDIMENTOLOGY
Short Title: SEM:TOPICS-SEDIMENTOLOGY
Department: Earth/Environmt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Repeatable for Credit.

ESCI 534 - CLASTIC DEPOSITIONAL SYSTEMS FIELD TRIP
Short Title: FIELD TRIP CLASTIC DEP SYSTEMS
Department: Earth/Environmt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ESCI 504
Description: This is a five day trip that takes place in northwestern New Mexico. The trip is intended for students with strong interests in sedimentology and stratigraphy and focuses on field methods in interpretation of clastic sedimentary deposits in terms of their depositional environment, sequence stratigraphic occurrence and reservoir and source rock potential. The field area includes four different basins, which provides further opportunity for discussion of sedimentary basin evolution. The course also includes reading assignments and class presentations on topics related to the trip. Repeatable for Credit.

ESCI 536 - SEMINAR: DEPARTMENT TYPE - LOCALE FIELD TRIP
Short Title: SEM:LOCALSEGEOLOGY
Department: Earth/Environmt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2-4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (ESCI 321 (may be taken concurrently) and ESCI 322 (may be taken concurrently) and ESCI 323 (may be taken concurrently) and ESCI 324 (may be taken concurrently))
Description: Seminar topics vary depending on location of field trip. This is a Seminar/Trip type course combination. Undergraduates are required to take prerequisites to register for this course. Prerequisites do not apply for graduate students. Prerequisites may be taken concurrently. Additional fee may be required for this course. Instructor Permission Required. Repeatable for Credit.
ESCI 537 - ADVANCED TOPICS IN THE SOLID EARTH I
Short Title: ADV TOPICS - SOLID EARTH I
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary.

ESCI 538 - ADVANCED TOPICS IN THE SOLID EARTH II
Short Title: ADV TOPICS - SOLID EARTH II
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Repeatable for Credit.

ESCI 539 - SEMINAR: TOPICS IN VOLCANOLOGY, MAGMATIC, AND HYDROTHERMAL PROCESSES
Short Title: SEM: PHYSICAL VOLCANOLOGY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Reading and discussions about current topics related to magma generation, migration, accumulation and eruption, as well as hydrothermal systems. Repeatable for Credit.

ESCI 540 - EARTH'S ATMOSPHERE
Short Title: EARTH'S ATMOSPHERE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: How and why has Earth's atmosphere evolved over time? We will begin with an understanding of the atmosphere today - its physics, chemistry, and dynamics. Work backwards in time to frontiers that are comparatively data-poor. We focus on empirical/observational constraints that drive theories of atmospheric evolution on Earth and other planets. Recommended Prerequisite(s): MATH 211 Mutually Exclusive: Cannot register for ESCI 540 if student has credit for ESCI 414. Repeatable for Credit.

ESCI 541 - THE PLANET MARS: FORMATION, DIFFERENTIATION, STRUCTURE AND EVOLUTION
Short Title: PLANET MARS: FORM, STRUCT, EVO
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar addresses fundamental issues in Mars science, spanning the disciplines of geology, geophysics, geochemistry and petrology. Sources range over six decades of data from flybys and orbiting spacecraft, landed stations and rovers, and laboratory analysis of meteorites and experiments. Readings will be supplemented by presentations from active Mars researchers. Instructor Permission Required.

ESCI 542 - SEISMOLOGY II
Short Title: SEISMOLOGY II
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Review of elastodynamics. Calculation of synthetic seismograms using asymptotic and finite-difference methods, wave propagation in layered and random media. Seismic migration and inversion using finite-difference, Kirchoff, and frequency-wave number methods.

ESCI 543 - INTRODUCTION TO THE DYNAMICS AND PHYSICAL PROPERTIES OF THE EARTH'S INTERIOR
Short Title: DYNAMICS OF EARTH'S INTERIOR
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Overview of the Earth's deep interior with an emphasis on dynamical processes and physical properties of the Earth's mantle. Topics include: global energy budget; convective heat transfer; thermal evolution of the Earth; constitutive laws; rheology; seismic velocities; composition, density structure; thermal expansion; thermal conductivity. Taught every other Fall.

ESCI 544 - HYDROCARBON EXPLORATION
Short Title: HYDROCARBON EXPLORATION
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A student team will analyze and assess petroleum prospects in a sedimentary basin. Using a dataset of industry well/seismic data, the team will analyze data, identify/prioritize exploration targets, and prepare a formal presentation. Team will review their findings to industry judges for AAPG Imperial Barrel Award competition. Instructor Permission Required.
ESCI 545 - HYDROCARBON SYSTEMS ANALYSIS
Short Title: HYDROCARBON SYSTEMS ANALYSIS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course has lecture, lab, and field components. Students will learn about the components of the hydrocarbon system and how to rank areas of a basin for prospectively. Activities will be organized on a class and small group basis. Recommended Prerequisite(s): ESCI 323 or ESCI 427/627.

ESCI 546 - ADVANCED TOPICS IN BASIN SEDIMENTOLOGY AND STRATIGRAPHY
Short Title: ADV TOPICS: BASIN SEDIM & STRAT
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will investigate the processes that lead to the development of sedimentary stratigraphy across a continuum of depositional environments, including: fluvial, deltaic, coastal near-shore, continental shelf and slope and abyssal settings. Material will include transport linkages based on studies from modern settings, and will also cover the unique stratigraphic signatures preserved in ancient depositional systems. Instructor Permission Required.

ESCI 547 - INTRODUCTION TO SCIENCE COMMUNICATION
Short Title: INTRO TO SCIENCE COMMUNICATION
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will introduce students to the methods of communicating science to the public, by exposing them to professionals and researchers from various communication careers. It will teach students to convey science to the lay audience through several methods, such as media reporting, museum programming, and general public outreach.

ESCI 548 - ADVANCED TOPICS IN FLUVIAL-DELTAIC SEDIMENTOLOGY AND STRATIGRAPHY
Short Title: ADV TOPICS FLUVIAL-DELTAIC
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will investigate physical and biological processes that contribute to the development of fluvial-deltaic environments. Materials will include deriving physical erosion, transport, and deposition laws, in order to evaluate modern processes that shape deltas and coastlines. The course will also focus on sedimentary deposits of fluvial-deltaic systems and preservation potential of the stratigraphy, by examining ancient depositional systems that are preserved in the rock record. The course will explore these topics by reviewing science literature that utilizes numerical, experimental, and field studies, to further theory on the development of fluvial-deltaic systems. Instructor Permission Required. Repeatable for Credit.

ESCI 549 - DATA MANAGEMENT AND DATA GOVERNANCE
Short Title: DATA MANAGEMENT
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An organization's data is recognized as the most vital asset of an enterprise, yet far too many fail to appreciate the legal and fiscal responsibilities and liabilities associated with it. This course covers the foundations, principles and methodology of data management and data governance to ensure such high quality data.

ESCI 550 - MODERN EXPLORATION TECHNOLOGY
Short Title: MODERN EXPLORATION TECHNOLOGY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ESCI 442 or ESCI 642
Corequisite: ESCI 564
Description: Modern petroleum exploration techniques using geology, geophysics, and information technology methods. As new techniques emerge, the course will change to ensure that the course material mirrors the exploration industry. Mutually Exclusive: Cannot register for ESCI 550 if student has credit for ESCI 420.
ESCI 552 - MARINE GEOLOGY SYSTEMS
Short Title: MARINE GEOLOGY SYSTEMS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines areas of the seafloor recently targeted by large-scale science projects, such as the ocean drilling program. The purpose is to understand current ocean geoscience problems, the research being conducted to address these problems, and preliminary results. Mutually Exclusive: Cannot register for ESCI 552 if student has credit for ESCI 432.

ESCI 555 - MOUNTAINS, CLIMATE AND GLOBAL CARBON CYCLING
Short Title: CARBON CYCLE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The purpose of this course is to discuss the origins of high elevations, such as mountains and epeirogenic uplifts, and their impacts of climate, global carbon cycling, and sedimentary processes. We will discuss the physics and chemistry of building mountains by magmatism and tectonic thickening as well as destroying them by erosion, chemical weathering, and delamination. We will explore perspectives from the deep Earth to the atmosphere. The seminar will meet once a week for two hours with the first hour being a thematic overview given by faculty or students and the second hour devoted to discussion of assigned papers. Recommended Prerequisite(s): ESCI 321 and ESCI 322. Repeatable for Credit.

ESCI 557 - SPECIAL TOPICS IN EARTH SCIENCE
Short Title: SPECIAL TOPICS IN EARTH SCIENCE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics will vary. Repeatable for Credit.

ESCI 558 - 3D SEISMIC REFLECTION DATA INTERPRETATION
Short Title: 3D SEISMIC REFLECTION DATA
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ESCI 442 or ESCI 642 (may be taken concurrently)
Description: Workstation-based geologic interpretation of 3D seismic reflection data. The course will focus on interpreting horizons and faults tying interpretation to well data, analyzing seismic attributes, and other relevant topics. Emphasis will be placed on workflows utilized in hydrocarbon exploration. Mutually Exclusive: Cannot register for ESCI 558 if student has credit for ESCI 428.

ESCI 559 - SPECIAL TOPICS IN EARTH, ENVIRONMENTAL & PLANETARY SCIENCES
Short Title: SPECIAL TOPICS IN EEPS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course deals with miscellaneous special topics not covered in other courses. Please contact the Earth Science department for the specific topics. Topics change each semester. Repeatable for Credit.

ESCI 562 - ADVANCED TOPICS IN GEOPHYSICS
Short Title: ADV TOPICS IN GEOPHYSICS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Repeatable for Credit.

ESCI 564 - SEISMIC REFLECTION DATA PROCESS
Short Title: SEISMIC REFLECTN DATA PROCESS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ESCI 442 or ESCI 642
Description: Mutually Exclusive: Cannot register for ESCI 564 if student has credit for ESCI 444.

ESCI 565 - JOINT INVERSION OF EXPLORATION GEOPHYSICAL DATA
Short Title: JNT INVERSN OF EXPLOR GEO DATA
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: By jointly inverting several different kinds of exploration geophysical measurements at a site we avoid some of the ambiguity inherent in the individual methods. *Students review papers (one-half of course) Recommended Prerequisite(s): ESCI 442 and (ESCI 444 or 564) and ESCI 436. Mutually Exclusive: Cannot register for ESCI 565 if student has credit for ESCI 445.

ESCI 566 - ROCK DEFORMATION AND RHEOLOGY
Short Title: ROCK DEFORMATION AND RHEOLOGY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The mechanisms of deformation and rheology of Earth’s crust and mantle. Mutually Exclusive: Cannot register for ESCI 566 if student has credit for ESCI 466.
ESCI 567 - UNCONVENTIONAL ENERGY EXPLORATION

Short Title: UNCONV ENERGY EXPLORATION

Department: Earth/Environmnt/Planetary Sci

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hours: 3

Restrictions: Enrollment is limited to Graduate level students.

Course Level: Graduate

Description: Topical presentations on the exploration and production of unconventional energy resources, including sources, techniques, and prospects. Intent is to cover all non-traditional energy targets, including shale oil/gas, oil sands/heavy oil, geothermal, coalbed methane, methane clathrates (seafloor hydrates) and more. Instructor Permission Required. Mutually Exclusive: Cannot register for ESCI 567 if student has credit for ESCI 447.

ESCI 570 - COMPUTATIONAL AND DATA SCIENCE IN THE ENERGY INDUSTRY

Short Title: COMP&DATA SCI ENERGY INDUSTRY

Department: Earth/Environmnt/Planetary Sci

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hours: 3

Restrictions: Enrollment is limited to Graduate level students.

Course Level: Graduate

Description: This course will be dedicated to problems and topics occurring in the energy industry, both in R&D and in operations. It has three main components: 1. Computational Geophysics 2. Reservoir Simulation Fundamentals 3. Machine Learning The first two components will be taught together in the first 10 weeks by dedicating half of the class-time to each subject. The Machine Learning component will, in part, build on the first two fundamental components and will be taught using the full class time. Computational Geophysics The participants in this geophysics part of the course are expected to be interested into learn how to use modern seismic data to image the subsurface with awareness of the computational costs of the techniques involved. The main focus will be given to current seismic imaging tools including cutting-edge Machine Learning (ML) applications. As the result of the successful completion of this course part, the course participants should be able to: (1) Understand the context and value of imaging tools for the hydrocarbon exploration business. (2) Relate the imaging tools with their computational costs for modern computer resources. (3) Properly use wave-based geophysical imaging and ML-based tools and (4) Understand main seismic processing and interpretation decisions. Applied Reservoir Simulation This component of the course will introduce participants to the practice of reservoir simulation. This class will be an applied course on reservoir simulation. Theoretical descriptions will be provided as warranted but will be kept to minimum. Class participants will learn about the fundamentals of applied reservoir simulation, use of a reservoir simulator, and how to select the proper model for a simulation study. This course will also cover data preparation, grid design, calibration of the reservoir model, forecasting of future performance, and interpretation of simulation results. Participants will also be introduced to the role of simulation in reservoir management, limitations of reservoir simulation, and the structural aspects of the models. Upscaling and recent advances simulation techniques will also be discussed. A realistic open-source reservoir simulation software will be used during the tutorials and computer projects. Machine Learning for Oil & Gas This part of the course will introduce the fundamentals of statistical learning, present a few of the popular learning paradigms and algorithms, and culminate in a small student project applying them to an oil reservoir data set using the R programming language (solutions to class problems will be accepted in any programming language or system). Much of the material presented here is also known under the names “Big Data”, “Data Analytics”, “Artificial Intelligence”, “Data Mining”, “Petroleum Data Driven Analytics” and other terms. Weeks 11 and 12 are theory only, weeks 13-15 will have small hands-on exercises incorporated and week 16 and 17 are dedicated to solving a simple oil reservoir problem using machine learning.
ESCI 571 - DATA SCIENCE METHODS AND DATA MANAGEMENT
Short Title: METHODS DATA SCIENCE/MGMT
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: Data has become a critical asset for enabling organizations to be competitive, make better decisions and support diverse stakeholders. In recent years, new methods, tools and techniques for data management and processing have been developed. In this vein, ensuring that users have the knowledge and skills to profit from this wealth of information is critical. In this course, participants will learn a holistic overview about infrastructure, data life cycles, metadata standards, policies and techniques for successfully managing and using data for decision-making. The emphasis of the course will be from the perspective of the Oil & Gas and Energy Industries. Recommended Prerequisite(s): Basic programming, introductory statistics.

ESCI 580 - PITCHING YOUR SCIENCE
Short Title: PITCHING YOUR SCIENCE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is designed for senior level graduate students who will be facing high-stakes professional speaking opportunities, such as impromptu job conversations, formal academic and professional presentations, conversations with journalists, and/or industrial job interviews. Students will construct and practice 90-second, 5-minute, and 15-minute presentations. Most assignments will take place in-class, with limited work occurring outside of the classroom. Requirement: Participation in the Rice University 90-second thesis competition. Instructor Permission Required.

ESCI 581 - TOPICS IN PLANETARY DYNAMICS AND MAGMATIC PROCESSES
Short Title: TOPICS IN PLANETARY DYNAMICS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Instructor Permission Required. Repeatable for Credit.

ESCI 590 - FIELD COURSE: APPLIED STRATIGRAPHY AND STRUCTURAL GEOLOGY
Short Title: FIELD COURSE: APPLIED STRAT
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Course Level: Graduate
Description: Focus on how to interpret stratigraphy and structure from outcrop and subsurface data using a field transect from the orogenic belt to the foreland basin. By the end of the class, students should be able to measure/describe stratigraphic sections, construct a structural-stratigraphic framework, interpret structural profiles and integrate paleontology.

ESCI 603 - SEMINAR: DEPARTMENT RESEARCH
Short Title: SEMINAR: DEPARTMENT RESEARCH
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to current research in the Earth Science department. Students will learn how to give a presentation and will get experience presenting their research. Graduate/Undergraduate Equivalency: ESCI 403. Repeatable for Credit.

ESCI 604 - SEMINAR: DEPARTMENT RESEARCH
Short Title: SEM: DEPARTMENT RESEARCH
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to current research in the Earth Science department. Students will learn how to give a presentation and will get experience presenting their research. Graduate/Undergraduate Equivalency: ESCI 404. Repeatable for Credit.

ESCI 605 - SEMINAR: CURRENT RESEARCH IN EARTH SCIENCE
Short Title: SEM:CURR RESRCH EARTH SCIENCE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A series of lectures and paper discussions in various areas of Earth science. Graduate/Undergraduate Equivalency: ESCI 405. Repeatable for Credit.

ESCI 606 - SEMINAR: CURRENT RESEARCH IN EARTH SCIENCE
Short Title: SEM:CURR RESRCH EARTH SCIENCE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A series of lectures and paper discussions in various areas of Earth science. Graduate/Undergraduate Equivalency: ESCI 406. Repeatable for Credit.
ESCI 607 - GEOCHEMISTRY OF EARTH'S SURFACE
Short Title: GEOCHEM EARTH'S SURFACE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will cover concepts in aqueous geochemistry in the context of chemical weathering and Earth's major biogeochemical cycles. Central to this course will be weekly student-led discussions of scientific literature. Students will also learn basic numerical modeling and data analysis techniques using MATLAB, field methods, and basic analytical chemistry. Graduate/Undergraduate Equivalency: ESCI 407. Mutually Exclusive: Cannot register for ESCI 607 if student has credit for ESCI 407.

ESCI 609 - INTRODUCTION TO MATLAB AND NUMERICAL METHODS FOR EARTH SCIENCE
Short Title: INTRO TO PROGRAMMING IN MATLAB
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course introduces students to the Matlab programming language and topics may include: importing and exporting data; working with vectors and matrices; curve fitting; data smoothing and filtering; data regression; data visualization; optimization; solving differential equations. The course is built around progressive programming assignments. Graduate/Undergraduate Equivalency: ESCI 409. Mutually Exclusive: Cannot register for ESCI 609 if student has credit for ESCI 409.

ESCI 610 - OPTICAL MINERALOGY AND PETROGRAPHY
Short Title: OPTICAL MINERALOGY & PETROGRPH
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is a lab course focused on the identification of minerals with petrographic microscopy. Principles of crystallography, mineral optics, and mineral chemistry will be covered in the first third of the course. The second third of the course will focus on the identification of minerals in igneous, metamorphic, and sedimentary rocks with emphasis on petrogenetic interpretation. The last third of the course will involve each student working on specific petrologic themes in the context of regional tectonics or magmatic processes. Taught every other Fall. Graduate/Undergraduate Equivalency: ESCI 410. Mutually Exclusive: Cannot register for ESCI 610 if student has credit for ESCI 410.

ESCI 611 - ADVANCED PETROLOGY
Short Title: ADVANCED PETROLOGY II
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will bring together constraints from field geology, petrography, petrology, geochemistry, and geodynamics to tackle advanced A87 research questions of whole Earth processes that are relevant in the 21st century. The topics that may be covered include, but are not limited to, interplay between magmatic and tectonic processes, magma generation, migration, extraction, and dynamic stability in various settings, magmatic differentiation, volatiles and fluids exchange between various reservoirs and effects on long-term climate, ore genesis, and formation and modification of continents. Graduate/Undergraduate Equivalency: ESCI 411. Mutually Exclusive: Cannot register for ESCI 611 if student has credit for ESCI 411.

ESCI 612 - ADVANCED PETROLOGY
Short Title: ADVANCED PETROLOGY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Evaluation of the evolution of igneous rocks in the Earth's crust and mantle. Topics will include phase equilibria, experimental studies, and geochemistry. Labs will stress thin section petrography. Graduated/Undergraduate Equivalency: ESCI 412. Mutually Exclusive: Cannot register for ESCI 612 if student has credit for ESCI 412. Repeatable for Credit.

ESCI 615 - DECISION MAKING AND ECONOMICS IN THE ENERGY INDUSTRY
Short Title: DECISION MAKING AND ECONOMICS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will provide students with an understanding of how energy projects are evaluated. Topics include resource-size determination, geologic and economic risk, discounted cash-flow economics, and other common methods used in decision making. Emphasis will be placed on working in teams to understand basic concepts and sensitivities. Graduate/Undergraduate Equivalency: ESCI 415. Recommended Prerequisite(s): ESCI 321 and ESCI 323. Mutually Exclusive: Cannot register for ESCI 615 if student has credit for ESCI 415.
ESCI 616 - ECONOMIC GEOLOGY MINERAL DEPOSITS
Short Title: ECON GEOL MINERAL DEPOSITS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An overview of metallic and nonmetallic mineral deposits, theories of their origin, and classification. The impact of government regulation, economics, production practices, and exploration will be considered. Graduate/Undergraduate Equivalency: ESCI 416. Mutually Exclusive: Cannot register for ESCI 616 if student has credit for ESCI 416.

ESCI 617 - PETROLEUM INDUSTRY ECONOMICS AND MANAGEMENT
Short Title: PETROLEUM IND ECONOMICS MGMT
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics covered include resource size determination; geologic risk analysis; establishing minimum economic thresholds; economic chance factors; the concepts of present worth, investment efficiency, rates of return. Price forecasting, cost inflation are discussed. Graduate/Undergraduate Equivalency: ESCI 417. Mutually Exclusive: Cannot register for ESCI 617 if student has credit for ESCI 417.

ESCI 618 - QUANTITATIVE HYDROGEOLOGY
Short Title: QUANTITATIVE HYDROGEOLOGY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced course that will provide a quantitative overview of groundwater hydrology. Emphasis will be placed on mastering concepts in fluid mechanics and applying these concepts to water supply, environmental, and geological problems. Graduate/Undergraduate Equivalency: ESCI 418. Mutually Exclusive: Cannot register for ESCI 618 if student has credit for ESCI 418.

ESCI 619 - MATERIALS CHARACTERIZATION
Short Title: MATERIALS CHARACTERIZATION
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will provide an overview of various characterization methods used in geological, chemical, material science and other natural science and engineering research. The techniques that will be discussed include but not limited to electron beam methods (imaging and spectroscopy), X-ray methods, ion-beam analysis, vibrational spectroscopies, and Synchrotron-based techniques. Graduate/Undergraduate Equivalency: ESCI 419. Mutually Exclusive: Cannot register for ESCI 619 if student has credit for ESCI 419.

ESCI 621 - PALEOCEANOGRAPHY
Short Title: PALEOCEANOGRAPHY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The evolution of the ocean, climate and the global carbon cycle over the last 100 million years as recorded by the biology, chemical and composition of deep-sea sediment. Graduate/Undergraduate Equivalency: ESCI 421. Mutually Exclusive: Cannot register for ESCI 621 if student has credit for ESCI 421.

ESCI 622 - PALEOCLIMATE AND MODERN CLIMATE CHANGE
Short Title: PALEOCLIMATE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Climate change is a widely discussed and, often, debated topic in society today. This course will focus on scientific observations of Earth's climate in the past, records of modern climate variability, and projections of future climate change as well as geologic and instrumental records of climate change and science communication. Graduate/Undergraduate Equivalency: ESCI 422. Mutually Exclusive: Cannot register for ESCI 622 if student has credit for ESCI 422.

ESCI 623 - ANTARCTIC MARINE GEOLOGY
Short Title: ANTARCTIC MARINE GEOLOGY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The study of marine geologic principles and processes using examples from the Southern Oceans. Graduate/Undergraduate Equivalency: ESCI 423. Mutually Exclusive: Cannot register for ESCI 623 if student has credit for ESCI 423.

ESCI 625 - ORGANIC GEOCHEMISTRY
Short Title: ORGANIC GEOCHEMISTRY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers the organic geochemistry of the natural environment. Topics include: production, transport, decomposition, and storage of organic matter in the marine and terrestrial environments, use of isotopes to track biogenicchemical processes and natural and perturbed carbon cycle issues, including past and recent climate shifts. Graduate/Undergraduate Equivalency: ESCI 425. Mutually Exclusive: Cannot register for ESCI 625 if student has credit for ESCI 425.
ESCI 626 - INTRODUCTION TO SEISMIC INTERPRETATION: STRUCTURAL STYLES AND SEISMIC STRATIGRAPHY
Short Title: 2D SEISMIC STRUCTURE AND STRAT
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ESCI 642 (may be taken concurrently)
Description: This course will introduce students to analysis of sub-regional structural and stratigraphic frameworks. We will utilize the interpretation of 2D seismic profiles to reconstruct basin history and discuss implications for petroleum systems. Students will gain an understanding of a variety of structural and stratigraphic styles, as expressed on seismic data. Instructor Permission Required. Graduate/Undergraduate Equivalency: ESCI 426. Mutually Exclusive: Cannot register for ESCI 626 if student has credit for ESCI 426.

ESCI 627 - SEQUENCE STRATIGRAPHY
Short Title: SEQUENCE STRATIGRAPHY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will introduce students to the concepts of sequence stratigraphy and the power behind this correlation technique. The course is divided between classic sequence stratigraphy using cores, well-logs, and outcrop examples and seismic sequence stratigraphy. Graduate/Undergraduate Equivalency: ESCI 427. Mutually Exclusive: Cannot register for ESCI 627 if student has credit for ESCI 427.

ESCI 629 - VOLCANIC PROCESSES
Short Title: VOLCANIC PROCESSES
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the physical processes governing magmatic hydrothermal and volcanic systems. Conceptual and quantitative discussion of topics such as magma generation, accumulation, dike propagation, magma chambers, volcano deformation, volcanic eruptions, magmatic gases, magma rheology and fragmentation, hydrothermal systems. A 3-6 day field trip may be required. Graduate/Undergraduate Equivalency: ESCI 429. Mutually Exclusive: Cannot register for ESCI 629 if student has credit for ESCI 429.

ESCI 630 - TRACE-ELEMENT AND ISOTOPE GEOCHEMISTRY FOR EARTH AND ENVIRONMENTAL SCIENCE
Short Title: TRACE-ELEMENT & ISOTOPE GEOCHEM
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate/Undergraduate Equivalency: ESCI 430. Mutually Exclusive: Cannot register for ESCI 630 if student has credit for ESCI 430.
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Short Title</th>
<th>Department</th>
<th>Grade Mode</th>
<th>Course Type</th>
<th>Credit Hours</th>
<th>Restrictions</th>
<th>Course Level</th>
<th>Description</th>
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<th>Credit Hours</th>
<th>Restrictions</th>
<th>Course Level</th>
<th>Description</th>
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<tbody>
<tr>
<td>ESCI 636</td>
<td>WELL LOGGING AND PETROPHYSICS</td>
<td>WELL LOGGING AND PETROPHYSICS</td>
<td>Earth/Environmnt/Planetary Sci</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>Basics of wireline logging and logging while drilling including borehole environment, resistivity, radiation, thermal, and elastic wave measurements and measuring tools. Building from this introduction, basic interpretation of logging data and formation evaluation will be studied. Graduate/Undergraduate Equivalency: ESCI 436. Mutually Exclusive: Cannot register for ESCI 636 if student has credit for ESCI 436.</td>
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<td>ESCI 640</td>
<td>GEOPHYSICAL DATA ANALYSIS: DIGITAL SIGNAL PROCESSING</td>
<td>GEOPHYSICAL DATA ANALYSIS</td>
<td>Earth/Environmnt/Planetary Sci</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>Data sampling, aliasing, discrete Fourier transform, digital filter design techniques, z-transform, and discrete Hilbert transform are introduced. Deconvolution, velocity filters, polarization filter, stacking, beam forming and migration techniques will be taught together with their application in geophysical studies. Graduate/Undergraduate Equivalency: ESCI 440. Mutually Exclusive: Cannot register for ESCI 640 if student has credit for ESCI 440.</td>
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<td>ESCI 642</td>
<td>EXPLORATION GEOPHYSICS</td>
<td>EXPLORATION GEOPHYSICS</td>
<td>Earth/Environmnt/Planetary Sci</td>
<td>Standard Letter</td>
<td>Lecture/Laboratory</td>
<td>4</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>Study of the principles and procedures involved in geophysical exploration. Includes acquisition, processing, and interpretation of seismic, ground-penetrating radar, gravity, magnetic, and electrical data. Graduate/Undergraduate Equivalency: ESCI 442. Mutually Exclusive: Cannot register for ESCI 642 if student has credit for ESCI 442.</td>
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<td>ESCI 643</td>
<td>TOPICS IN GEOMATHEMATICS</td>
<td>TOPICS IN GEOMATHEMATICS</td>
<td>Earth/Environmnt/Planetary Sci</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>1-3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>Content varies from year to year. Instructor Permission Required. Cross-list: CAAM 643. Recommended Prerequisite(s): CAAM 335 and CAAM 336 Repeatable for Credit.</td>
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<td>ESCI 650</td>
<td>REMOTE SENSING</td>
<td>REMOTE SENSING</td>
<td>Earth/Environmnt/Planetary Sci</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>Introduction to electromagnetic remote sensing of the Earth and other planets using passive and active methods. The course includes a computer lab component involving processing and interpretation of remote sensing imagery, and an individual project. Instructor Permission Required. Graduate/Undergraduate Equivalency: ESCI 450. Mutually Exclusive: Cannot register for ESCI 650 if student has credit for ESCI 450.</td>
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<td>ESCI 652</td>
<td>GIS FOR SCIENTISTS AND ENGINEERS</td>
<td>GIS FOR SCIENTISTS</td>
<td>Earth/Environmnt/Planetary Sci</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>Introduction to Geographic Information Systems (GIS) technology, mapping sciences, and spatial analysis. The course will also be introduced. Material will be delivered via a blend of lecture and hands-on exercises. Instructor Permission Required. Graduate/Undergraduate Equivalency: ESCI 452. Mutually Exclusive: Cannot register for ESCI 652 if student has credit for ESCI 452.</td>
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<td>ESCI 654</td>
<td>GEOGRAPHIC INFORMATION SCIENCE</td>
<td>GEOGRAPHIC INFORMATION SCIENCE</td>
<td>Earth/Environmnt/Planetary Sci</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>Introduction to Geographic Information Systems (GIS) technology, mapping sciences, and spatial analysis. The course will include extensive computer use and the completion of a major individual project on a topic selected by the student. Graduate/Undergraduate Equivalency: ESCI 454. Mutually Exclusive: Cannot register for ESCI 654 if student has credit for ESCI 454.</td>
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ESCI 660 - GEOLOGICAL AND GEOPHYSICAL FLUID DYNAMICS
Short Title: GEOL & GEOPHY FLUID DYNAMICS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: Advanced course in the foundations of fluid mechanics and its application to Earth science. Aspects of continuum mechanics, heat and mass transfer, and the rheologic behavior of materials will be covered in developing the fundamental laws that describe fluid motion. Applications include atmospheric dynamics, mantle and lithospheric dynamics, and hydrogeology. Graduate/Undergraduate Equivalency: ESCI 460. Mutually Exclusive: Cannot register for ESCI 660 if student has credit for ESCI 460.

ESCI 661 - SEISMOLOGY I
Short Title: SEISMOLOGY I
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: Principles of elastic wave propagation, the determination of Earth structure, and the understanding of earthquake physics. Graduate/Undergraduate Equivalency: ESCI 461. Mutually Exclusive: Cannot register for ESCI 661 if student has credit for ESCI 461.

ESCI 662 - TECTONOPHYSICS
Short Title: TECTONOPHYSICS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: Applications of continuum physics to the deformation, flexure, heat transfer, and gravity field of the lithosphere. Graduate/Undergraduate Equivalency: ESCI 462. Mutually Exclusive: Cannot register for ESCI 662 if student has credit for ESCI 462.

ESCI 663 - STRUCTURE AND EVOLUTION OF TECTONIC SYSTEMS
Short Title: TECTONIC SYSTEMS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: The distribution, origin, and evolution of various tectonic systems, and characterization of their structural and geophysical signatures, emphasizing crustal and lithospheric processes associated with tectonic deformation. Review of representative global examples of convergent and collisional margins, divergent and passive margins, and transform margins. Graduate/Undergraduate Equivalency: ESCI 463. Mutually Exclusive: Cannot register for ESCI 663 if student has credit for ESCI 463.

ESCI 664 - GLOBAL TECTONICS
Short Title: GLOBAL TECTONICS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: Geometrical aspects of plate tectonics, the 3 traditional types of plate boundaries, instantaneous plate motions, earthquakes and faulting, space geodesy, geomagnetic reversals, paleomagnetic poles, hotspots, 'absolute' plate motion, true polar wander, driving forces, diffuse plate boundaries, plate nonrigidity, and rheology of the lithosphere. Instructor Permission Required. Graduate/Undergraduate Equivalency: ESCI 464. Mutually Exclusive: Cannot register for ESCI 664 if student has credit for ESCI 464.

ESCI 667 - GEOMECHANICS
Short Title: GEOMECHANICS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: An examination of deformation and failure processes within the Earth’s shallow crust, with a focus on rock and sediment mechanics, and associated fluid processes. Emphasis will be on geologic applications, including sediment consolidation, slope stability, fault mechanics, and earthquake nucleation and rupture. Graduate/Undergraduate Equivalency: ESCI 467. Mutually Exclusive: Cannot register for ESCI 667 if student has credit for ESCI 467.
ESCI 671 - EARTH SYSTEMS MODELING I: PHILOSOPHY AND FUNDAMENTALS
Short Title: EARTH SYSTEMS MODELING I
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A model is a simplified representation of something. Scientific models range from conceptual to physical to mathematical. In Earth and planetary science, one is often concerned with modeling interactions between physical, chemical, and biological components, i.e., with modeling systems. This class will cover the fundamentals of scientific modeling with a focus on Earth systems. Graduate/Undergraduate Equivalency: ESCI 471. Mutually Exclusive: Cannot register for ESCI 671 if student has credit for ESCI 471. Repeatable for Credit.

ESCI 672 - EARTH SYSTEMS MODELING: NUMERICAL TECHNIQUES AND APPLICATIONS
Short Title: NUMERICAL METHODS EARTH SYSTEM
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to numerical methods with applications in Earth Science using Matlab and COMSOL. Much of the class is spent in the computer lab learning Matlab and COMSOL, followed by hands-on exercises. Instructor Permission Required. Graduate/Undergraduate Equivalency: ESCI 472. Repeatable for Credit.

ESCI 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Laboratory, Lecture, Seminar, Internship/Practicum, Lecture/Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

ESCI 699 - GRAPHIC AND VISUAL DESIGN FOR SCIENTISTS
Short Title: VISUAL DESIGN FOR SCIENTISTS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A significant portion of a scientist's time is spent solving visual design problems (graphics for papers, visual layouts for seminars, posters, teaching). Effective communication of scientific information is part of a scientist's skill set. This class is designed to enhance that skill set in terms of presenting visual information clearly, simply, and effectively. Instructor Permission Required. Graduate/Undergraduate Equivalency: ESCI 499. Mutually Exclusive: Cannot register for ESCI 699 if student has credit for ESCI 499. Repeatable for Credit.

ESCI 800 - THESIS RESEARCH
Short Title: THESIS RESEARCH
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Recommended Prerequisite(s): Students must pass the preliminary exam before taking this course. Repeatable for Credit.

Ecology & Evolutionary Biology (EBIO)

EBIO 110 - INTRODUCTION TO RESEARCH
Short Title: INTRODUCTION TO RESEARCH
Department: Biosciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-5
Restrictions: Enrollment is limited to Undergraduate or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is only for visiting high school juniors and seniors and undergraduates conducting research for the first time. The students will conduct scientific research in the laboratories of the Rice faculty in the areas of Biochemistry & Cell Biology and Ecology & Evolutionary Biology. During the five-week course, students will engage in full time research and will be mentored by experienced researchers under the supervision of Rice faculty. Participating students will also receive formal instruction on the basics of scientific research and innovation. Visiting high school students and undergraduates must complete visiting student application process. Instructions to do this can be found in the Application Checklist at summer.rice.edu. Instructor Permission Required. Repeatable for Credit.

EBIO 113 - ENVIRONMENTAL CRISIS SEMINAR
Short Title: ENVIRONMENTAL CRISIS SEMINAR
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
EBIO 119 - FRESHMAN SEMINAR IN LOCAL BIOLOGY RESEARCH (EEB)

Short Title: FRESHMAN BIOLOGY SEMINAR (EEB)
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A 7-week seminar course to introduce freshmen prospective biologists to the excitement of research at Rice and the Medical Center and to provide context with which to think about facts presented in biosciences textbooks. Small groups will meet weekly with a graduate student or postdoctoral researcher to explore a published research article by a local lab, gaining background information about the subject and exposure to the research techniques. In the final session, the group will tour the lab that produced the featured article. Additional tours and activities TBA. All first-year, non-transfer students are eligible to enroll in EBIO 119 regardless of AP credit. This course meets in the first half of the semester and features research in the Program of Ecology and Environmental Biology. Mutually Exclusive: Cannot register for EBIO 119 if student has credit for EBIO 116/FSEM 116.

EBIO 124 - INTRODUCTION TO ECOLOGY AND EVOLUTIONARY BIOLOGY

Short Title: INTRO TO EEB
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course provides a short introduction to the science of ecology and evolutionary biology. The topics covered include the mechanisms of evolution, the origin of species, the history of life on earth, biodiversity, animal behavior, population and community ecology, ecosystems, and conservation biology.

EBIO 202 - INTRODUCTORY BIOLOGY II

Short Title: INTRODUCTORY BIOLOGY II
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): BIOC 201
Description: The second in a series of two introductory biology courses (BIOC 201, EBIO 202). This course examines the diversity of life, comparative animal physiology, evolution, ecology, and conservation. An emphasis is placed on evolution as a central framework necessary for a complete understanding of modern biology. Group discussions allow students to explore topics in more detail and discover how they are relevant to our everyday lives.

EBIO 204 - ENVIRONMENTAL SUSTAINABILITY: THE DESIGN & PRACTICE OF COMMUNITY AGRICULTURE

Short Title: COMMUNITY GARDEN
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The course introduces the fundamentals of community garden design and practice. Responsibilities will center on developing and improving the Rice Community Garden. A strong emphasis will be on learning and applying ecological principles to the practice of community agriculture. Class has required meetings outside of regular class time. Distribution Credit for EBIO/ENST 204 no longer eligible beginning Fall 2019. Cross-list: ENST 204. Repeatable for Credit.

EBIO 210 - INTRODUCTION TO RESEARCH

Short Title: INTRODUCTION TO RESEARCH
Department: Biosciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-5
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is only for Rice students conducting research for the first time. The students will conduct scientific research in the laboratories of the Rice faculty in the areas of Biochemistry & Cell Biology and Ecology & Evolutionary Biology. During the five-week course, students will engage in full time research and will be mentored by experienced researchers under the supervision of Rice faculty. Participating students will also receive formal instruction on the basics of scientific research and innovation. Rice students will need a special registration from or ask the faculty member for permission to register. Instructor Permission Required. Cross-list: BIOC 210. Repeatable for Credit.

EBIO 213 - INTRO EXPERIMENTAL ECOLOGY AND EVOLUTIONARY BIOLOGY

Short Title: INTRO EXPER ECOL & EVOL BIOL
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Experimental, laboratory, and field studies of natural history, ecology, evolution, and animal behavior. Class has required meetings outside of regular class time. Distribution Credit for EBIO 213 no longer eligible beginning Fall 2019.
EBIO 215 - BIOS LAB TEACHING
Short Title: BIOS LAB TEACHING
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Undergraduate teaching in a biosciences laboratory. Participate in meetings and selected seminars; supervise students in one or more laboratory sections. Provide group and individual instruction to undergraduates during and outside of laboratory classes. Instructor Permission Required. Repeatable for Credit.

EBIO 216 - DISCUSSION SECTION TEACHING
Short Title: DISCUSSION SECTION TEACHING
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: In this course, undergraduates who have previously excelled in EBIO courses will develop teaching skills by leading discussion sections for the benefit of students presently taking EBIO courses under the guidance of the professor teaching the course. Instructor Permission Required.

EBIO 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

EBIO 270 - ECOSYSTEM MANAGEMENT
Short Title: ECOSYSTEM MANAGEMENT
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will focus on applied ecosystem topics including relations with state and federal agencies, filed studies, wetland delineations, permitting compliance, and environmental regulations. Graduate/Undergraduate Equivalency: EBIO 570. Mutually Exclusive: Cannot register for EBIO 270 if student has credit for EBIO 570.

EBIO 280 - SUSTAINABLE DEVELOPMENT AND REPORTING
Short Title: SUSTAINABLE DEVELOPMENT
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Sustainable development is an approach to development based on interacting social, economic, and environmental forces. It is intended as methodology for planning, and a guiding principle for Environmental Health and safety compliance (EHSs) and Corporate Sustainability (CSRs). Students will learn compliance guidelines, risk management, and assessment considerations. Graduate/Undergraduate Equivalency: EBIO 580. Mutually Exclusive: Cannot register for EBIO 280 if student has credit for EBIO 580.

EBIO 306 - INDEPENDENT RESEARCH FOR ECOLOGY & EVOLUTIONARY BIOLOGY UNDERGRADUATES
Short Title: EEB UNDERGRADUATES IND RES
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): EBIO 213
Description: Program of independent research for students with previous training in the biosciences. Includes a research paper. Students are expected to spend at least three hours per week in the laboratory for each semester hour of credit. If receiving two or more credits, students will be required to participate in the university annual undergraduate symposium in the spring semesters. Instructor Permission Required. Repeatable for Credit.

EBIO 316 - LAB MODULE IN ECOLOGY
Short Title: LAB MODULE IN ECOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): EBIO 323 or EBIO 325
Description: Field and lab experiments in ecology. Class has required meetings outside of regular class time.
EBIO 317 - LAB MODULE IN BEHAVIOR
Short Title: LAB MODULE IN BEHAVIOR
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Field experiments in behavior. Learn to formulate and test hypotheses on bird behavior using mockingbirds, grackles, and herons nesting on campus. Class has required meetings outside of regular class time.

EBIO 319 - TROPICAL FIELD BIOLOGY
Short Title: TROPICAL FIELD BIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Examine first-hand the two most diverse ecosystems on earth - the coral reef and the tropical rainforest in this 2-week summer course in the Central American country of Belize. Topics will include the diversity of tropical organisms and habitats, the formation of coral reefs, rainforest ecology, historical biogeography, symbiosis, and conservation of tropical biodiversity. While a background in biology is desirable, individuals lacking this background but having a special interest in the tropics are encouraged to enroll. Students will be responsible for their own transportation and accommodation cost (exact price TBD). Distribution Credit for EBIO 319 no longer eligible beginning Fall 2019. Instructor Permission Required.

EBIO 320 - ECOLOGY AND CONSERVATION OF BRAZILIAN WETLANDS LABORATORY
Short Title: BRAZILIAN WETLANDS LAB
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course consists of a 2-week trip to Brazil to examine first-hand the ecology of the largest wetland ecosystem on earth - the Pantanal. Days will be spent in the field making observations and collecting data; lectures in the evenings will cover topics including freshwater ecology, seasonal flooding dynamics, community ecology of wetland species, symbiosis, geology, environmental management, ecotourism, and conservation biology. Distribution Credit for EBIO 320 no longer eligible beginning Fall 2019. Recommended Prerequisite(s): EBIO 213

EBIO 321 - ANIMAL BEHAVIOR
Short Title: ANIMAL BEHAVIOR
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 201 and EBIO 202
Description: Evolutionary theory is used to evaluate behavioral adaptations of organisms to their environment.

EBIO 323 - CONSERVATION BIOLOGY
Short Title: CONSERVATION BIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 201 and EBIO 202
Description: The course is designed to give students a broad overview of conservation biology. Lecture and discussions will focus on conservation issues such as biodiversity, extinction, management, sustained yield, invasive species and preserve design. Cross-list: ENST 323. Graduate/Undergraduate Equivalency: EBIO 523. Mutually Exclusive: Cannot register for EBIO 323 if student has credit for EBIO 523.

EBIO 324 - CONSERVATION BIOLOGY LAB
Short Title: CONSERVATION BIOLOGY LAB
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): EBIO 213 and EBIO 323 (may be taken concurrently)
Description: This course will give students hands-on experiences in the practice of conservation biology through authentic projects related to prioritization and design of nature preserves, restoration of natural environments, and for monitoring threatened and endangered species in the Houston area. EBIO 323 may be taken concurrently with EBIO 324. Graduate/Undergraduate Equivalency: EBIO 524. Mutually Exclusive: Cannot register for EBIO 324 if student has credit for EBIO 524.
EBIO 325 - ECOLOGY
Short Title: ECOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 201 and EBIO 202
Description: Study of population dynamics, species interactions, plant and animal community organization, and ecosystem function. Graduate/Undergraduate Equivalency: EBIO 525. Mutually Exclusive: Cannot register for EBIO 325 if student has credit for EBIO 525.

EBIO 326 - INSECT BIOLOGY
Short Title: INSECT BIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course addresses contemporary issues in ecology and evolution through the lens of insect diversity. Readings span a broad literature (popular to technical). Writing and oral reports develop proficiency in scientific communication.

EBIO 327 - BIOLOGICAL DIVERSITY
Short Title: BIOLOGICAL DIVERSITY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 201 and EBIO 202 and EBIO 213
Description: The lecture/laboratory course in field ecology focuses on the theory and practice of estimating biodiversity. The goals are to acquaint students with basic techniques for field sampling and quantifying biodiversity as well as some aspects of the natural history of south and east Texas. These will be accomplished through four field trips during the first half of the semester and an independent research project to be completed by the end of the semester. Class has required meetings outside of regular class time.

EBIO 328 - EVOLUTION OF GENES & GENOMES
Short Title: EVOLUTION OF GENES & GENOMES
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 201 or EBIO 202
Description: The course provides an overview of the evolution of genes and genomes. Using many examples, the course introduces databases and the Worldwide Web, and molecular and statistical methods used to study the evolution of genes and genomes. Broad-scale evolutionary patterns and medical applications based on genome analyses are presented.

EBIO 329 - ANIMAL BIOLOGY AND PHYSIOLOGY
Short Title: ANIMAL BIOLOGY AND PHYSIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 201 or EBIO 202
Description: The evolution and systematics of the animal kingdom with consideration of functional anatomy, comparative physiology, behavior, medical implications and resource management. Cross-list: BIOC 329. Graduate/Undergraduate Equivalency: EBIO 529. Mutually Exclusive: Cannot register for EBIO 329 if student has credit for EBIO 529.

EBIO 330 - INSECT BIOLOGY LAB
Short Title: INSECT BIOLOGY LAB
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 201 and EBIO 202 and EBIO 213
Description: Lectures will address contemporary issues in ecology and evolution through the lens of insect diversity. Labs will provide hands-on experiences with collection and curation of insects.
EBIO 331 - BIOLOGY OF INFECTIOUS DISEASES  
Short Title: BIOLOGY OF INFECTIOUS DISEASES  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group III  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): EBIO 213  
Description: This course gives a broad overview of the biology of infectious diseases using examples from humans, plants, and animals. Topics include diversity of diseases, mechanisms of disease transmission, epidemiology, population regulation, evolution of virulence, disease dynamics in natural communities and disease invasion and conservation biology. Cross-list: BIOC 331.

EBIO 332 - EVOLUTION OF GENES & GENOMES LAB  
Short Title: EVOLUTION GENES & GENOMES LAB  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Laboratory  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): EBIO 328  
Description: The laboratory course is designed to demonstrate concepts and approaches introduced in the lecture course EBIO 328. The text book remains the same, but the course will heavily rely on the computational exercises provided in the text (called Weblems). Students will be shown how to conduct analysis of sequence data, search databases, literature, and how to synthesize such data. Students will conduct their own projects, some suggested by the text, some by the instructor, some perhaps ideas of their own. Students present and defend their results in writing and in form of presentations and posters. The course would be useful for graduate student education, with added requirements for graduate students.

EBIO 333 - EVOLUTIONARY BIOINFORMATICS  
Short Title: EVOLUTION BIOINFORMATICS  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): EBIO 202  
Description: Principles of biological evolution. Topics include natural selection, adaptation, molecular evolution, formation of new species, the fossil record, biogeography, and principles of classification. Cross-list: BIOC 334. Graduate/Undergraduate Equivalency: EBIO 534. Mutually Exclusive: Cannot register for EBIO 334 if student has credit for EBIO 534.

EBIO 335 - EVOLUTIONARY BIOINFORMATICS LAB  
Short Title: EVOLUTION BIOINFORMATICS LAB  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Laboratory  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): EBIO 333 (may be taken concurrently) or COMP 370 (may be taken concurrently)  
Description: Computer lab section for Evolutionary Bioinformatics. Students must enroll in EBIO 333.

EBIO 336 - PLANT DIVERSITY  
Short Title: PLANT DIVERSITY  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group III  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): EBIO 202  
Description: The evolution, systematics, and ecology of plants, with emphasis on flowering plants and biodiversity.

EBIO 337 - FIELD BIRD BIOLOGY LAB  
Short Title: FIELD BIRD BIOLOGY LAB  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Laboratory  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): EBIO 213  
Description: This course centers on a series of five field trips to diverse habitats for observing birds both immigrants and residents. Each will be preceded by a lecture and students will do two projects. Class has required meetings outside of regular class time. Distribution Credit for EBIO 337 no longer eligible beginning Fall 2019.
EBIO 338 - ANALYSIS AND VISUALIZATION OF BIOLOGICAL DATA
Short Title: BIO DATA ANALYSIS
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): EBIO 213 or BIOC 211 or BIOC 212
Description: This course addresses how to analyze, visualize and draw conclusions from biological data. It introduces basic concepts in statistics interwoven with training in data analysis using the R computing environment. Students will learn to identify underlying data structures and wrangle data. Students will also learn to effectively convey results using statistical graphics. Topics include basic R programming, data exploration, statistical modeling, parameter estimation and interpretation, and model comparison. This class particularly focuses on biological data. Graduate/Undergraduate Equivalency: EBIO 538.

EBIO 340 - GLOBAL BIOGEOCHEMICAL CYCLES
Short Title: GLOBAL BIOGEOCHEMICAL CYCLES
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course introduces students to the coupled nature of the biosphere, atmosphere and hydrosphere using as focal points elemental cycles such as those of carbon and nitrogen. This is a writing-intensive class, and will include 3 required Saturday field trips. Cross-list: ENST 340, ESCI 340. Graduate/Undergraduate Equivalency: EBIO 540. Mutually Exclusive: Cannot register for EBIO 340 if student has credit for EBIO 540.

EBIO 365 - INTRODUCTORY PHYCOLOGY
Short Title: INTRODUCTORY PHYCOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 201 and EBIO 202
Description: This course provides an overview of the biology of algae including their physiology, taxonomy, biochemistry, and ecology. Students will study the role of algae in different environments, their importance as primary producers, and their economic value.

EBIO 366 - APPLIED PHYCOLOGY
Short Title: APPLIED PHYCOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 201 and EBIO 202
Description: This course provides an overview of methods of algal strain selection and cultivation for food, fodder, fertilizers, biofuels, pharmaceuticals, and cosmetics. Graduate/Undergraduate Equivalency: EBIO 566. Mutually Exclusive: Cannot register for EBIO 366 if student has credit for EBIO 566.

EBIO 367 - INTRODUCTION PHYCOLOGY LAB
Short Title: INTRODUCTION PHYCOLOGY LAB
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): EBIO 365
Corequisite: EBIO 366
Description: This lab course provides an introduction to techniques of isolation, culturing, measuring of growth and identification of algae.

EBIO 368 - APPLIED PHYCOLOGY LAB
Short Title: APPLIED PHYCOLOGY LAB
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 201 and EBIO 202
Corequisite: EBIO 366
Description: In this course students will learn methods of algal strain selection and mass cultivation together with analyses of algal characteristics including their lipid composition, enzymes and pigments.
EBIO 372 - CORAL REEF ECOSYSTEMS  
Short Title: CORAL REEF ECOSYSTEMS  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group III  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): EBIO 202  
Description: This three credit lecture course introduces students to a complex, dynamic and sensitive ecosystem: coral reefs. We will explore the biotic and abiotic components of coral reefs; how reef organisms interact with each other and the environment, and the factors that contribute to reef construction and decline over time and space. Graduate/Undergraduate Equivalency: EBIO 572. Mutually Exclusive: Cannot register for EBIO 372 if student has credit for EBIO 572.

EBIO 379 - LAB MODULE IN AQUATIC ECOLOGY WITH SCUBA  
Short Title: LAB MOD AQU ECOLOGY WITH SCUBA  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Laboratory  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Students will learn some fundamentals of aquatic ecosystems and conduct lab exercises that involve SCUB-based fieldwork in a nationally recognized freshwater dive site. Course has required meetings outside of regular class time. Prerequisites: LPAP 194 or proof of Open Water Scuba certification from a professional organization (e.g., PADI, NAUI). A course fee ranging from $300 to $535 is associated with the class. Please send all enrollment requests to Mariah McClarty, mam22@rice.edu and include the following information: major, year, scuba certification level and issuing professional organization, and a brief statement about why you want to take the course. You will be notified of enrollment decisions by December 5th. Distribution Credit for ENST/EBIO 379 no longer eligible beginning Fall 2019. Department Permission Required. Cross-list: ENST 379. Graduate/Undergraduate Equivalency: EBIO 579. Recommended Prerequisite(s): EBIO 213 and LPAP 194. Mutually Exclusive: Cannot register for EBIO 379 if student has credit for EBIO 579.

EBIO 391 - TRANSFER CREDIT IN ECOLOGY AND EVOLUTIONARY BIOLOGY  
Short Title: TRAN CREDIT ECOL&EVOLUTION  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Transfer  
Credit Hours: 3  
Course Level: Undergraduate Upper-Level  
Description: For transfer of courses which have no current equivalent in the Rice curriculum, but which can be counted as Group B Biosciences courses in satisfying requirements for majors in the Biosciences. Repeatable for Credit.

EBIO 393 - LABORATORY TRANSFER CREDIT IN BIOSCIENCES  
Short Title: LAB TRANSFER CREDIT  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Transfer  
Credit Hour: 1  
Course Level: Undergraduate Upper-Level  
Description: For transfer of an advanced laboratory course in the biosciences that has no current equivalent in the Rice Biosciences curriculum. Any student may receive a maximum of one credit of EBIO 393.

EBIO 403 - UNDERGRADUATE HONORS RESEARCH IN ECOLOGY AND EVOLUTIONARY BIOLOGY  
Short Title: UNDERGRADUATE HONORS RESEARCH  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Research  
Credit Hours: 5  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Open only to undergraduate majors who meet specific requirements and with permission of the research supervisor and chair. Registration for EBIO 403/404 implies a commitment to participate in research for at least 2 semesters. Department Permission Required.

EBIO 404 - UNDERGRADUATE HONORS RESEARCH IN ECOLOGY AND EVOLUTIONARY BIOLOGY  
Short Title: UNDERGRADUATE HONORS RESEARCH  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Research  
Credit Hours: 5  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Open only to undergraduate majors who meet specific requirements and with permission of the research supervisor and chair. Registration for EBIO 403/404 implies a commitment to participate in research for at least 2 semesters. Department Permission Required.

EBIO 412 - ADVANCED COMMUNICATION IN THE BIOLOGICAL SCIENCES  
Short Title: ADV COMMUNICATION IN BIOL SCI  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 2  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Intended primarily for seniors majoring in the biological sciences, this course will focus on improving students' written and oral communication skills. Emphasis will be placed on communication of scientific topics for audiences ranging from experts to the general public through weekly assignments. Instructor Permission Required. Repeatable for Credit.
EBIO 433 - ADVANCED ECOLOGY
Short Title: ADVANCED ECOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Graduate Professional or Visiting Graduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 201 and EBIO 202 and EBIO 325
Description: Students will develop a critical understanding of the discipline of ecology through a combination of lectures and discussion that span a range of topics. With the instructor’s help, students will use current papers to stimulate debate on the theories, philosophies and methods of the study of populations, communities, and ecosystems. Instructor Permission Required.

EBIO 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Graduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

EBIO 495 - SEMINAR: TOPICS IN ENVIRONMENTAL SCIENCE
Short Title: TOPICS: ENVIRONMENTAL SCIENCE
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Senior. Enrollment is limited to Undergraduate, Graduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course provides an integration of interdisciplinary topics that span environmental sciences. Topics will vary depending upon the interests and needs of both students and faculty. Only Seniors may register for this course without instructor permission. Cross-list: ESCI 495.

EBIO 523 - CONSERVATION BIOLOGY
Short Title: CONSERVATION BIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (BIOC 201 and EBIO 202)
Description: The course is designed to give students a broad overview of conservation biology. Lecture and discussions will focus on conservation issues such as biodiversity, extinction, management, sustained yield, invasive species and preserve design. Graduate/Undergraduate Equivalency: EBIO 323. Mutually Exclusive: Cannot register for EBIO 523 if student has credit for EBIO 323.

EBIO 524 - CONSERVATION BIOLOGY LAB
Short Title: CONSERVATION BIOLOGY LAB
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (EBIO 213 and EBIO 323 (may be taken concurrently))
Description: This course will give students hands-on experiences in the practice of conservation biology through authentic projects related to prioritization and design of nature preserves, restoration of natural environments, and for monitoring threatened and endangered species in the Houston area. Prereq EBIO 323 may be taken concurrently. Graduate/Undergraduate Equivalency: EBIO 324. Mutually Exclusive: Cannot register for EBIO 524 if student has credit for EBIO 324.

EBIO 525 - ECOLOGY
Short Title: ECOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): BIOC 201 and EBIO 202
Description: Study of population dynamics, species interactions, plant and animal community organization, and ecosystem function. Graduate/Undergraduate Equivalency: EBIO 325. Mutually Exclusive: Cannot register for EBIO 525 if student has credit for EBIO 325.

EBIO 529 - ANIMAL BIOLOGY AND PHYSIOLOGY
Short Title: ANIMAL BIOLOGY AND PHYSIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): BIOC 201 or EBIO 202
Description: The evolution and systematics of the animal kingdom with consideration of functional anatomy, comparative physiology, behavior, medical implications and resource management. Graduate/Undergraduate Equivalency: EBIO 329. Mutually Exclusive: Cannot register for EBIO 529 if student has credit for BIOC 329/EBIO 329.
EBIO 534 - EVOLUTION  
**Short Title:** EVOLUTION  
**Department:** Biosciences  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Principles of biological evolution. Topics include natural selection, adaptation, molecular evolution, formation of new species, the fossil record, biogeography, and principles of classification. Instructor Permission Required. Cross-list: BIOC 534. Graduate/Undergraduate Equivalency: EBIO 334. Mutually Exclusive: Cannot register for EBIO 534 if student has credit for EBIO 334.

EBIO 538 - ANALYSIS AND VISUALIZATION OF BIOLOGICAL DATA  
**Short Title:** BIO DATA ANALYSIS  
**Department:** Biosciences  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Prerequisite(s):** EBIO 213 or BIOC 211 or BIOC 212  
**Description:** This course addresses how to analyze, visualize and draw conclusions from biological data. It introduces basic concepts in statistics interwoven with training in data analysis using the R computing environment. Students will learn to identify underlying data structures and wrangle data. Students will also learn to effectively convey results using statistical graphics. Topics include basic R programming, data exploration, statistical modeling, parameter estimation and interpretation, and model comparison. This class particularly focuses on biological data. Graduate/Undergraduate Equivalency: EBIO 338.

EBIO 540 - GLOBAL BIOGEOCHEMICAL CYCLES  
**Short Title:** GLOBAL BIOGEOCHEMICAL CYCLES  
**Department:** Biosciences  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This course introduces students to the coupled nature of the biosphere, atmosphere and hydrosphere using as focal points elemental cycles such as those of carbon and nitrogen. This is a writing-intensive class, and will include 3 required Saturday field trips. Graduate/Undergraduate Equivalency: EBIO 340. Mutually Exclusive: Cannot register for EBIO 540 if student has credit for EBIO 340.

EBIO 541 - RESEARCH SEMINAR IN ECOLOGY AND EVOLUTIONARY BIOLOGY  
**Short Title:** RESEARCH SEMINAR  
**Department:** Biosciences  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hour:** 1  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Repeatable for Credit.

EBIO 542 - RESEARCH SEMINAR IN ECOLOGY AND EVOLUTIONARY BIOLOGY  
**Short Title:** RESEARCH SEMINAR  
**Department:** Biosciences  
**Grade Mode:** Standard Letter  
**Course Type:** Research  
**Credit Hour:** 1  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Repeatable for Credit.

EBIO 555 - CURRENT TOPICS IN WOLF CONSERVATION  
**Short Title:** WOLF CONSERVATION  
**Department:** Biosciences  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Seminar  
**Credit Hour:** 1  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This course will provide an overview of the biology of wolves, their effects on ecosystems, the history of their management, and the current state of their conservation in the United States. Instructor Permission Required.

EBIO 560 - SUSTAINABILITY IMPACT ASSESSMENTS  
**Short Title:** SUSTAINABILITY IMPACTS  
**Department:** Biosciences  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This course is an exciting review of the methodologies involved in conducting Environmental Impact Assessments according to epistemologies from Sustainable Development. EIAs have to be conducted, before permitting is secured, for large projects and programs; such as power plants, highways, pipelines, dams, mines, airports, incinerators and landfills. Most environmental consultancies and government environmental offices will routinely engage experts who are familiar with a comprehensive assessment of local ecosystems around a project or program.  
**Course URL:** profms.rice.edu (http://profms.rice.edu)

EBIO 561 - TOPICS IN EVOLUTION  
**Short Title:** TOPICS IN EVOLUTION  
**Department:** Biosciences  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hour:** 1  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Review and discussion of the literature on current research in evolution. Repeatable for Credit.
EBIO 562 - TOPICS IN BEHAVIORAL BIOLOGY
Short Title: TOPICS IN BEHAVIORAL BIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Review and discussion of the literature on current research in animal behavior and evolution. Recommended prerequisite(s): Graduate standing or permission of chair or instructor. Repeatable for Credit.

EBIO 563 - TOPICS IN ECOLOGY
Short Title: TOPICS IN ECOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Review and discussion of the literature on current research in ecology. Repeatable for Credit.

EBIO 566 - APPLIED PHYCOLOGY
Short Title: APPLIED PHYCOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course provides an overview of methods of algal strain selection and cultivation for food, fodder, fertilizers, biofuels, pharmaceuticals, and cosmetics. Graduate/Undergraduate Equivalency: EBIO 366. Mutually Exclusive: Cannot register for EBIO 566 if student has credit for EBIO 366.

EBIO 568 - TOPICS IN BIOLOGICAL DIVERSITY
Short Title: TOPICS IN BIOLOGICAL DIVERSITY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Review and discussion of literature on current research in biological diversity. Repeatable for Credit.

EBIO 569 - CORE COURSE IN ECOLOGY AND EVOLUTIONARY BIOLOGY
Short Title: CORE COURSE IN ECOLOGY & EVOL
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Survey of topics in ecology and evolution taught by all EEB faculty.

EBIO 570 - ECOSYSTEM MANAGEMENT
Short Title: ECOSYSTEM MANAGEMENT
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will focus on applied ecosystem topics including relations with state and federal agencies, field studies, wetland delineations, permitting compliance, and environmental regulations. Graduate/Undergraduate Equivalency: EBIO 270. Mutually Exclusive: Cannot register for EBIO 570 if student has credit for EBIO 270.

EBIO 572 - CORAL REEF ECOSYSTEMS
Short Title: CORAL REEF ECOSYSTEMS
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): EBIO 202
Description: This three credit lecture course introduces students to a complex, dynamic and sensitive ecosystem: coral reefs. We will explore the biotic and abiotic components of coral reefs; how reef organisms interact with each other and the environment, and the factors that contribute to reef construction and decline over time and space. Graduate/Undergraduate Equivalency: EBIO 372. Mutually Exclusive: Cannot register for EBIO 572 if student has credit for EBIO 372.

EBIO 579 - LAB MODULE IN AQUATIC ECOLOGY WITH SCUBA
Short Title: LAB MOD AQU ECOLOGY WITH SCUBA
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students will learn some fundamentals of aquatic ecosystems and conduct lab exercises that involve SCUBA-based fieldwork in a nationally recognized freshwater dive site. Course has required meetings outside of regular class time. Prerequisites: LPAP 194 or proof of Open Water Scuba certification from a professional organization (e.g., PADI, NAUI). A course fee ranging from $300 to $535 is associated with the class. Please send all enrollment requests to Mariah McClarty, mam22@rice.edu. You will be notified of enrollment decisions by December 5th. Department Permission Required. Graduate/Undergraduate Equivalency: EBIO 379. Recommended Prerequisite(s): EBIO 213 and LPAP 194. Mutually Exclusive: Cannot register for EBIO 579 if student has credit for EBIO 379.
EBIO 580 - SUSTAINABLE DEVELOPMENT AND REPORTING
Short Title: SUSTAINABLE DEVELOPMENT
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: Sustainable development is an approach to development based on interacting social, economic, and environmental forces. It is intended as methodology for planning, and a guiding principle for Environmental Health and safety compliance (EHSs) and Corporate Sustainability (CSRs). Students will learn compliance guidelines, risk management, and assessment considerations. Graduate/Undergraduate Equivalency: EBIO 280. Mutually Exclusive: Cannot register for EBIO 580 if student has credit for EBIO 280.

EBIO 581 - EEB OUTREACH DEVELOPMENT
Short Title: EEB OUTREACH DEVELOPMENT
Department: Biosciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Description: This course is for Rice students interested in developing life science outreach initiatives that target underserved K-12 students in the Houston area. Goals of the course include developing hands-on teaching modules related to Texas science education standards and expanding graduate student teaching experiences beyond the University setting.

EBIO 585 - GRADUATE SEMINAR IN ECOLOGY AND EVOLUTIONARY BIOLOGY
Short Title: GRAD SEM IN ECOL & EVOL BIOL
Department: Biosciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Description: Faculty and student presentations on current research. Required of all Ecology & Evolutionary Biology graduate students. Repeatable for Credit.

EBIO 586 - GRADUATE SEMINAR/ECOLOGY AND EVOLUTIONARY BIOLOGY
Short Title: GRAD SEM: ECOL & EVOL BIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Description: Continuation of EBIO 585. Repeatable for Credit.

EBIO 591 - GRADUATE TEACHING IN ECOLOGY AND EVOLUTIONARY BIOLOGY
Short Title: GRADUATE TEACHING IN EEB
Department: Biosciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: Repeatable for Credit.

EBIO 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

EBIO 801 - EEB GRADUATE RESEARCH
Short Title: EEB GRADUATE RESEARCH
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Description: Repeatable for Credit.

Economics (ECON)
ECON 100 - PRINCIPLES OF ECONOMICS
Short Title: PRINCIPLES OF ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Description: Introduction to the basic concepts of microeconomics and macroeconomics. Microeconomics component includes analysis of supply and demand, consumer and producer behavior, and competitive and noncompetitive market equilibria, with applications to current policy issues. Macroeconomics component provides an overview of the determination of national output, employment, interest rates, and inflation, and analyzes monetary fiscal policies and international trade. Designed for both non-majors and majors. Mutually Exclusive: Cannot register for ECON 100 if student has credit for ECON 101.
ECON 101 - INTRODUCTION TO MICROECONOMICS
Short Title: INTRODUCTION TO MICROECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction to microeconomic analysis at a level suitable for non-majors. Applies only for transfer credit and requires departmental approval. Approved credit counts toward total credit hours required for graduation and for distribution, but does not count toward the ECON or MTEC majors. Students may not receive credit for ECON 101 if credit for ECON 201/211 has already been awarded. Mutually Exclusive: Cannot register for ECON 101 if student has credit for ECON 100/ECON 201/ ECON 211.

ECON 103 - INTRODUCTION TO MACROECONOMICS
Short Title: INTRODUCTION TO MACROECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction to macroeconomic analysis at a level suitable for non-majors. Applies only for transfer credit and requires departmental approval. Approved credit counts toward total credit hours required for graduation and for distribution, but does not count toward the ECON or MTEC majors. Students may not receive credit for ECON 103 if credit for ECON 212 has already been awarded. Mutually Exclusive: Cannot register for ECON 103 if student has credit for ECON 112/ECON 212.

ECON 111 - AP/OTH CREDIT IN MICROECONOMICS
Short Title: AP/OTH CREDIT MICROECONOMICS
Department: Economics
Grade Mode: Transfer Courses
Course Type: Transfer
Credit Hours: 1-6
Course Level: Undergraduate Lower-Level
Description: Provides transfer credit based on student performance on approved examinations in microeconomics, such as the Advanced Placement microeconomics exam or the International Baccalaureate higher-level economics exams, or for an approved introductory microeconomics course. Approved credit counts toward total credit hours required for graduation, but does not count for distribution or toward the ECON or MTEC majors. Students may not receive credit for ECON 111 if credit for ECON 201/211 has already been awarded. Mutually Exclusive: Cannot register for ECON 111 if student has credit for ECON 201/ECON 211.

ECON 113 - AP/OTH CREDIT IN MACROECONOMICS
Short Title: AP/OTH CREDIT MACROECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Transfer
Credit Hours: 1-6
Course Level: Undergraduate Lower-Level
Description: Provides transfer credit based on student performance on approved examinations in macroeconomics, such as the Advanced Placement macroeconomics exam or the International Baccalaureate higher-level economics exams, or for an approved introductory macroeconomics course. Approved credit counts toward total credit hours required for graduation, but does not count for distribution or toward the ECON or MTEC majors. Mutually Exclusive: Cannot register for ECON 113 if student has credit for ECON 112/ECON 212.

ECON 200 - MICROECONOMICS
Short Title: MICROECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group II
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ECON 100 and (MATH 102 (may be taken concurrently) or MATH 106)
Description: Intermediate level analysis of theories of household behavior, including demand for consumer goods, labor supply, and savings/ investment decisions, and producer behavior including the supply of output and demands for labor, capital and other production inputs. Emphasizes individual and interactive decision making under resource constraints and discusses equilibria in competitive markets. MATH 102 may be taken concurrently with ECON 200. As much of the analysis in ECON 200 involves partial differentiation, MATH 212 is strongly recommended. Recommended Prerequisite(s): MATH 212 Mutually Exclusive: Cannot register for ECON 200 if student has credit for ECON 301.

ECON 203 - MACROECONOMICS
Short Title: MACROECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ECON 200 (may be taken concurrently)
Description: Analyzes aggregate performance of the national economy including output, inflation, interest rates, employment, the business cycle, monetary and fiscal policy, and more generally the role of government in influencing aggregate economic performance. Introduces both the traditional aggregative only approach to Macroeconomics and the more recent New Classical and New Keynesian micro-foundations approaches. ECON 200 may be taken concurrently. Mutually Exclusive: Cannot register for ECON 203 if student has credit for ECON 303.
ECON 209 - APPLIED ECONOMETRICS

Short Title: APPLIED ECONOMETRICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group II
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Prerequisite(s): (ECON 100 or ECON 200) and (ECON 307 or STAT 310 or STAT 315 or DSCI 301)
Description: Applied econometric methods: econometric theory with practical emphasis on modeling, estimation, and hypothesis testing. A computer lab one day a week focuses on empirical implementation of econometric methods using STATA software. Mutually Exclusive: Cannot register for ECON 209 if student has credit for ECON 309/ECON 446.

ECON 210 - BEHAVIORAL ECONOMICS

Short Title: BEHAVIORAL ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Prerequisite(s): ECON 100 or ECON 200
Description: Examines behavioral economics, which seeks to insert more behavioral realism into economic theory by incorporating into economic models insights based on empirical observations from psychology, sociology, and neuroscience. Emphasizes attempts by behavioral economists to explain anomalies that depart from the predictions of standard economic theory. Topics include temptation and self-control, fairness and reciprocity, reference dependence, bounded rationality and choice under risk and uncertainty.

ECON 238 - SPECIAL TOPICS

Short Title: SPECIAL TOPICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Laboratory, Lecture, Seminar, Lecture/Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

ECON 239 - LAW AND ECONOMICS

Short Title: LAW AND ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Prerequisite(s): ECON 100 or ECON 200
Description: Exploration of the law using economic tools based on microeconomic theory. Focuses on legal issues most applicable to business. Mutually Exclusive: Cannot register for ECON 239 if student has credit for ECON 438.

ECON 260 - MICROECONOMICS AND PUBLIC POLICY

Short Title: MICROECONOMICS & PUBLIC POLICY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Prerequisite(s): ECON 100 or ECON 200
Description: Applies insights learned from the microeconomic component of ECON 100 to the analysis of public policy issues, stressing economic intuition rather than mathematical formulations. Designed for students who do not wish to major in ECON or MTEC, and does not apply toward ECON or MTEC major requirements.

ECON 265 - MICROECONOMICS AND PUBLIC POLICY TOWARDS BUSINESS

Short Title: MICRO & PUBLIC POLICY/BUSINESS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Prerequisite(s): ECON 100 or ECON 200
Description: Applies insights learned from the microeconomic component of ECON 100 to the analysis of issues related to public policy toward business, stressing economic intuition rather than mathematical formulations. Designed for students who do not wish to major in ECON or MTEC, and does not apply toward ECON or MTEC major requirements.
ECON 270 - MACROECONOMICS AND PUBLIC POLICY
Short Title: MACROECONOMICS & PUBLIC POLICY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Prerequisite(s): ECON 100 or ECON 200
Description: Applies insights learned from the macroeconomic component of ECON 100 to the analysis of public policy issues, stressing economic intuition rather than mathematical formulations. Designed for students who do not wish to major in ECON or MTEC, and does not apply toward ECON or MTEC major requirements.

ECON 275 - INTERNATIONAL MACROECONOMICS AND PUBLIC POLICY
Short Title: INT MACRO & PUBLIC POLICY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ECON 100 or ECON 200
Description: Applies insights learned from the macroeconomic component of ECON 100 to the analysis of issues related to international public policy, stressing economic intuition rather than mathematical formulations. Designed for students who do not wish to major in ECON or MTEC, and does not apply toward ECON or MTEC major requirements.

ECON 299 - EXPERIENTIAL EDUCATION IN ECONOMICS
Short Title: EXPERIENTIAL EDUC IN ECONOMICS
Department: Economics
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Enrollment is limited to students with a major in Economics or Mathematical Economic Analysis. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ECON 200
Description: Provides one hour of university credit for faculty-approved internship. Students must obtain approval from a member of the department's undergraduate committee and must submit an offer letter from the internship provider as well as a letter indicating completion and satisfactory performance. Instructor Permission Required. Repeatable for Credit.

ECON 300 - GAME THEORY AND OTHER MICRO TOPICS FOR ECON MAJORS
Short Title: GAME THEORY, MICRO TOPICS/ECON
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 and (ECON 307 or STAT 310 or STAT 315 or DSCI 301)
Description: Advanced applied analysis of topics in microeconomics designed for students in the ECON major. Topics include the foundations and applications of game theory, the economics of choice under uncertainty, and information economics including issues of asymmetric information. Additional topics may include auction theory and mechanism design. Open to all majors other than MTEC. Mutually Exclusive: Cannot register for ECON 300 if student has credit for ECON 205.

ECON 305 - GAME THEORY AND OTHER MICRO TOPICS FOR MTEC MAJORS
Short Title: GAME THEORY, MICRO TOPICS/MTEC
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ECON 307 or STAT 310 or STAT 315 or DSCI 301) and ECON 308
Description: Advanced theoretical analysis of topics in microeconomics, focusing on mathematical modeling. Topics include the foundations and applications of game theory, general equilibrium theory and applications, the economics of choice under uncertainty, and information economics including issues of asymmetric information. Additional topics may include auction theory and mechanism design. Open to all majors but designed for students in the MTEC major. Mutually Exclusive: Cannot register for ECON 305 if student has credit for ECON 405.

ECON 307 - PROBABILITY AND STATISTICS
Short Title: PROBABILITY & STATISTICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 102 or MATH 106
Description: Probability and the central concepts and methods of statistics including probability, distributions of random variables, expectation, sampling distributions, estimation, confidence intervals, and hypothesis testing. Cross-list: STAT 310. Recommended Prerequisite(s): MATH 212. Mutually Exclusive: Cannot register for ECON 307 if student has credit for DSCI 301/STAT 315.
ECON 308 - MATHEMATICAL ECONOMICS
Short Title: MATHEMATICAL ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 and (MATH 212 or (MATH 221 and MATH 222))
Description: Coverage of mathematical topics used in economics, such as linear algebra, optimization, and real analysis, with applications to fundamental topics in economic theory, constrained optimization, labor market dynamics, game theory and Leontief input-output model. Emphasizes logical clarity and mathematical rigor, along with the ability to follow and construct mathematical proofs. Students must have either (1) made a grade of B- or higher in MATH 212 or MATH 221/MATH 222 taken at Rice, or (2) received transfer credit for MATH 212 or MATH 221/MATH 222 and received approval of the course instructor. Mutually Exclusive: Cannot register for ECON 308 if student has credit for ECON 401.

ECON 310 - ECONOMETRICS
Short Title: ECONOMETRICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 209 and ECON 308
Description: Survey of estimation and forecasting models. Includes multiple regression time series analysis. A good understanding of linear algebra is highly desirable. Cross-list: STAT 376. Mutually Exclusive: Cannot register for ECON 310 if student has credit for ECON 409/STAT 400.

ECON 343 - CORPORATE FINANCE
Short Title: CORPORATE FINANCE
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ECON 100 or ECON 200) and (STAT 280 or STAT 305 or STAT 310 or STAT 315 or ECON 307 or STAT 312 or POLI 395 or PSYC 339 or SOSC 302) and BUSI 305
Description: Corporate financial management including tools used to evaluate and select investment projects and the method of financing those investments. The influence of corporate control on investment decisions. The valuation of stocks, bonds and options using the time value of money, the trade-off between risk and return, and arbitrage. Mutually Exclusive: Cannot register for ECON 343 if student has credit for BUSI 343.

ECON 355 - FINANCIAL MARKETS
Short Title: FINANCIAL MARKETS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200
Description: Principles governing U.S. and international equity and debt markets, and the interactions between such markets and national monetary and exchange rate policies. Focuses on the role of financial markets and institutions in the allocation and transfer of credit and risk, and examines various existing and suggested regulatory frameworks.

ECON 365 - WORLD ECONOMIC HISTORY
Short Title: WORLD ECONOMIC HISTORY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 100 and ECON 200 and ECON 203
Description: Study and analysis of world economy focusing on the economic expansion of Western countries between the 14th and 21st centuries. Emphasis on contextual changes in economy, geography, history, society, culture, religion and politics in determining economic leadership of certain economies, such as Italy, Portugal, Spain, the United Kingdom, Belgium, the Netherlands, France, Germany, Sweden, the United States and Japan. Cross-list: HIST 365.

ECON 399 - INDEPENDENT RESEARCH
Short Title: INDEPENDENT RESEARCH
Department: Economics
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 203 and ECON 209 and (ECON 300 or ECON 305)
Description: Independent research project under the supervision of a faculty member who must approve the topic. Consult the department website under "Independent Research" for additional details. Students must have a GPA of 3.0 or higher in the prerequisite courses and must have taken the 400-level course or courses most relevant to the research topic. Faculty advisors may require additional prerequisites. Instructor and department permission required. Not offered during the summer. Instructor Permission Required.
ECON 415 - LABOR ECONOMICS
Short Title: LABOR ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200
Description: Empirical evidence and theories relating to several features of labor markets. Topics covered may include fertility, health, criminal behavior, labor force participation, hours of work, education and training, geographical and inter-firm labor mobility, static and dynamic labor demand, unions, discrimination, government intervention in labor markets, and ‘hedonic’ equilibria in labor markets. Graduate/Undergraduate Equivalency: ECON 515. Mutually Exclusive: Cannot register for ECON 415 if student has credit for ECON 515.

ECON 418 - ECONOMIC FORECASTING
Short Title: ECONOMIC FORECASTING
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 203 and ECON 209
Description: Application of econometric techniques to problems in macroeconomics and financial economics. The course focuses on macroeconomic forecasting and test of economic theories using stationary and non-stationary time-series data. Methods include predictive regressions, vector autoregressions, impulse response functions, and variance decomposition. Tests and comparisons of forecast accuracy are also included. Projects will be completed in STATA.

ECON 419 - ADVANCED TOPICS IN ECONOMETRICS
Short Title: ADV TOPICS IN ECONOMETRICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 310 or STAT 376
Description: Introduction to advanced econometrics, with an emphasis on methods used in microeconomic applications. Methods covered are used in the estimation of the demand for goods and services, production functions, and for analyzing the impact of social programs.

ECON 422 - INTERNATIONAL ECONOMICS AND FINANCE
Short Title: INTERNATIONAL ECON & FINANCE
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 and ECON 203
Description: Studies the economic relationships among countries. Explores the sources of comparative advantage and reasons for trade policies. Examines foreign exchange and international capital markets and linkages between exchange rates, interest rates, and prices. Includes trade theory, tariffs, and other trade restrictions, an overview of historical and institutional developments, and current policy issues. Mutually Exclusive: Cannot register for ECON 422 if student has credit for ECON 420/ECON 421.

ECON 432 - POLITICAL ECONOMY
Short Title: POLITICAL ECONOMY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 and (ECON 300 or ECON 305)
Description: Analyzes income redistribution, taxation, the production of public goods, and other actions of the public sector as determined by a political process simultaneously with the economic process of exchange and production. Investigates the connection between public policies and the political forces that shape them.

ECON 435 - INDUSTRIAL ORGANIZATION
Short Title: INDUSTRIAL ORGANIZATION
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ECON 300 or ECON 305) and (ECON 209 or ECON 310)
Description: Covers topics in industrial organization and market design, including oligopoly, mergers, demand, matching and auctions.
ECON 437 - ENERGY ECONOMICS
Short Title: ENERGY ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200
Description: Discussion of key aspects in the supply and demand of energy. Topics include optimal extraction of depletable resources, transportation, storage, end-use and efficiency, and the relationship between economic activity, energy, and the environment. Cross-list: ENST 437. Graduate/Undergraduate Equivalency: ECON 601. Mutually Exclusive: Cannot register for ECON 437 if student has credit for ECON 601.

ECON 439 - ADVANCED TOPICS IN LAW AND ECONOMICS
Short Title: ADV TOPICS IN LAW AND ECON
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200
Description: Addresses the role of economics in understanding the legal system, in particular how the law allocates entitlements and risk in property, tort and contract law. Intended primarily for students who are considering attending law school and uses instruction methods appropriate for that goal.

ECON 441 - EMPIRICAL METHODS FOR INDUSTRIAL ORGANIZATION
Short Title: EMPIRICAL METHODS FOR IO
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 and ECON 209
Description: Covers empirical methods for the analysis of markets and industries. Focuses on various topics related to incomplete information in industrial organization. Topics include markets, strategy, interactions among firms, and the pricing of products, including non-linear pricing.

ECON 443 - FINANCIAL ECONOMICS
Short Title: FINANCIAL ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 305 and (ECON 307 or STAT 310 or STAT 315 or DSCI 301)
Description: Economic analysis of the operation of financial markets from a mathematical and theoretical perspective. Topics include asset pricing, risk management, portfolio theory, arbitrage theory, and market efficiency. Emphasizes the application of the financial concepts to decisions faced by households and firms.

ECON 445 - MANAGERIAL ECONOMICS
Short Title: MANAGERIAL ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200
Description: Application of economics to the determination of the profitability of the firm. Includes organization theory and problems of control. A student may not receive credit for ECON 445 and ECON 245/ POLI 245.

ECON 449 - PRINCIPLES OF FINANCIAL ENGINEERING
Short Title: PRINCIPLES OF FINANCIAL ENGINEERING
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ECON 308 or MATH 211) and MATH 212 and (ECON 310 or STAT 376)
Description: Covers the use of financial securities and derivatives to take or hedge financial risk positions, including most commonly used instruments, from simple forwards and futures to exotic options and swaptions. Studies the pricing of derivative securities with emphasis on the mechanics and uses of financial engineering methods. Mutually Exclusive: Cannot register for ECON 449 if student has credit for STAT 449.
ECON 450 - ECONOMIC DEVELOPMENT
Short Title: ECONOMIC DEVELOPMENT
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 and ECON 203
Description: This course covers different dimensions of economic development, focusing on poverty, inequality, demography, and health. It provides an overview of the economies of less developed countries, the lives of the poor, and the theories for why some countries are rich and others are poor. It also describes how labor and credit markets function in poor countries, the consequences for health and education, and the role of institutions.

ECON 452 - RELIGION, ETHICS, AND ECONOMICS
Short Title: RELIGION, ETHICS, & ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 and (ECON 307 or STAT 310 or STAT 315 or DSCI 301)
Description: Reviews economic models of the demand, supply, and markets for religion, including the effects of economic conditions on religious choice and vice versa. Students will write a term paper on topics of their choosing, subject to professor’s approval. Recommended Prerequisite(s): ECON 209 or ECON 310 or STAT 376.

ECON 455 - MONEY AND BANKING
Short Title: MONEY AND BANKING
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 and ECON 203
Description: Micro-foundations of monetary, fiscal and financial theory. Examines the unique roles of money and of banking in providing the transactions mechanism and in the functioning of financial markets. Explains the use of valued fiat, unbacked money which appears to violate basic microeconomics, in the context of Samuelson’s overlapping generations model, including the implications for monetary and fiscal policy and for inflation. Discusses bank runs and financial instability.

ECON 460 - ADVANCED TOPICS IN ECONOMIC DEVELOPMENT
Short Title: ADV TOPICS ECON DEVELOPMENT
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 and ECON 450
Description: Focuses on role of taxation, finance and international trade, foreign investment and foreign aid in economic development.

ECON 462 - ECONOMICS OF HUMAN CAPITAL
Short Title: ECONOMICS OF HUMAN CAPITAL
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 and ECON 209
Description: This course covers theory that describes the central role of human capital in determining economic growth and inequality, uses advanced econometric techniques to test if the theory is consistent with data, and presents insights for public policy that can improve human capital formation, increase economic growth and reduce social inequality.

ECON 470 - MARKET DESIGN
Short Title: MARKET DESIGN
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 and (ECON 307 or STAT 310 or STAT 315 or DSCI 301)
Description: Regulators, entrepreneurs and economists have recently been involved in the design of novel markets for radio spectrum, kidneys, on-line advertising, school choice, etc. This course utilizes game theory to provide the theoretical underpinning of such markets via real world examples, including the study of institutional details that can determine the success or failure of a market.

ECON 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture, Laboratory, Internship/Practicum, Seminar
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.
ECON 479 - ECONOMIC MODELING AND PUBLIC POLICY
Short Title: ECONOMIC MODLG & PUBLIC POLICY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200
Description: Examines the use of computational dynamic models to analyze the effects of economic policy reforms. Introduces computer programming methods to simulate household and firm behavior in partial and general equilibrium frameworks. Policy evaluation includes personal and corporate income taxes, Social Security, retirement savings incentives, and social insurance programs.

ECON 480 - ENVIRONMENTAL ECONOMICS
Short Title: ENVIRONMENTAL ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200
Description: Uses economic theories of externalities and common property resources to analyze how markets, legal institutions, regulations, taxes and subsidies, and voluntary activity can affect the supply of environmental amenities, such as clean air, clean water, and wilderness areas. Also discusses methods for determining the demand for environmental amenities. Cross-list: ENST 480.

ECON 481 - HEALTH ECONOMICS
Short Title: HEALTH ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 and ECON 209
Description: This course introduces research on social networks and analyzes how these networks affect our choices: the products we buy, the careers we follow, whom we marry, how we raise our children. Students will learn about network measurement and formation and the influence of social networks on our decisions.

ECON 483 - PUBLIC FINANCE
Short Title: PUBLIC FINANCE
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200
Description: Provides an economic analysis of tax policy, focusing on the current national debate regarding the relative merits of income and consumption-based taxes in terms of equity, efficiency, and simplicity. Analyses tax effects on individual and business behavior and discusses general equilibrium modeling of the economic and distributional effects of alternative tax reforms. Special topics include optimal taxation, taxation of the family, estate taxation, taxation of electronic commerce, and state and local public finance.

ECON 484 - PUBLIC ECONOMICS
Short Title: PUBLIC ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 and MATH 212
Description: Theory and evidence on government expenditure policy. Topics include the theory of public goods, education, state and local public goods, redistribution and welfare policy, cost-benefit analysis, social insurance programs such as social security and unemployment insurance, and health care policy.

ECON 489 - ECONOMICS OF SOCIAL NETWORKS
Short Title: ECONOMICS OF SOCIAL NETWORKS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 and ECON 209
Description: This course introduces research on social networks and analyzes how these networks affect our choices: the products we buy, the careers we follow, whom we marry, how we raise our children. Students will learn about network measurement and formation and the influence of social networks on our decisions.
ECON 496 - RESEARCH IN ECONOMIC THEORY
Short Title: RESEARCH IN ECONOMIC THEORY
Department: Economics
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 203 and (ECON 310 or STAT 376) and ECON 305
Description: Capstone course for MTEC majors whose primary interest is in economic theory. Review and analysis of seminal and current research in economic theory, including independent analysis by the student. Topics vary from year to year.

ECON 497 - RESEARCH IN ECONOMETRICS
Short Title: RESEARCH IN ECONOMETRICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 203 and (ECON 310 or STAT 376) and ECON 305
Description: Capstone course for MTEC majors whose primary interest is in econometrics. Review and analysis of seminal and current research in econometrics, including independent analysis by the student. Topics vary from year to year.

ECON 498 - HONORS PROGRAM IN ECONOMICS-I
Short Title: HONORS PROGRAM IN ECONOMICS-I
Department: Economics
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 203 and (ECON 209 or ECON 310) and (ECON 300 or ECON 305)
Description: Research workshop open to ECON and MTEC majors. Students must have a GPA of at least 3.67 in all courses taken toward satisfying major requirements, and must have taken all ECON courses directly related to the topic of their research. Students develop a research idea, construct an economic model with testable hypotheses, test those hypotheses, and write and present in the workshop an academic quality paper. Econometrics pre-requisite is ECON 209 for ECON majors and ECON 310 for MTEC majors. Instructor may impose additional prerequisites. Instructor Permission Required.

ECON 499 - HONORS PROGRAM IN ECONOMICS-II
Short Title: HONORS PROGRAM IN ECONOMICS-II
Department: Economics
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 498
Description: Continuation of ECON 498. University credit only. Instructor Permission Required.

ECON 501 - MICROECONOMICS I
Short Title: MICROECONOMICS I
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Consumer theory including choice under certainty, producer theory, and general equilibrium analysis.

ECON 502 - MACROECONOMICS
Short Title: MACROECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Review of static general equilibrium theory; elements of functional analysis for optimization; deterministic and stochastic difference equations, local stability analysis; introduction to Markov processes; dynamic optimization techniques, including stochastic optimal control theory, dynamic programming, and robust control; applications to growth theory, search, industrial organization, and monetary economics; dynamic stochastic general equilibrium modeling.

ECON 504 - COMPUTATIONAL ECONOMICS
Short Title: COMPUTATIONAL ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers numerical methods most commonly used in Economics, including solving systems of equations, numerical optimization, stochastic dynamic programming, numerical differentiation and integration, Monte Carlo methods, and solving ordinary and partial differential equations. Cross-list: STAT 604.

ECON 505 - FINANCIAL ECONOMICS I
Short Title: FINANCIAL ECONOMICS I
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ECON 501 and ECON 502
Description: Introduction at the graduate level to asset pricing and portfolio choice theory. Covers single-period and dynamic models, including pricing by arbitrage, mean-variance analysis, factor models, dynamic programming, recursive utility, and an introduction to continuous-time finance. Cross-list: BUSI 521.
ECON 507 - MATHEMATICAL ECONOMICS I
Short Title: MATHEMATICAL ECONOMICS I
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The purpose of this course is to provide the first-year PhD students in Economics with the essential mathematical tools. The course covers topics in real analysis, topology, linear algebra, etc. Aside from providing the mathematical tools, a primary aim of this course is to develop the level of mathematical sophistication necessary to conduct research in modern economics. The course will therefore emphasize logical clarity and mathematical rigor, along with the ability to follow and construct mathematical proofs.

ECON 508 - MICROECONOMICS II
Short Title: MICROECONOMICS II
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Two modules: (1) Introduces students to the mathematical tools of game theory, and the modeling of economic settings as games. Covers normal form games, extensive form games with perfect information, Bayesian games, and extensive form games with imperfect information; (2) introduces students to information economics and the theory of mechanism design. Applies tools from game theory and linear and non-linear

ECON 509 - TOPICS IN MICROECONOMICS
Short Title: TOPICS IN MICROECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ECON 508
Description: Role of private information in mathematical models of collective decision making. Emphasizes information acquisition by voters, and information disclosure by the political parties or media outlets. Topics include: the value of private information in a single-agent decision problem; various statistical concepts of informativeness; Shannon entropy and rational inattention; models of strategic voting; cost-benefit analysis of information acquisition and optimization; deliberation and information transmission; mathematical modeling of information disclosure by media outlets. Repeatable for Credit.

ECON 510 - ECONOMETRICS I
Short Title: ECONOMETRICS I
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Estimation and inference in single equation regression models, multicollinearity, autocorrelated and heteroskedastic disturbances, distributed lags, asymptotic theory, and maximum likelihood techniques. Emphasis is placed on critical analysis of the literature. Cross-list: STAT 610.

ECON 511 - ECONOMETRICS II
Short Title: ECONOMETRICS II
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics in linear and nonlinear simultaneous equations estimation, including panel data, qualitative and categorical dependent variable models, duration analysis, simulation-based estimation, treatment effects, stochastic production frontier estimation. Cross-list: STAT 611.

ECON 512 - INTERNATIONAL TRADE THEORY
Short Title: INTERNATIONAL TRADE THEORY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Exploration of classical, neoclassical, and modern trade theory. Includes welfare aspects of trade such as the theory of commercial policy, with emphasis on applications.

ECON 514 - INDUSTRIAL ORGANIZATION AND CONTROL
Short Title: INDUSTL ORGANIZATION&CONTROL
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ECON 501 and ECON 502 and ECON 505 and ECON 508 and ECON 510 and ECON 511 and MATH 321
Description: Core topics include monopoly, price discrimination, vertical control, short-run price competition, dynamic price competition and tacit collusion, price and non-price competition with differentiated products, entry barriers, information and strategic behavior (e.g. limit pricing, auctions), and research and development.
ECON 515 - LABOR ECONOMICS
Short Title: LABOR ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ECON 501 and ECON 502 and ECON 505 and ECON 508 and ECON 510 and ECON 511 and MATH 321
Description: Mathematical and statistical analysis of empirical evidence and theories relating to several features of labor markets. Topics covered may include fertility, health, criminal behavior, labor force participation, hours of work, education and training, geographical and inter-firm labor mobility, static and dynamic labor demand, unions, discrimination, government intervention in labor markets, and “hedonic” equilibria in labor markets. Graduate/Undergraduate Equivalency: ECON 415. Mutually Exclusive: Cannot register for ECON 515 if student has credit for ECON 415.

ECON 516 - EMPIRICAL MICROECONOMICS
Short Title: EMPIRICAL MICROECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ECON 508
Description: Overview of methods used in empirical microeconomic research. Examples are drawn from health economics, law and economics, and business economics. Emphasis is placed on designing econometric and statistical analyses to test economic hypotheses. Class projects will expand on analyses from previously published studies.

ECON 517 - EMPIRICAL INDUSTRIAL ORGANIZATION
Short Title: EMPIRICAL INDUSTRIAL ORG
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ECON 501 and ECON 502 and ECON 505 and ECON 508 and ECON 510 and ECON 511 and MATH 321
Description: Examines economic models of competition and industry structure. These include models of demand, supply, investment and entry. Special attention is paid to economic statistical modeling of industries and the use of price and game theory in industrial organization. Matching and market design are also covered.

ECON 518 - INTERNATIONAL MACROECONOMICS
Short Title: INTERNATIONAL MACROECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Effects of fiscal and monetary policies on exchange rates and the current account and balance of payments. Includes exchange market efficiency, exchange rates and prices, LDC debt, and policy coordination.

ECON 519 - ECONOMIC GROWTH AND DEVELOPMENT
Short Title: ECONOMIC GROWTH & DEVELOPMENT
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ECON 501 and ECON 508 and ECON 510 and ECON 511
Description: Mathematical and statistical analysis of topics in microeconomic development and introduction to some frequently used applied econometric methods. Topics covered include poverty and inequality, health, education, fertility, marriage markets, and other gender issues. Special focus is given to intra-household bargaining models and their applications.

ECON 522 - PUBLIC ECONOMICS: TAX POLICY
Short Title: PUBLIC ECONOMICS: TAX POLICY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of the effects of taxation on individual and firm behavior, general equilibrium tax incidence analysis, optimal taxation theory, optimal implementation of tax reform, analysis of comprehensive income, and consumption taxes.

ECON 523 - DYNAMIC OPTIMIZATION
Short Title: DYNAMIC OPTIMIZATION
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of dynamic optimization in discrete and continuous time, including numerical methods and applications to macroeconomics, finance and resource and energy economics.
ECON 547 - ADVANCED TOPICS IN ENERGY ECONOMICS
Short Title: ADV TOPICS IN ENERGY ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (ECON 301 or ECON 370) and (ECON 309 or ECON 446 or ECON 409 or ECON 400 or STAT 400) and ECON 437
Description: A detailed development and analysis of topics in energy modeling. Topics include optimal extraction of depletable resources, models of storable energy commodities, energy demand by end-use sector, models of non-competitive behavior, energy security and the relationship between energy and commodity prices. ECON 547 requires an additional assignment in addition to the assignments of ECON 447. Recommended Prerequisite(s): ECON 477 or ECON 401. Mutually Exclusive: Cannot register for ECON 547 if student has credit for ECON 447/ECON 604.

ECON 565 - HEALTH ECONOMICS
Short Title: HEALTH ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Application of empirical and theoretical economic models to health and healthcare. Includes production, cost, demand and supply factors; methods of payment and effects of regulation. Topics include optimal design of health insurance markets, cost-benefit analysis of healthcare technologies, econometric evaluation of government regulations and reimbursement in the healthcare sector, and testing of hypothesis that explain rising prices and costs of healthcare. Graduate/Undergraduate Equivalency: ECON 481. Mutually Exclusive: Cannot register for ECON 565 if student has credit for ECON 481.

ECON 576 - TOPICS IN MACROECONOMICS
Short Title: TOPICS IN MACROECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Discussion topics in macroeconomics. Repeatable for Credit.

ECON 577 - TOPICS IN ECONOMIC THEORY I
Short Title: TOPICS IN ECONOMIC THEORY I
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Discussion of topics in advanced economic theory. Repeatable for Credit.

ECON 578 - TOPICS IN ECONOMETRICS I
Short Title: TOPICS IN ECONOMETRICS I
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Discussion of selected topics in advanced econometrics. Repeatable for Credit.

ECON 579 - TOPICS IN ECONOMETRICS II
Short Title: TOPICS IN ECONOMETRICS II
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ECON 511
Description: Discussion of selected topics in advanced econometrics that focus on the mathematical and statistical modeling of such phenomena as (1) extended panel data methods; (2) spatial econometrics; (3) bootstrapping; (4) factor models, wavelets, smoothing-splines, sieves; (5) model averaging; (6) continuous and discrete dynamic programming models; (7) econometrics of auctions; (8) BLP methods of demand estimation; (9) structural and non-structural models of producer behavior; (10) point and set identification; (11) Bayesian Econometrics/Metropolis-Hastings MCMC algorithms. Repeatable for Credit.

ECON 592 - TOPICS IN POLICY AND APPLIED ECONOMICS
Short Title: TOP-POLICY&APPL'D ECON
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Discussion of selected topics and applied economics. Repeatable for Credit.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Department</th>
<th>Course Title</th>
<th>Short Title</th>
<th>Description</th>
<th>Grade Mode</th>
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<tr>
<td>ECON 593</td>
<td>Economics</td>
<td>WORKSHOP IN MICROECONOMICS</td>
<td>WORKSHOP IN ECONOMICS</td>
<td>Seminars on advanced topics in macroeconomics, microeconomics, econometrics and applied microeconomic theory, presented through guest lectures by leading researchers. Repeatable for credit.</td>
<td>Satisfactory/Unsatisfactory</td>
<td>Seminar</td>
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<td>ECON 594</td>
<td>Economics</td>
<td>WORKSHOP IN ECONOMICS I</td>
<td>WORKSHOP IN ECONOMICS I</td>
<td>Seminars on advanced topics in macroeconomics, microeconomics, econometrics and applied microeconomic theory, presented through guest lectures by leading researchers. Repeatable for credit.</td>
<td>Satisfactory/Unsatisfactory</td>
<td>Seminar</td>
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<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
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<td>ECON 596</td>
<td>Economics</td>
<td>RESEARCH SEMINAR</td>
<td>RESEARCH SEMINAR</td>
<td>Seminars on advanced topics in macroeconomics, microeconomics, econometrics and applied microeconomic theory, presented through guest lectures by leading researchers. Repeatable for credit.</td>
<td>Satisfactory/Unsatisfactory</td>
<td>Seminar</td>
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<td>ECON 597</td>
<td>Economics</td>
<td>READINGS IN ADVANCED TOPICS</td>
<td>READINGS IN ADVANCED TOPICS</td>
<td>Prepares second-year Ph.D. students to conduct quantitative research. After a critical review of existing economic models, statistical analysis of data and economic evaluations, students develop their own research agenda. Repeatable for Credit.</td>
<td>Satisfactory/Unsatisfactory</td>
<td>Seminar</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
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<tr>
<td>ECON 598</td>
<td>Economics</td>
<td>SEMINAR WORKSHOP</td>
<td>SEMINAR WORKSHOP</td>
<td>Seminars on advanced topics in macroeconomics, microeconomics, econometrics and applied microeconomic theory, presented through guest lectures by leading researchers. Repeatable for credit.</td>
<td>Satisfactory/Unsatisfactory</td>
<td>Seminar</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
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<tr>
<td>ECON 601</td>
<td>Economics</td>
<td>ENERGY ECONOMICS I</td>
<td>ENERGY ECONOMICS I</td>
<td>Session introduces the energy sector to students, discusses key aspects of energy supply, demand and pricing, and is foundational for the MEECON degree. Topics include optimal extraction of depletable resources, investment in energy-using capital, trade of energy commodities, storage, end-use demand and energy efficiency, and the relationship between economic activity, energy and the environment. Students learn to apply dynamic optimization, linear programming and econometric techniques in addressing the course topics.</td>
<td>Satisfactory/Unsatisfactory</td>
<td>Seminar</td>
<td>4</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
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Note: Undergraduate Equivalency: ECON 437. Mutually Exclusive: Cannot register for ECON 601 if student has credit for ECON 437.
ECON 602 - MICROECONOMICS OF THE ENERGY SECTOR
Short Title: MICROECONOMICS - ENERGY SECTOR  
Department: Economics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 4  
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.  
Course Level: Graduate  
Description: Covers basic microeconomic concepts and applies them to contemporary issues in the energy sector. Topics covered include demand and supply analysis, market equilibrium and different market structures, international trade, investment and capacity expansion, risk and investment finance, and economic analysis of energy policy including environmental policy. This course enables students to apply quantitative microeconomic theory in order to make data-driven recommendations to case studies presented by industry partners.

ECON 603 - APPLIED ECONOMETRICS FOR ENERGY MARKETS  
Short Title: APPLIED ECONOMETRICS ENGY MKTS  
Department: Economics  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 4  
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.  
Course Level: Graduate  
Description: Students will be introduced to basic concepts in statistical analysis and how to use statistical tools to analyze economic data and test economic theories. The course includes a laboratory session where students practice using the tools discussed in lectures with data that is particularly relevant to the energy industry.

ECON 604 - ENERGY ECONOMICS II  
Short Title: ENERGY ECONOMICS II  
Department: Economics  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 4  
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.  
Course Level: Graduate  
Description: Explores a variety of topics in energy modeling and energy data analysis. Topics include optimal extraction of depletable resources, game theoretic approaches to OPEC behavior, national oil company behavior, models of storable energy commodities and energy demand by end-use sector, energy security and fundamental drivers of commodity prices. This course tasks students to expand on the dynamic optimization problems and econometric techniques applied to energy economics. Mutually Exclusive: Cannot register for ECON 604 if student has credit for ECON 547.

ECON 605 - TAXATION IN THE ENERGY SECTOR  
Short Title: TAXATION IN THE ENERGY SECTOR  
Department: Economics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 4  
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.  
Course Level: Graduate  
Description: Introduces basic principles of taxation, and general equilibrium modeling of the economic effects of taxes, and applies them to federal and state taxes on the energy sector. Topics include royalties, resource rent taxes, corporate income taxes including international tax issues such as transfer pricing and income shifting, excess profit taxes, production-sharing agreements, and environmental taxes. Students will formulate, implement, and use quantitative models to solve problems related to private and public decision making in the context of taxes applied to U.S. energy systems.

ECON 606 - CORPORATE FINANCE FOR THE ENERGY SECTOR  
Short Title: CORP FINANCE - ENGY SECTOR  
Department: Economics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 4  
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.  
Course Level: Graduate  
Description: Examines the investment decisions of corporations, the valuation of stock, bonds and options investments by individual investors. The implications of investor decisions for corporations, and specifically the manner in which they evaluate investment projects and finance investments are a core focus. Examples and case studies focus on the energy sector. Students will increase their understanding of financing and investment decision as the relate to energy companies and energy related projects using analytical and mathematical techniques to make data-driven recommendation to real-world problems.

ECON 607 - THE ECONOMICS OF ENERGY AND THE ENVIRONMENT  
Short Title: ECON OF ENERGY & ENVIRONMENT  
Department: Economics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 4  
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.  
Course Level: Graduate  
Description: This course provides students with an introduction to, and overview of, policies to protect environmental resources against emissions from energy production and use and hazardous wastes. The first part of the course will present an economic analysis of the costs and benefits of using different types of policies to control emissions from fossil fuel use. The remainder of the course, taught from a practitioner's perspective, will discuss the interrelationship between science, institutions and politics when designing environmental policy. The focus will be on problems associated with oil and gas production - especially water contamination and use - and hazardous waste disposal.
ECON 608 - RISK MANAGEMENT IN THE ENERGY INDUSTRY
Short Title: RISK MANAGEMENT/ENERGYINDUSTRY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: This course introduces quantitative risk management techniques often employed in the energy industry. It covers topics such as real options, value at risk, conditional value at risk, and expected shortfall, as well as the use of derivatives for trading and hedging various risk exposures. The course is methodologically self-contained and provides students with hands-on experience with state-of-the-art software to measure and manage risk-adjusted returns of heterogeneous asset portfolios.

ECON 610 - ENERGY AND THE MACROECONOMY
Short Title: ENERGY & THE MACROECONOMY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: Discusses connections between energy and economic activity at the regional, national, and international level, and especially the role of energy shocks in economic fluctuations, innovations in energy supply as drivers of regional economic growth, and the role of energy commodities in transportation and international trade.

ECON 611 - GEOPOLITICS OF ENERGY
Short Title: GEOPOLITICS OF ENERGY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: Explores the geopolitical issues around energy security and trade by focusing on role of energy as the world’s largest business and a strategic requirement of the modern nation-state, a source of power in international relations, and a major influence on national politics and institutions. This course equips students with the analytical skills to inform policy debates, advocate for the interests of principals, and advise policy makers and firms amid rapid changes in energy markets. Students learn both to produce sound empirical analysis by employing state of the art econometric techniques and to be discerning consumers of empirical research.

ECON 612 - MANAGEMENT OF PUBLIC POLICY ISSUES BY ENERGY COMPANIES
Short Title: MGMT OF PUBLIC POLICY ISSUES
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: This course discusses how to achieve best practices in government, media, and community relations, and interaction with NGOs. It uses case studies as a springboard to demonstrate how energy companies can set up processes to identify and manage public policy issues that can have significant impacts on the energy industry.

ECON 613 - INTERNATIONAL TRADE IN ENERGY
Short Title: INTERNATIONAL TRADE IN ENERGY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: This course explores the effects of international trade and the determinants of the amount of trade between countries in energy commodities, and the role of international capital flows in financing energy projects, in particular. It will also discuss the many ways that governments can alter international trade through various policies.

ECON 614 - POLITICAL ECONOMY OF OIL IN DEVELOPING COUNTRIES
Short Title: POLITICAL ECONOMY OF OIL
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: This course evaluates the political and economic determinants of oil and gas policies in developing countries and their impact on world markets, the interaction between states and oil companies, the challenges of oil wealth management, and the causal links between resource dependency, development, institutions, and political regimes. Although the main focus is on oil production, natural gas is also analyzed, and both are compared to other natural resources. Emphasis is on the analysis of institutional change and the functions of institutional change in the energy industry using data-driven methods to examine case studies.
ECON 615 - SOCIAL STUDIES OF ENERGY
Short Title: SOCIAL STUDIES OF ENERGY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: Investigate the ways in which energy production and consumption impacts social life. By studying the implementation and use of renewable and non-renewable energy infrastructures in different parts of the world, the students will develop a contextual, self-reflexive and critical lens that will help them make decisions in later stages of their careers.

ECON 620 - INDUSTRIAL ORGANIZATION AND THE ENERGY SECTOR
Short Title: INDUSTRIAL ORG & ENERGY SECTOR
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: The course will discuss monopoly, oligopoly, and the underlying sources of monopoly power in energy industries and how the industries can be restructured to isolate the monopoly elements from the more competitive ones. Other topics include price discrimination, vertical control, mergers and acquisitions, and strategic behavior between firms.

ECON 621 - THE ECONOMICS OF THE ELECTRICITY INDUSTRY
Short Title: ELECTRICITY INDUSTRY ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: Discusses the determinants of the cost of electricity, the effects of organizing the industry in different ways, the need to encourage sufficient investment in reserve capacity, and the use of information technology to allow for new ways of pricing electricity, operating the network and coordinating supply and demand. Students will learn to analyze the behavior of power markets, the effect of different policies, and draw empirical solutions to the real-world issues.

ECON 622 - TRANSPORTATION ECONOMICS
Short Title: TRANSPORTATION ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: Discusses transportation as a major source of energy demand in modern post-industrial economies and of future demands in emerging economies. Emphasizes that the demand for energy use in the transportation sector involves modeling household choices, economic growth and demographic transition, government decisions to support transportation infrastructure development, and the introduction of new technologies. Students will apply problem solving and analytical skills to perform calculations related to transportation energy and its environmental impact.

ECON 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

ECON 699 - PRACTICUM
Short Title: PRACTICUM
Department: Economics
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1-12
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: Projects developed by an industry advisory group to be researched and presented to participating industry at completion of all course work. Internships with an approved employer may be substituted. Emphasis on skill building components may include: analyzing data for accuracy and reconciliation across different sources, quantitative analysis and risk assessment of a firm's portfolio of assets and capital investment opportunities, and briefing expert and non-expert audiences.

ECON 800 - GRADUATE RESEARCH
Short Title: GRADUATE RESEARCH
Department: Economics
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-12
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Assists students in the dissertation writing process. Students must write an independent and original piece of quantitative research that is of sufficient quality to merit publication in an academic economics journal. Towards this objective, faculty mentor evaluate and critique the research of PhD students who are either preparing research before formally selecting a dissertation topic or actively engaged in dissertation research. Repeatable for Credit.
Education (EDUC)

EDUC 101 - SCIENCE EDUCATION AND CAREER EXPLORATION:
INTRODUCTION TO AEROSPACE AND AVIATION
Short Title: INTRO TO AEROSPACE & AVIATION
Department: Education
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course enables students to survey the fields of aerospace and aviation and various career options within each. Student will explore career trajectories and supporting educational pathways; engage with engineering faculty from Rice University and practicing professionals during an interactive exploration through all of the phases of product creation; tour a rocket propulsion research facility; experience a mini-ground school simulation at a flight museum; and compete in both a high altitude weather balloon launch and rocket man challenge (each designed to apply learnings from classroom teachings). Department Permission Required.

EDUC 202 - CONTEMPORARY ISSUES IN EDUCATION
Short Title: CONTEMPORARY ISSUES IN EDUC
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The course examines the way globalization, immigration, privatization and the increasing diversity in our student population is shaping, and being shaped, by America’s schools. An exploration of these and other issues from both micro- (student) and macro- (systemic) levels, will be the mainstay of the course. The lenses of sociology, psychology and political economy will be used throughout the semester. The course is open to students in these fields and to students exploring a career in teaching, and is recommended for students entering the teacher education program. This course requires five hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 502. Mutually Exclusive: Cannot register for EDUC 202 if student has credit for EDUC 502.

EDUC 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Education
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

EDUC 301 - PHILOSOPHICAL, HISTORICAL, AND SOCIAL FOUNDATIONS OF EDUCATION
Short Title: PHIL,HIST,&SOC FOUNDTN OF EDUC
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: In this course students analysis events and ideas that have shaped the philosophy and practice of American schools today. It is appropriate for all students interested in the influences and stresses that have created a unique educational system in our culturally diverse country. This course requires five hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 501. Mutually Exclusive: Cannot register for EDUC 301 if student has credit for EDUC 501.

EDUC 304 - RACE, CLASS, GENDER IN EDUCATION
Short Title: RACE, CLASS, GENDER IN EDUC
Department: Education
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines the complex ways in which race, ethnicity, gender, and class intersect and influence the educational experience of students in American schools. By employing an interdisciplinary approach centered both on individuals’ lived experiences and educational system as a whole, EDUC 304 explores and critiques these critical issues and their impact on student learning. Likely topics include the historical foundations of race, class and gender in education, segregation, Title IX, and other contemporary topics. Graduate/Undergraduate Equivalency: EDUC 504. Mutually Exclusive: Cannot register for EDUC 304 if student has credit for EDUC 504.

EDUC 305 - EDUCATIONAL PSYCHOLOGY
Short Title: EDUCATIONAL PSYCHOLOGY
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The goal of this course is to introduce students to a psychological understanding of teaching and learning through an overview of principles, issues, and related research in educational psychology. Students in this course will examine theories of learning, complex cognitive processes, cognitive and emotional development, and motivation. These constructs will be applied to effective instruction, the design of optimum learning environments, assessment of student learning, and teaching in diverse classrooms. Required for those seeking teacher certification. This course requires five hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 505. Mutually Exclusive: Cannot register for EDUC 305 if student has credit for EDUC 505.
EDUC 310 - INTRODUCTION TO SPECIAL EDUCATION
Short Title: INTRODUCTION SPECIAL EDUCATION
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will introduce and expose students to the field of Special Education. Students will learn about the various individuals who receive special education as well as other types of exceptionality, including giftedness. Controversial issues in this field will be examined along with pertinent legislation. This course will familiarize students with instructional approaches in special education and the social issues impacting the field. Students will visit area schools. This course requires five hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 510. Mutually Exclusive: Cannot register for EDUC 310 if student has credit for EDUC 510.

EDUC 315 - ADOLESCENT DEVELOPMENT
Short Title: ADOLESCENT DEVELOPMENT
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The goal of this course is to introduce students to basic theories of adolescent development and cognition. The course will examine principles and concepts in the areas of physical, emotional and psychological development, identity formation, sexuality, and family and peer relations. Other ‘hot topics’ such as substance abuse, eating disorders, and teenagers and the media will also be examined. This course requires five hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 515. Mutually Exclusive: Cannot register for EDUC 315 if student has credit for EDUC 515.

EDUC 316 - ASSESSMENT
Short Title: ASSESSMENT
Department: Education
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: In this course, students will use formative and summative assessment to drive instructional decisions. Disaggregation of student data growth in the classroom and on standardized tests will foster academic achievement. Graduate/Undergraduate Equivalency: EDUC 516. Mutually Exclusive: Cannot register for EDUC 316 if student has credit for EDUC 516.

EDUC 319 - TEACHING AND LEARNING WITH INQUIRY
Short Title: TEACHING & LEARNING W/INQUIRY
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Education for the 21st Century of change and innovation demands problem-solving and critical thinking skills. This course approaches the teaching of context areas with a student-focused lens that engages inquirers minds with the small group exploration of opened-ended problems. Lesson structure, activities, and assessment will be integral to the course. This course requires five hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 519. Mutually Exclusive: Cannot register for EDUC 319 if student has credit for EDUC 519.

EDUC 320 - TEACHING DIVERSE LEARNERS
Short Title: TEACHING DIVERSE LEARNERS
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course offers pedagogies for learners who have different ways of seeing the world, different experiences, and different learning needs. A variety of teaching methods and strategies help special needs students, gifted and talented students and English language learners succeed in the classroom. This course also addresses effective communication in ARDS, LPACS, and staffing within classrooms. Students learn about the support personnel who can assist the classroom teacher. Required for certification. This course requires five hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 520. Mutually Exclusive: Cannot register for EDUC 320 if student has credit for EDUC 520.

EDUC 323 - CREATIVE WRITING IN THE CLASSROOM
Short Title: CREATIVE WRITING IN CLASSROOM
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Rice students enrolled in this intensive summer internship will work alongside master teachers and professional writers to promote creative thinking and writing with middle and high school students. Students in this course will explore arts integration pedagogy, engage in the classroom planning process, lead lessons, facilitate student writing, and develop anthologies to showcase student voices. Instructor Permission Required. Graduate/Undergraduate Equivalency: EDUC 523. Mutually Exclusive: Cannot register for EDUC 323 if student has credit for EDUC 523. Repeatable for Credit.
EDUC 325 - ADOLESCENT LITERATURE  
Short Title: ADOLESCENT LITERATURE  
Department: Education  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Graduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: The nature of adolescence in an increasingly complex and diverse society is examined through literature written for and about adolescents and young adults. This study of the cultural, literary and developmental issues in adolescent literature is relevant to students of literature, psychology, child development, anthropology and sociology, and is recommended for students preparing to become teachers. This course requires five hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 525. Mutually Exclusive: Cannot register for EDUC 325 if student has credit for EDUC 525.

EDUC 330 - THE AMERICAN HIGH SCHOOL  
Short Title: THE AMERICAN HIGH SCHOOL  
Department: Education  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Graduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Historically one of the few universally experienced institutions in the U.S., the American high school has been an essential rite of passage for youth and an essential building block of democracy. Students in this course will study the historical origins of the high school and examine its roles in the economy, culture, and the lives of youth. Using field study of an urban high school (15 hours of observation required for undergraduates), students will analyze the contemporary high school and debate about its future. Graduate/Undergraduate Equivalency: EDUC 530. Mutually Exclusive: Cannot register for EDUC 330 if student has credit for EDUC 530.

EDUC 335 - URBAN EDUCATION: ISSUES, POLICY, AND PRACTICE  
Short Title: URBAN ED/ISSUES, POLICY & PRACTICE  
Department: Education  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Graduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This course focuses on the major issues facing urban education, including poverty, the implications of racial and ethnic diversity for educational institutions, and strategies for improving academic achievement in urban schools. Students will examine sociological, political, cultural and educational research and theory, as well as explore strategies for improvement of urban education at the classroom, school and policy levels. This course requires five hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 535. Mutually Exclusive: Cannot register for EDUC 335 if student has credit for EDUC 535.

EDUC 345 - EDUCATIONAL TECHNOLOGIES & DIGITAL LEARNING  
Short Title: EDUC TECH & DIGITAL LRNING  
Department: Education  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Graduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: The primary purposes of this course is to prepare teachers to identify and evaluate effective, appropriate data and curriculum management systems/programs that improve student achievement; to determine how technologies can personalize and accelerate learning goals for students; and understand how technology can be used to change communication and pedagogical practices in the classroom. This course is required for certification. This course requires five hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 545. Mutually Exclusive: Cannot register for EDUC 345 if student has credit for EDUC 545.

EDUC 350 - EDUCATION POLICY: FROM LEGISLATURES TO CLASSROOMS  
Short Title: EDUCATION POLICY  
Department: Education  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Graduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Policy issues in this course include school funding, curriculum decisions, accountability systems, discipline policies, and other areas. What are the major policy discussions affecting K-12 education today, and how are they resolved in the political arena? Who drives policy in each of these areas and what role can or does research-based analysis play? We will answer these questions and more as we explore the political arena of educational policy. This class requires five hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 550. Mutually Exclusive: Cannot register for EDUC 350 if student has credit for EDUC 550/POST 340.

EDUC 421 - CURRICULUM DEVELOPMENT  
Short Title: CURRICULUM DEVELOPMENT  
Department: Education  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment limited to a class of Seniors. Enrollment is limited to Undergraduate, Graduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This course is the first of a two-part series for preservice teachers. It offers a reflective study of classroom practice through seventy-five (75) hours of observation in secondary schools and teaching activities under the guidance of cooperating teachers and education team members in an actual classroom setting. This course includes opportunities to structure lessons for diverse student populations with whole group and small group lessons. This course is required for certification. Instructor Permission Required. Graduate/Undergraduate Equivalency: EDUC 521. Mutually Exclusive: Cannot register for EDUC 421 if student has credit for EDUC 521.
EDUC 422 - LITERACY ACROSS THE CURRICULUM
Short Title: LITERACY ACROSS THE CURRICULUM
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: How students are taught to read and write in all academic and elective disciplines is critical to the academic development of adolescents. In this course multiple literacies will be discussed in terms of theory and practice. Students will examine reading, writing, listening, speaking and thinking strategies across the curriculum and their impact on learning. Additionally students will investigate, plan, and practice the skills of using literacy strategies for the specific discipline. Required for certification. This course requires five hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 522. Mutually Exclusive: Cannot register for EDUC 422 if student has credit for EDUC 522.

EDUC 460 - THEORY AND METHODS: ART
Short Title: THEORY AND METHODS: ART
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Students with a class of Freshman may not enroll. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course involves the study and integration of theory and methods with observation and practice in the classroom through the facilitation of student-led, student-centered activities. Under the guidance of education support team members, the course offers multiple methods for implementing curriculum with diverse students. Required for certification. This course includes a minimum of 5 hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 560. Mutually Exclusive: Cannot register for EDUC 460 if student has credit for EDUC 560.

EDUC 461 - THEORY AND METHODS: ENGLISH LANGUAGE ARTS & READING (ELAR)
Short Title: THEORY AND METHODS: ELAR
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Students with a class of Freshman may not enroll. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course involves the study and integration of theory and methods with observation and practice in the classroom through the facilitation of student-led, student-centered activities. Under the guidance of education support team members, the course offers multiple methods for implementing curriculum with diverse students. Required for certification. This course includes a minimum of 5 hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 561. Mutually Exclusive: Cannot register for EDUC 461 if student has credit for EDUC 561.

EDUC 462 - THEORY AND METHODS: LOTE
Short Title: THEORY AND METHODS: LOTE
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Students with a class of Freshman may not enroll. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course involves the study and integration of theory and methods with observation and practice in the classroom through the facilitation of student-led, student-centered activities. Under the guidance of education support team members, the course offers multiple methods for implementing curriculum with diverse students. Required for certification. This course includes a minimum of 5 hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 562. Mutually Exclusive: Cannot register for EDUC 462 if student has credit for EDUC 562.

EDUC 463 - THEORY AND METHODS: MATHEMATICS
Short Title: THEORY AND METHODS: MATHEMATICS
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 1-3
Restrictions: Students with a class of Freshman may not enroll. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course involves the study and integration of theory and methods with observation and practice in the classroom through the facilitation of student-led, student-centered activities. Under the guidance of education support team members, the course offers multiple methods for implementing curriculum with diverse students. Required for certification. This course includes a minimum of 5 hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 563. Mutually Exclusive: Cannot register for EDUC 463 if student has credit for EDUC 563.

EDUC 464 - THEORY AND METHODS: PHYSICAL EDUCATION
Short Title: THEORY AND METHODS: PHYSICAL ED
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Students with a class of Freshman may not enroll. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course involves the study and integration of theory and methods with observation and practice in the classroom through the facilitation of student-led, student-centered activities. Under the guidance of education support team members, the course offers multiple methods for implementing curriculum with diverse students. Required for certification. This course includes a minimum of 5 hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 564. Mutually Exclusive: Cannot register for EDUC 464 if student has credit for EDUC 564.
EDUC 465 - THEORY AND METHODS: SCIENCE
Short Title: THEORY AND METHODS: SCIENCE
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 1-3
Restrictions: Students with a class of Freshman may not enroll. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course involves the study and integration of theory and methods with observation and practice in the classroom through the facilitation of student-led, student-centered activities. Under the guidance of education support team members, the course offers multiple methods for implementing curriculum with diverse students. Required for certification. This course includes a minimum of 5 hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 565. Mutually Exclusive: Cannot register for EDUC 465 if student has credit for EDUC 565.

EDUC 466 - THEORY AND METHODS: SOCIAL STUDIES
Short Title: THEORY AND METHODS: SOCIAL STUD
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Students with a class of Freshman may not enroll. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course involves the study and integration of theory and methods with observation and practice in the classroom through the facilitation of student-led, student-centered activities. Under the guidance of education support team members, the course offers multiple methods for implementing curriculum with diverse students. Required for certification. This course includes a minimum of 5 hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 566. Mutually Exclusive: Cannot register for EDUC 466 if student has credit for EDUC 566.

EDUC 467 - PRACTICUM FOR PRESERVICE TEACHERS
Short Title: PRACT FOR PRESERVICE TEACHERS
Department: Education
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (EDUC 460 or EDUC 461 or EDUC 462 or EDUC 463 or EDUC 464 or EDUC 465 or EDUC 466) and EDUC 421
Description: This is the second course in the two-part series for preservice teachers. In this field-based practicum, the preservice teacher will have a concentrated experience in student teaching based on the lesson development, pedagogical explorations, and field-based work of the previous semester. Students are expected to follow the assigned district/campus academic calendar for the semester of student teaching. This course is required for certification. Graduate/Undergraduate Equivalency: EDUC 567. Mutually Exclusive: Cannot register for EDUC 467 if student has credit for EDUC 567.

EDUC 470 - FIELD-BASED STUDIES IN TEACHING AND LEARNING
Short Title: FLB-BASED STDY TEACH & LRNG
Department: Education
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Students with a class of Freshman or Sophomore may not enroll. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The study of critical issues in urban education uses ethnographic research methods to study a wide range of educational subjects, from policy impact to classroom practice, from curriculum and pedagogy to the cultures of the children. The course includes a seminar on research methodologies, with a focus on ethnography; independent research projects in a local school setting; and directed case studies. It is open particularly to students in education, sociology, psychology, anthropology and cultural studies. Graduate/Undergraduate Equivalency: EDUC 570. Mutually Exclusive: Cannot register for EDUC 470 if student has credit for EDUC 570.

EDUC 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Education
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Laboratory, Lecture
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

EDUC 491 - INDEPENDENT STUDY AND RESEARCH
Short Title: INDEPENDENT STUDY AND RESEARCH
Department: Education
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course uses ethnographic and quantitative research methods to study a specific issue in education. Independent research projects may include literature reviews and analysis, and/or case studies in school settings. Instructor Permission Required. Graduate/Undergraduate Equivalency: EDUC 591. Mutually Exclusive: Cannot register for EDUC 491 if student has credit for EDUC 591. Repeatable for Credit.
EDUC 501 - PHILOSOPHICAL, HISTORICAL, AND SOCIAL FOUNDATIONS OF EDUCATION  
Short Title: PHIL,HIST,&SOC FOUNDTN OF EDUC  
Department: Education  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: In this course students analyze events and ideas that have shaped the philosophy and practice of American schools today. It is appropriate for all students interested in the influences and stresses that have created a unique educational system in our culturally diverse country. This course requires five hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 301. Graduate/Undergraduate Equivalency: EDUC 301. Mutually Exclusive: Cannot register for EDUC 501 if student has credit for EDUC 301.

EDUC 502 - CONTEMPORARY ISSUES IN EDUCATION  
Short Title: CONTEMPORARY ISSUES IN EDUC  
Department: Education  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: The course examines the way globalization, immigration, privatization and the increasing diversity in our student population is shaping, and being shaped, by America's schools. An exploration of these and other issues from both micro- (student) and macro- (systemic) levels, will be the mainstay of the course. The lenses of sociology, psychology and political economy will be used throughout the semester. The course is open to students in these fields and to students exploring a career in teaching, and is recommended for students entering the teacher education program. This course requires five hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 202. Graduate/Undergraduate Equivalency: EDUC 202. Mutually Exclusive: Cannot register for EDUC 502 if student has credit for EDUC 202.

EDUC 504 - RACE, CLASS, GENDER IN EDUCATION  
Short Title: RACE, CLASS, GENDER IN EDUC  
Department: Education  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course examines the complex ways in which race, ethnicity, gender, and class intersect and influence the educational experience of students in American schools. By employing an interdisciplinary approach centered both on individuals' lived experiences and educational system as a whole; EDUC 504 explores and critiques these critical issues and their impact on student learning. Likely topics include the historical foundations of race, class and gender in education, segregation, Title IX, and other contemporary topics. This graduate equivalent of EDUC 304 requires additional assignments. Graduate/Undergraduate Equivalency: EDUC 304. Mutually Exclusive: Cannot register for EDUC 504 if student has credit for EDUC 304.

EDUC 505 - EDUCATIONAL PSYCHOLOGY  
Short Title: EDUCATIONAL PSYCHOLOGY  
Department: Education  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: The goal of this course is to introduce students to a psychological understanding of teaching and learning through an overview of principles, issues, and related research in educational psychology. Students in this course will examine theories of learning, complex cognitive processes, cognitive and emotional development, and motivation. These constructs will be applied to effective instruction, the design of optimum learning environments, assessment of student learning, and teaching in diverse classrooms. Required for those seeking teacher certification. This course requires five hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 305. Mutually Exclusive: Cannot register for EDUC 505 if student has credit for EDUC 305.

EDUC 510 - INTRODUCTION TO SPECIAL EDUCATION  
Short Title: INTRODUCTION SPECIAL EDUCATION  
Department: Education  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course will introduce and expose students to the field of Special Education. Students will learn about the various individuals who receive special education as well as other types of exceptionality, including giftedness. Controversial issues in this field will be examined along with pertinent legislation. This course will familiarize students with instructional approaches in special education and the social issues impacting the field. Students will visit area schools. This course requires five hours of observation in a local secondary school. Recommended for certification. Additional assignments are required beyond those for EDUC 310. Graduate/Undergraduate Equivalency: EDUC 310. Mutually Exclusive: Cannot register for EDUC 510 if student has credit for EDUC 310.

EDUC 515 - ADOLESCENT DEVELOPMENT  
Short Title: ADOLESCENT DEVELOPMENT  
Department: Education  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: The goal of this course is to introduce students to basic theories of adolescent development and cognition. The course will examine principles and concepts in the areas of physical, emotional and psychological development, identity formation, sexuality, and family and peer relations. Other ‘hot topics’ such as substance abuse, eating disorders, and teenagers and the media will also be examined. This course requires five hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 315. Graduate/Undergraduate Equivalency: EDUC 315. Mutually Exclusive: Cannot register for EDUC 515 if student has credit for EDUC 315.
EDUC 516 - ASSESSMENT
Short Title: ASSESSMENT
Department: Education
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this course, students will use formative and summative assessment to drive instructional decisions. Disaggregation of student data growth in the classroom and on standardized tests will foster academic achievement. Additional requirements are required beyond those for EDUC 316. Graduate/Undergraduate Equivalency: EDUC 316. Mutually Exclusive: Cannot register for EDUC 516 if student has credit for EDUC 316.

EDUC 519 - TEACHING AND LEARNING WITH INQUIRY
Short Title: TEACHING & LEARNING W/INQUIRY
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Education for the 21st Century of change and innovation demands problem-solving and critical thinking skills. This course approaches the teaching of context areas with a student-focused lens that engages inquiring minds with the small group exploration of open-ended problems. Lesson structure, activities, and assessment will be integral to the course. This course requires five hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 319. Graduate/Undergraduate Equivalency: EDUC 319. Mutually Exclusive: Cannot register for EDUC 519 if student has credit for EDUC 319.

EDUC 520 - TEACHING DIVERSE LEARNERS
Short Title: TEACHING DIVERSE LEARNERS
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course offers pedagogies for learners who have different ways of seeing the world, different experiences, and different learning needs. A variety of teaching methods and strategies help special needs students, gifted and talented students and English language learners succeed in the classroom. This course also addresses effective communication in ARDS, LPACS, and staffing within classrooms. Students learn about the support personnel who can assist the classroom teacher. Required for certification. This course requires five hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 320. Graduate/Undergraduate Equivalency: EDUC 320. Mutually Exclusive: Cannot register for EDUC 520 if student has credit for EDUC 320.

EDUC 521 - CURRICULUM DEVELOPMENT
Short Title: CURRICULUM DEVELOPMENT
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is the first of a two-part series for preservice teachers. It offers a reflective study of classroom practice through seventy-five (75) hours of observation in secondary schools and teaching activities under the guidance of cooperating teachers and education team members in an actual classroom setting. This course includes opportunities to structure lessons for diverse student populations with whole group and small group lessons. This course is required for certification. Additional assignments are required beyond those for EDUC 421. Instructor Permission Required. Graduate/Undergraduate Equivalency: EDUC 421. Mutually Exclusive: Cannot register for EDUC 521 if student has credit for EDUC 421.

EDUC 522 - LITERACY ACROSS THE CURRICULUM
Short Title: LITERACY ACROSS THE CURRICULUM
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: How students are taught to read and write in all academic and elective disciplines is critical to the academic development of adolescents. In this course multiple literacies will be discussed in terms of theory and practice. Students will examine reading, writing, listening, speaking and thinking strategies across the curriculum and their impact on learning. Additionally students will investigate, plan, and practice the skills of using literacy strategies for the specific discipline. Required for certification. This course requires five hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 422. Graduate/Undergraduate Equivalency: EDUC 422. Mutually Exclusive: Cannot register for EDUC 522 if student has credit for EDUC 422.

EDUC 523 - CREATIVE WRITING IN THE CLASSROOM
Short Title: CREATIVE WRITING IN CLASSROOM
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Rice students enrolled in this intensive summer internship will work alongside master teachers and professional writers to promote creative thinking and writing with middle and high school students. Students in this course will explore arts integration pedagogy, engage in the classroom planning process, lead lessons, facilitate student writing, and develop anthologies to showcase student voices. Additional assignments are required beyond those for EDUC 323. Instructor Permission Required. Graduate/Undergraduate Equivalency: EDUC 323. Mutually Exclusive: Cannot register for EDUC 523 if student has credit for EDUC 323. Repeatable for Credit.
EDUC 525 - ADOLESCENT LITERATURE
Short Title: ADOLESCENT LITERATURE
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The nature of adolescence in an increasingly complex and diverse society is examined through literature written for and about adolescents and young adults. This study of the cultural, literary, and developmental issues in adolescent literature is relevant to students of literature, psychology, child development, anthropology, and sociology, and is recommended for students preparing to become teachers. This course requires five hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 325. Graduate/Undergraduate Equivalency: EDUC 325. Mutually Exclusive: Cannot register for EDUC 525 if student has credit for EDUC 325.

EDUC 530 - THE AMERICAN HIGH SCHOOL
Short Title: THE AMERICAN HIGH SCHOOL
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Historically one of the few universally experienced institutions in the U.S., the American high school has been an essential rite of passage for youth and an essential building block of Democracy. This course will study the historical origins of the high school; examine its roles in the economy, our culture, and the lives of youth. We will examine the contemporary high school and debates about its future, through the field of study of an urban high school (20 hours of observation required for graduates). Required for certification unless EDUC 501 is substituted. Additional assignments are required. Graduate/Undergraduate Equivalency: EDUC 330. Mutually Exclusive: Cannot register for EDUC 530 if student has credit for EDUC 330.

EDUC 535 - URBAN EDUCATION: ISSUES, POLICY, AND PRACTICE
Short Title: URBAN ED:ISSUES, POLICY & PRAC
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course focuses on the major issues facing urban education, including poverty, the implications of racial and ethnic diversity for educational institutions, and strategies for improving academic achievement in urban schools. Students will examine sociological, political, cultural, and educational research and theory, as well as explore strategies for improvement of urban education at the classroom, school and policy levels. This course requires five hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 335. Graduate/Undergraduate Equivalency: EDUC 335. Mutually Exclusive: Cannot register for EDUC 535 if student has credit for EDUC 335.

EDUC 540 - SEMINAR FOR FIRST-YEAR TEACHERS
Short Title: SEMINAR FOR FIRSTYR TEACHERS
Department: Education
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this single-year internship, first year teachers will be supported in their work by field supervisors. In a weekly seminar, teachers will analyze their practice with current theories in education. Teachers will also develop and defend portfolios of their work. This course is required for stand certification and for the Master of Arts in Teaching. Repeatable for Credit.

EDUC 545 - EDUCATIONAL TECHNOLOGIES & DIGITAL LEARNING
Short Title: EDUC TECH & DIGITAL LRNING
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The primary purposes of this course is to prepare teachers to identify and evaluate effective, appropriate data and curriculum management systems/programs that improve student achievement; to determine how technologies can personalize and accelerate learning goals for students; and understand how technology can be used to change communication and pedagogical practices in the classroom. This course is required for certification. This course requires five hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 345. Graduate/Undergraduate Equivalency: EDUC 345. Mutually Exclusive: Cannot register for EDUC 545 if student has credit for EDUC 345.

EDUC 550 - EDUCATION POLICY: FROM LEGISLATURES TO CLASSROOMS
Short Title: EDUCATION POLICY
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is required for certification. This course requires five hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 345. Graduate/Undergraduate Equivalency: EDUC 345. Mutually Exclusive: Cannot register for EDUC 545 if student has credit for EDUC 345.

EDUC 550 - EDUCATION POLICY: FROM LEGISLATURES TO CLASSROOMS
Short Title: EDUCATION POLICY
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The primary purposes of this course is to prepare teachers to identify and evaluate effective, appropriate data and curriculum management systems/programs that improve student achievement; to determine how technologies can personalize and accelerate learning goals for students; and understand how technology can be used to change communication and pedagogical practices in the classroom. This course is required for certification. This course requires five hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 345. Graduate/Undergraduate Equivalency: EDUC 345. Mutually Exclusive: Cannot register for EDUC 545 if student has credit for EDUC 345.

EDUC 550 - EDUCATION POLICY: FROM LEGISLATURES TO CLASSROOMS
Short Title: EDUCATION POLICY
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The primary purposes of this course is to prepare teachers to identify and evaluate effective, appropriate data and curriculum management systems/programs that improve student achievement; to determine how technologies can personalize and accelerate learning goals for students; and understand how technology can be used to change communication and pedagogical practices in the classroom. This course is required for certification. This course requires five hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 345. Graduate/Undergraduate Equivalency: EDUC 345. Mutually Exclusive: Cannot register for EDUC 545 if student has credit for EDUC 345.

EDUC 550 - EDUCATION POLICY: FROM LEGISLATURES TO CLASSROOMS
Short Title: EDUCATION POLICY
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The primary purposes of this course is to prepare teachers to identify and evaluate effective, appropriate data and curriculum management systems/programs that improve student achievement; to determine how technologies can personalize and accelerate learning goals for students; and understand how technology can be used to change communication and pedagogical practices in the classroom. This course is required for certification. This course requires five hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 345. Graduate/Undergraduate Equivalency: EDUC 345. Mutually Exclusive: Cannot register for EDUC 545 if student has credit for EDUC 345.

EDUC 550 - EDUCATION POLICY: FROM LEGISLATURES TO CLASSROOMS
Short Title: EDUCATION POLICY
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The primary purposes of this course is to prepare teachers to identify and evaluate effective, appropriate data and curriculum management systems/programs that improve student achievement; to determine how technologies can personalize and accelerate learning goals for students; and understand how technology can be used to change communication and pedagogical practices in the classroom. This course is required for certification. This course requires five hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 345. Graduate/Undergraduate Equivalency: EDUC 345. Mutually Exclusive: Cannot register for EDUC 545 if student has credit for EDUC 345.
EDUC 560 - THEORY AND METHODS: ART
Short Title: THEORY AND METHODS: ART
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course involves the study and integration of theory and methods with observation and practice in the classroom through the facilitation of student-led, student-centered activities. Under the guidance of education support team members, the course offers multiple methods for implementing curriculum with diverse students. Required for certification. This course includes a minimum of 5 hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 460. Graduate/Undergraduate Equivalency: EDUC 460. Mutually Exclusive: Cannot register for EDUC 560 if student has credit for EDUC 460.

EDUC 561 - THEORY AND METHODS: ENGLISH LANGUAGE ARTS & READING (ELAR)
Short Title: THEORY AND METHODS: ELAR
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course involves the study and integration of theory and methods with observation and practice in the classroom through the facilitation of student-led, student-centered activities. Under the guidance of education support team members, the course offers multiple methods for implementing curriculum with diverse students. Required for certification. This course includes a minimum of 5 hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 461. Graduate/Undergraduate Equivalency: EDUC 461. Mutually Exclusive: Cannot register for EDUC 561 if student has credit for EDUC 461.

EDUC 562 - THEORY AND METHODS: LOTE
Short Title: THEORY AND METHODS: LOTE
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course involves the study and integration of theory and methods with observation and practice in the classroom through the facilitation of student-led, student-centered activities. Under the guidance of education support team members, the course offers multiple methods for implementing curriculum with diverse students. Required for certification. This course includes a minimum of 5 hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 462. Graduate/Undergraduate Equivalency: EDUC 462. Mutually Exclusive: Cannot register for EDUC 562 if student has credit for EDUC 462.

EDUC 563 - THEORY AND METHODS: MATHEMATICS
Short Title: THEORY AND METHODS: MATHEMATICS
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course involves the study and integration of theory and methods with observation and practice in the classroom through the facilitation of student-led, student-centered activities. Under the guidance of education support team members, the course offers multiple methods for implementing curriculum with diverse students. Required for certification. This course includes a minimum of 5 hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 463. Graduate/Undergraduate Equivalency: EDUC 463. Mutually Exclusive: Cannot register for EDUC 563 if student has credit for EDUC 463.

EDUC 564 - THEORY AND METHODS: PHYSICAL EDUCATION
Short Title: THEORY AND METHODS: PHYSICAL ED
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Students with a class of Freshman may not enroll. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course involves the study and integration of theory and methods with observation and practice in the classroom through the facilitation of student-led, student-centered activities. Under the guidance of education support team members, the course offers multiple methods for implementing curriculum with diverse students. Required for certification. This course includes a minimum of 5 hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 464. Graduate/Undergraduate Equivalency: EDUC 464. Mutually Exclusive: Cannot register for EDUC 564 if student has credit for EDUC 464.

EDUC 565 - THEORY AND METHODS: SCIENCE
Short Title: THEORY AND METHODS: SCIENCE
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course involves the study and integration of theory and methods with observation and practice in the classroom through the facilitation of student-led, student-centered activities. Under the guidance of education support team members, the course offers multiple methods for implementing curriculum with diverse students. Required for certification. This course includes a minimum of 5 hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 465. Graduate/Undergraduate Equivalency: EDUC 465. Mutually Exclusive: Cannot register for EDUC 565 if student has credit for EDUC 465.

EDUC 566 - THEORY AND METHODS: SOCIAL STUDIES
Short Title: THEORY AND METHODS: SOCIAL STUDIES
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course involves the study and integration of theory and methods with observation and practice in the classroom through the facilitation of student-led, student-centered activities. Under the guidance of education support team members, the course offers multiple methods for implementing curriculum with diverse students. Required for certification. This course includes a minimum of 5 hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 466. Graduate/Undergraduate Equivalency: EDUC 466. Mutually Exclusive: Cannot register for EDUC 566 if student has credit for EDUC 466.
EDUC 566 - THEORY AND METHODS: SOCIAL STUDIES  
Short Title: THEORY AND METHODS: SOCIAL STUD  
Department: Education  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students. 
Course Level: Graduate  
Description: This course involves the study and integration of theory and methods with observation and practice in the classroom through the facilitation of student-led, student-centered activities. Under the guidance of education support team members, the course offers multiple methods for implementing curriculum with diverse students. Required for certification. This course includes a minimum of 5 hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 466. Graduate/Undergraduate Equivalency: EDUC 466. Mutually Exclusive: Cannot register for EDUC 566 if student has credit for EDUC 466.  

EDUC 567 - PRACTICUM FOR PRESERVICE TEACHERS  
Short Title: PRACT FOR PRESERVICE TEACHERS  
Department: Education  
Grade Mode: Standard Letter  
Course Type: Internship/Practicum  
Credit Hours: 6  
Restrictions: Enrollment is limited to Graduate level students. 
Course Level: Graduate  
Prerequisite(s): (EDUC 560 or EDUC 561 or EDUC 562 or EDUC 563 or EDUC 564 or EDUC 565 or EDUC 566) and EDUC 521  
Description: This is the second course in the two-part series for preservice teachers. In this field-based practicum, the preservice teacher will have a concentrated experience in student teaching based on the lesson development, pedagogical explorations, and field-based work of the previous semester. Students are expected to follow the assigned district/campus academic calendar for the semester of student teaching. This course is required for certification. Additional assignments are required beyond those for EDUC 467. Graduate/Undergraduate Equivalency: EDUC 467. Mutually Exclusive: Cannot register for EDUC 567 if student has credit for EDUC 467. Repeatable for Credit.  

EDUC 570 - FIELD-BASED STUDIES IN TEACHING AND LEARNING  
Short Title: FLD-BASED STDY TEACH & LRNG  
Department: Education  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 1-6  
Restrictions: Enrollment is limited to Graduate level students. 
Course Level: Graduate  
Description: The study of critical issues in urban education uses ethnographic research methods to study a wide range of educational subjects, from policy impact to classroom practice, from curriculum and pedagogy to the cultures of the children. The course includes a seminar on research methodologies, with a focus on ethnography; independent research projects in a local school setting; and directed case studies. It is open particularly to students in education, sociology, psychology, anthropology and cultural studies. Additional assignments are required beyond those for EDUC 470. Graduate/Undergraduate Equivalency: EDUC 470. Mutually Exclusive: Cannot register for EDUC 570 if student has credit for EDUC 470.  

EDUC 590 - INSTRUCTIONAL LEADERSHIP  
Short Title: INSTRUCTIONAL LEADERSHIP  
Department: Education  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students. 
Course Level: Graduate  
Prerequisite(s): EDUC 516 and EDUC 519 and EDUC 520 and EDUC 522 and EDUC 545  
Description: A focus on professional student-centered coaching techniques empowers students in this course to become catalysts for instructional improvement and student achievement. As current practitioners in the field, students use their personal experiences while adding foundational and progressive research, advanced methodologies, and curriculum tools to enhance the capacity of leaders in the educational arena. Repeatable for Credit.  

EDUC 591 - INDEPENDENT STUDY AND RESEARCH  
Short Title: INDEPENDENT STUDY AND RESEARCH  
Department: Education  
Grade Mode: Standard Letter  
Course Type: Research  
Credit Hours: 1-3  
Restrictions: Enrollment is limited to Graduate level students. 
Course Level: Graduate  
Description: This course uses ethnographic and quantitative research methods to study a specific issue in education. Independent research projects may include literature reviews and analysis, and/or case studies in school settings. Additional assignments are required beyond those for EDUC 491. Instructor Permission Required. Graduate/Undergraduate Equivalency: EDUC 491. Mutually Exclusive: Cannot register for EDUC 591 if student has credit for EDUC 491. Repeatable for Credit.  

EDUC 595 - CAPSTONE  
Short Title: CAPSTONE  
Department: Education  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students. 
Course Level: Graduate  
Description: The Capstone Project is the culmination of the program as the student melds the MAT course of study specialization with classroom experience. The work in this two-semester course is showcased in a portfolio to be defended before an academic committee. Repeatable for Credit.  

EDUC 596 - ORGANIZATIONAL LEADERSHIP  
Short Title: ORGANIZATIONAL LEADERSHIP  
Department: Education  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students. 
Course Level: Graduate  
Corequisite: EDUC 590  
Description: Students will be challenged in workshops that test a leader’s ability to solve problems that include school finance management, student demographics and test scores, teachers’ effectiveness, and the community’s needs. Department Permission Required.
EDUC 597 - PRACTICUM FOR PRINCIPALS
Short Title: PRACTICUM FOR PRINCIPALS
Department: Education
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): EDUC 504 and EDUC 516 and EDUC 590 and EDUC 596
Description: During this two-semester course students will be implementing the knowledge gained from classroom experiences into tasks in their home schools under guidance of a school mentor and a field supervisor. Department Permission Required. Repeatable for Credit.

EDUC 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Education
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

Electrical & Comp. Engineering (ELEC)

ELEC 101 - ELEMENTS OF ELECTRICAL ENGINEERING
Short Title: ELEMENTS OF ELECT ENGINEERING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Freshman or Sophomore. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction to fundamentals of electrical engineering through the hands-on design of a micro-controlled model electric car. Topics from fields of circuits, signals, computing, and sensing are covered as needed to support the student in designing systems to power, monitor, and control the vehicle's speed, and to guide its trajectory, in order to pass a series of vehicle tests. Instructor Permission Required.

ELEC 220 - FUNDAMENTALS OF COMPUTER ENGINEERING
Short Title: FUND COMPUTER ENGINEERING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to students with a major in Computer Science, Engineering Division, Electrical & Computer Eng. or Electrical Engineering. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An overview of computer engineering, starting with fundamental building blocks including transistors, bits, data representation, logic and state machines, progressing to computer organization, instruction sets, interrupts, input/output, assembly language programming, and linkage conventions, and ending with an introduction to architectural performance enhancements and computing services.
Course URL: www.owlnet.rice.edu/~elec220 (http://www.owlnet.rice.edu/~elec220/)

ELEC 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Laboratory, Lecture, Seminar, Internship/Practicum
Credit Hours: 1-4
Course Level: Undergraduate Lower-Level
Description: Repeatable for Credit.

ELEC 240 - FUNDAMENTALS OF ELECTRICAL ENGINEERING I LABORATORY
Short Title: FUND EE I LAB
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): (MATH 101 or MATH 105) and (MATH 102 or MATH 106)
Corequisite: ELEC 241
Description: Laboratory course that introduces basic electronic measurement techniques and demonstrates the principles of information management by electronic means. Lectures supplement the laboratory experiments.

ELEC 241 - FUNDAMENTALS OF ELECTRICAL ENGINEERING I
Short Title: FUND ELECTRICAL ENGINEERING I
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): (MATH 101 or MATH 105) and (MATH 102 or MATH 106)
Corequisite: ELEC 240
Description: The creation, manipulation, transmission, and reception of information by electronic means, elementary signal theory; time and frequency-domain analysis; sampling theorem. Digital information theory; digital transmission of analog signals; error-correcting codes.
ELEC 242 - SIGNALS, SYSTEMS, AND TRANSFORMS
Short Title: SIGNALS, SYSTEMS, & TRANSFORMS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ELEC 241
Corequisite: ELEC 244
Description: Transforms between the time and frequency domains. Linear time-invariant systems: convolutions, impulse response, and eigenfunctions. Delta functions, their nature and their uses. Fourier series and the Fourier transform for continuous signals. Fourier transform for discrete-time signals: DTFT and DFT. The fast Fourier transform. The Hilbert transform and causality. Sampling and aliasing. Laplace and Z transforms: poles and zeros, and system stability. Students must register for both ELEC 242 and ELEC 244.

ELEC 243 - ELECTRONIC MEASUREMENT SYSTEMS
Short Title: ELECTRONIC MEASUREMENT SYSTEMS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): (MATH 101 or MATH 105) and (MATH 102 or MATH 106) and (PHYS 102 or PHYS 112 or PHYS 126)
Description: The course will give students the skills to design, construct, and assess electronic systems to measure, monitor, and control physical properties and events; spans the areas of circuits, signals, systems, and digital processing. Intended for non-ECE majors.

ELEC 244 - ANALOG CIRCUITS LABORATORY
Short Title: ANALOG CIRCUITS LABORATORY
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Corequisite: ELEC 242
Description: Lab skills covered including breadboarding, use of oscilloscopes, and circuit debugging. Topics covered include design, construction, and testing of basic electronic circuits; RLC networks; diodes; transistors; operational amplifiers; comparators; interfacing digital and analog circuits; pulse width modulation; motors; and feedback control. Students must register for both ELEC 242 and ELEC 244.

ELEC 261 - ELECTRONIC MATERIALS AND DEVICES
Short Title: ELECTRONIC MATERIALS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): (MATH 102 or MATH 106) and (PHYS 102 or PHYS 112)
Description: Modern technology would not exist without devices such as transistors, LEDs and solar cells. This course introduces the physics of materials that enable these devices. An overview of fundamental topics in physical electronics including a semiclassical approach to the electrical properties of materials, introduction to quantum mechanics, electronic band structure and device operation will be covered.

ELEC 262 - INTRODUCTION TO WAVES AND PHOTONICS
Short Title: INTRO TO WAVES AND PHOTONICS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): (PHYS 101 or PHYS 111 or PHYS 125 or PHYS 141) and (PHYS 102 or PHYS 112 or PHYS 126 or PHYS 142)
Description: Introduction to the concepts of waves and oscillatory motion with a particular focus on electromagnetic waves and their interaction with dielectric materials, and on the use of these ideas in the fields of optical fiber communications, laser design, non-linear optics, and Fourier optics.

ELEC 301 - SIGNALS, SYSTEMS, AND LEARNING
Short Title: SIGNALS, SYSTEMS, AND LEARNING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 241 and (MATH 354 or MATH 355 or CAAM 334 or CAAM 335)
Corequisite: ELEC 303
Description: Analytical framework for analyzing signals and systems. Time and frequency domain analysis of continuous and discrete time signals and systems, convolution, and the Laplace and Z transforms. Introduction to algorithms for machine learning on signals, including clustering, regression, and classification. Instructor Permission Required.
ELEC 303 - RANDOM SIGNALS IN ELECTRICAL ENGINEERING SYSTEMS  
Short Title: RANDOM SIGNALS  
Department: Electrical & Computer Eng.  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): ELEC 301 (may be taken concurrently)  
Description: An introduction to probability theory and statistics with applications to electrical engineering problems in signal processing, communications and control; probability spaces, conditional probability, independence, random variables, distribution and density functions, random vectors, signal detection and parameter estimation. ELEC 301 may be taken concurrently with ELEC 303.

ELEC 305 - INTRODUCTION TO PHYSICAL ELECTRONICS  
Short Title: INTRO PHYSICAL ELECTRONICS  
Department: Electrical & Computer Eng.  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): ELEC 241 and MATH 212 and PHYS 102  
Description: Survey of devices and physical principles that are used in modern electronic systems such as cellphones: diodes, transistors, integrated circuits; scaling and Moore’s Law; transmission lines; signal integrity; antennas.

ELEC 306 - APPLIED ELECTROMAGNETICS  
Short Title: APPLIED ELECTROMAGNETICS  
Department: Electrical & Computer Eng.  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): ELEC 220  
Description: An introduction to the theory of static and dynamic electromagnetic fields with a focus on engineering applications. Principles will be illustrated with applications in various areas. Topics include computational electromagnetics, transmission lines, antennas, electromagnetic interference, and signal propagation in high speed circuits.

ELEC 323 - PRINCIPLES OF PARALLEL PROGRAMMING  
Short Title: FUNDAMENTALS OF PARALLEL PROG  
Department: Electrical & Computer Eng.  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 4  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): COMP 211 or COMP 215  
Description: Fundamentals of parallel programming: abstract models of parallel computers, parallel algorithms and data structures, and common parallel programming patterns including task parallelism, undirected and directed synchronization, data parallelism, divide-and-conquer parallelism, and map-reduce. Laboratory assignments will explore these topics through the use of parallel extensions to the Java language. Cross-list: COMP 322. Recommended Prerequisite(s): COMP 221.

ELEC 326 - DIGITAL LOGIC DESIGN  
Short Title: DIGITAL LOGIC DESIGN  
Department: Electrical & Computer Eng.  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): ELEC 220  
Description: Study of gates, flip-flops, combinational and sequential switching circuits, registers, logical and arithmetic operations, introduction to the Verilog hardware description language. Cross-list: COMP 326.

ELEC 327 - IMPLEMENTATION OF DIGITAL SYSTEMS  
Short Title: IMPLEMENTATION OF DIGITAL SYS  
Department: Electrical & Computer Eng.  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): ELEC 326 or COMP 326  
Description: Embedded microsystems are widely employed to provide intelligence to sensors and actuators throughout our daily life. In this course, we learn the software and hardware frameworks which underly embedded systems design. Students will learn the fundamentals of embedded system programming and feel competent to design, build, and manufacture their own embedded devices. In particular, we focus on principles of low-power design and interface with external peripherals. In addition, students will learn how to design their own manufacturable hardware and discover how application-specific blocks enable modern commercial devices to function. There are weekly lab assignments and two projects. Instructor Permission Required.
ELEC 332 - ELECTRONIC SYSTEMS PRINCIPLES AND PRACTICE
Short Title: ELECTRONICS PRINCIPLES & PRACTICE
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 242 or ELEC 243
Description: This course covers the theory and techniques necessary to realize modern, high performance electronic systems. Design considerations for systems utilizing high speed, high frequency analog and digital integrated circuits will be covered. Students develop a microcontroller system for controlling the functions of a model electric car. Power and sensor circuits will be designed to monitor and control the vehicle’s speed, and to guide its trajectory, in order to pass a series of vehicle tests. Instructor Permission Required.

ELEC 342 - ANALOG ELECTRONIC CIRCUITS
Short Title: ANALOG ELECTRONIC CIRCUITS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 242 or ELEC 243
Description: The course starts with a review of 1st order and 2nd order linear circuits. It emphasizes time-domain techniques and discusses step and impulse responses, reviews basic device physics of a CMOS transistor, followed by a derivation of current-voltage equations. The course also covers an in-depth analysis of large-signal behavior, linearization, and small signal models. Furthermore, it discusses single-stage and multi-stage amplifiers as well as differential amplifiers, common mode rejection ratio (CMRR), and techniques for increasing gain and improving linearity.

ELEC 361 - QUANTUM MECHANICS FOR ENGINEERS
Short Title: QUANTUM MECHANICS FOR ENGINEER
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 261
Description: This course provides the background in quantum mechanics and solid state physics necessary for further studies in semiconductor optoelectronic devices, quantum electronics, nanoscience, and photonics. Examples include: electronic energy levels in semiconductor quantum wells and superlattices; tunneling phenomena in semiconductor devices; the Kronig-Penney model; crystal momentum, effective mass, and Bloch oscillations; band structure of graphene and carbon nanotubes; and introduction to quantum information science.
Course URL: www.ece.rice.edu/~kono/ELEC361.html

ELEC 364 - PHOTONICS MEASUREMENTS: PRINCIPLES AND PRACTICE
Short Title: PHOTONICS MEASUREMENTS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 262 or PHYS 201
Description: After completing this course, students will have the knowledge and experimental skills to design and apply a photonic measurement system to monitor an environment, process, device, or system. The course will combine predefined labs to develop skills with application projects. Instructor Permission Required.

ELEC 365 - NANOMATERIALS FOR ENERGY
Short Title: NANOMATERIALS FOR ENERGY
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will introduce students to the fundamental science of nanomaterials. Many of the concepts will be explained by drawing from applications in sustainability (photovoltaics, solar-to-fuel conversion thermionic, thermoelectric, fuel cells). Students will design a lab demo from scratch using amongst others the infrastructure provided by the photonics measurement lab. Cross-list: MSNE 365.

ELEC 380 - INTRODUCTION TO NEUROENGINEERING: MEASURING AND MANIPULATING NEURAL ACTIVITY
Short Title: INTRO TO NEUROENGINEERING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (PHYS 101 or PHYS 111 or PHYS 125 or PHYS 141) and (PHYS 102 or PHYS 112 or PHYS 126 or PHYS 142)
Description: This course will serve as an introduction to quantitative modeling of neural activity and the methods used to stimulate and record brain activity. Cross-list: BIOE 380, NEUR 383. Graduate/Undergraduate Equivalency: ELEC 587. Mutually Exclusive: Cannot register for ELEC 380 if student has credit for BIOE 480/BIOE 590/ELEC 480/ELEC 580/ ELEC 587.
ELEC 381 - FUNDAMENTALS OF NERVE AND MUSCLE
ELECTROPHYSIOLOGY
Short Title: FUND OF ELECTROPHYSIOLOGY
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Graduate Professional or Visiting Graduate level students.
Course Level: Graduate Upper-Level
Description: An introduction to cellular electrophysiology. Includes development of whole-cell models for neurons and muscle (cardiac and skeletal muscle) cells, based on ion channel currents obtained from whole-cell voltage-clamp experiments. Material balance equations are developed for various ions and chemical signaling agents (e.g., second messengers). Numerical methods are introduced for solving the ordinary and partial differential equations associated with these models. Several types of cell models are discussed ranging from neurons and muscle cells to sensory cells of mechanoreceptors, auditory hair cells and photoreceptor cells. Volume conductor boundary-value problems frequently encountered in electrophysiology are posed. Course provides a cellular basis for the interpretation of macroscopic bioelectric signals such as the electrocardiogram (ECG), electromyogram (EMG), electroretinogram (ERG) and electroencephalogram. Cross-list: BIOE 381.

ELEC 382 - INTRODUCTION TO COMPUTATIONAL NEUROSCIENCE
Short Title: INTRO COMPUTATIONAL NEURSCI
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Graduate Professional or Visiting Graduate level students.
Course Level: Graduate Upper-Level
Description: Introduction to methods and theories used to describe and understand neural information processing in the brain. Models covered will range from single neuron to networks for sensory, motor and learning tasks. Programming exercises will be done using Matlab. Cross-list: NEUR 382. Recommended Prerequisite(s): CAAM 210. Mutually Exclusive: Cannot register for ELEC 382 if student has credit for NEUR 582.

ELEC 395 - TRANSFER CREDIT - JUNIOR
Short Title: TRANSFER CREDIT - JUNIOR
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Transfer
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Graduate Professional or Visiting Graduate level students.
Course Level: Graduate Upper-Level
Description: This course is intended for transfer credit for courses not offered at Rice. Permission of ECE Undergraduate Committee and review by faculty in related specialization area is required. ELEC 395 is for Junior level ECE Specialization course credit. Department Permission Required. Repeatable for Credit.

ELEC 410 - SECURE AND CLOUD COMPUTING
Short Title: SECURE & CLOUD COMPUTING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Graduate Professional or Visiting Graduate level students.
Course Level: Graduate Upper-Level
Prerequisite(s): COMP 327 or COMP 427 or COMP 541 or COMP 429 or COMP 556 or ELEC 429 or ELEC 556 or COMP 421 or COMP 521 or ELEC 552 or ELEC 421 or ELEC 437 or ELEC 539
Description: What is “cloud computing”? How do we build cloud-scale systems and components that are secure against malicious attacks, and scale to millions of users? Many of today’s services run inside the cloud – a set of geographically distributed data centers running heterogeneous software stacks. Cloud systems must scale across tens of thousands of machines, support millions of concurrent requests, and they must do so with high security guarantees. This course will start with the fundamentals of cloud computing, introduce key techniques in building scalable and secure systems and expose students to state-of-the-art research advances as well as emerging security threats and defenses in today’s cloud systems. Mutually Exclusive: Cannot register for ELEC 410 if student has credit for ELEC 510.

ELEC 411 - MICROWAVE ENGINEERING
Short Title: MICROWAVE ENGINEERING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Graduate Professional or Visiting Graduate level students.
Course Level: Graduate Upper-Level
Description: Topics covered include transmission line, Smith Chart, scattering parameters, impedance matching, passive microwave circuits (power divider, coupler, 180° hybrid, filter), and antenna design fundamentals. Graduate/Undergraduate Equivalency: ELEC 517. Recommended Prerequisite(s): ELEC 262 or ELEC 305 or equivalent courses with the key concepts of Maxwell's Equations and Linear Algebra. Mutually Exclusive: Cannot register for ELEC 411 if student has credit for ELEC 517.
ELEC 419 - INNOVATION LAB FOR MOBILE HEALTH
Short Title: INNOVATION LAB - MOBILE HEALTH
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Students with a class of Freshman may not enroll. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will be an innovation lab for mobile health products. The students will organize themselves in groups with complementary skills and work on a single project for the whole semester. The aim will be to develop a product prototype which can then be demonstrated to both medical practitioners and potential investors. For successful projects with an operational prototype, the next steps could be applying for OWLspark (Rice accelerator program) or crowd sourcing (like Kickstarter) and/or work in Scalable Health Labs over summer. ELEC Juniors can also continue the project outcomes as a starting point for their senior design. Cross-list: BIOE 419. Graduate/Undergraduate Equivalency: ELEC 559. Mutually Exclusive: Cannot register for ELEC 419 if student has credit for ELEC 559. Repeatable for Credit.
Course URL: [www.ece.rice.edu/~ashu/ELEC419.html](http://www.ece.rice.edu/~ashu/ELEC419.html)

ELEC 421 - OPERATING SYSTEMS AND CONCURRENT PROGRAMMING
Short Title: OP SYS/CONCURRENT PROGRAMMING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 215 and (COMP 221 or COMP 321)
Description: Introduction to the design, construction, and analysis of concurrent programs with an emphasis on operating systems, including filing systems, schedulers, and memory allocators. Specific attention is devoted to process synchronization and communication within concurrent programs. Cross-list: COMP 421. Graduate/Undergraduate Equivalency: ELEC 552. Mutually Exclusive: Cannot register for ELEC 421 if student has credit for ELEC 552.
Course URL: [www.clear.rice.edu/comp421/](http://www.clear.rice.edu/comp421/)

ELEC 422 - VLSI SYSTEMS DESIGN
Short Title: VLSI SYSTEMS DESIGN
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 326 or COMP 326
Description: A study of VLSI technology and design. MOS devices, Characteristics and fabrication. Logic design and implementation. VLSI design methodology, circuit simulation and verification. Graduate/Undergraduate Equivalency: ELEC 527. Mutually Exclusive: Cannot register for ELEC 422 if student has credit for ELEC 527.

ELEC 423 - DIGITAL INTEGRATED CIRCUITS
Short Title: DIGITAL INTEGRATED CIRCUITS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 220 and ELEC 242 and (ELEC 326 or COMP 326)
Description: This course introduces students to the analysis and design of digital integrated circuits. We look at how CMOS devices are fabricated and how they operate physically, as well as how to design high-performance and low-power circuits. Various types of memory devices and designs are also covered in the course. Recommended Prerequisite(s): ELEC 305 or ELEC 261.

ELEC 424 - MOBILE AND EMBEDDED SYSTEM DESIGN AND APPLICATION
Short Title: MOBILE & EMBEDDED SYSTEM DESIGN AND APPLICATION
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 220
Description: This course introduces students to the analysis and design of digital integrated circuits. We look at how CMOS devices are fabricated and how they operate physically, as well as how to design high-performance and low-power circuits. Various types of memory devices and designs are also covered in the course. Recommended Prerequisite(s): ELEC 305 or ELEC 261.

ELEC 425 - COMPUTER SYSTEMS ARCHITECTURE
Short Title: COMPUTER SYSTEMS ARCHITECTURE
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 326 or COMP 326
Description: This course introduces students to the analysis and design of digital integrated circuits. We look at how CMOS devices are fabricated and how they operate physically, as well as how to design high-performance and low-power circuits. Various types of memory devices and designs are also covered in the course. Recommended Prerequisite(s): ELEC 305 or ELEC 261.
ELEC 427 - ADVANCED DIGITAL HARDWARE DESIGN, IMPLEMENTATION, AND OPTIMIZATION
Short Title: ADV DIGITAL DESIGN & IMPLEMENT
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 326 or COMP 326
Description: This senior level course will investigate design and implementation of modern digital signal processing, machine learning, and security algorithms in hardware (including FPGAs and ASICS). Along with learning the principals of design, students will acquire hands-on experience in hardware implementation and the use of the hardware in modern applications including but not limited to mobile phones, biomedical devices, and smart cards. Emphasis is on digital processors, design implementation on FPGA/ASIC fabrics and testing real systems on board, architectures, control, functional units, and circuit topologies for increased performance and reduced circuit size and power dissipation. Graduate/Undergraduate Equivalency: ELEC 555. Mutually Exclusive: Cannot register for ELEC 427 if student has credit for ELEC 555. Repeatable for Credit.

ELEC 429 - INTRODUCTION TO COMPUTER NETWORKS
Short Title: INTRO TO COMPUTER NETWORKS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 221 or COMP 321
Course URL: www.clear.rice.edu/comp429/ (http://www.clear.rice.edu/comp429/)

ELEC 430 - MODERN COMMUNICATION THEORY AND PRACTICE
Short Title: MODERN COMM. THEORY & PRACTICE
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 301 and ELEC 303
Description: This is an upper-level course in digital communications, which is designed to prepare students for engineering work in high-tech industries and for graduate work in communications, signal processing, and computer systems. The course covers basic concepts and useful tools for design and performance analysis of transmitters and receivers in the physical layer of a communication system, including multiple antenna MIMO systems. A hands-on laboratory using a state-of-the-art radio testbed illustrates course concepts. Mutually Exclusive: Cannot register for ELEC 430 if student has credit for ELEC 551. Graduate/Undergraduate Equivalency: ELEC 551. Mutually Exclusive: Cannot register for ELEC 430 if student has credit for ELEC 551.

ELEC 431 - DIGITAL SIGNAL PROCESSING
Short Title: DIGITAL SIGNAL PROCESSING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 301
Description: Methods for analysis of discrete-time signals and design of discrete-time systems including topics of: discrete-time linear systems, difference equations, z-transforms, discrete convolution, stability, discrete-time Fourier transforms, analog-to-digital and digital-to-analog conversion, digital filter design, discrete Fourier transforms, fast Fourier transforms, multi-rate signal processing, filter banks, and spectral analysis. Graduate/Undergraduate Equivalency: ELEC 558. Mutually Exclusive: Cannot register for ELEC 431 if student has credit for ELEC 558.

ELEC 432 - MOBILE BIO-BEHAVIORAL SENSING
Short Title: MOBILE BIO-BEHAVIORAL SENSING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 301
Description: In the next-generation of devices, designed for diverse fields as healthcare and education, the devices will understand the human user. At the core of this understanding will be data that is gathered from a new class of sensors, that can measure both biological and behavioral markers. This course introduces the fundamentals of bio- and behavioral sensing. Graduate/Undergraduate Equivalency: ELEC 534. Mutually Exclusive: Cannot register for ELEC 432 if student has credit for ELEC 302/ELEC 534.
ELEC 433 - ARCHITECTURE FOR WIRELESS COMMUNICATIONS  
**Short Title:** ARCH - WIRELESS COMMUNICATIONS  
**Department:** Electrical & Computer Eng.  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** ELEC 301 and (ELEC 326 or COMP 326)  
**Description:** This is an FPGA laboratory course. Students will embark upon a detailed study and implementation of digital communications systems. Major functional blocks of end-to-end wireless communication systems will be discussed, built, and tested in hardware. Course will also cover analysis and design of communication systems, especially modulation, demodulation and detection. Students will benefit from a combined theory-lab approach to communications and work in groups on weekly lab assignments and a major semester project. Graduate/Undergraduate Equivalency: ELEC 536. Mutually Exclusive: Cannot register for ELEC 433 if student has credit for ELEC 536.

ELEC 434 - ADVANCED HIGH-SPEED SYSTEM DESIGN  
**Short Title:** ADV H-S SYSTEM DESIGN  
**Department:** Electrical & Computer Eng.  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** ELEC 305 and ELEC 244  
**Description:** This course covers practical aspects of high-speed system design, highlights system design and simulation challenges, and demonstrates common pitfalls and how to prevent them. In this course, students will learn how to design, do gigahertz speed PCB layout, simulate (spice and Hyperlynx), and apply good design practices to minimize both component and system noise and to ensure system design success. Graduate/Undergraduate Equivalency: ELEC 543. Mutually Exclusive: Cannot register for ELEC 434 if student has credit for ELEC 543.

ELEC 435 - INTRODUCTION TO ENERGY-EFFICIENT MECHATRONICS  
**Short Title:** INTO MECHATRONICS  
**Department:** Electrical & Computer Eng.  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** ELEC 242 or ELEC 243  
**Description:** Introduction to electromechanical systems, focusing on motor mechanics, electric drives & electronics, & modern digital control algorithms. Covers basic principles of electromechanical energy conversion & motor control. Students are introduced to energy efficiency considerations of modern electric drives. Includes hands-on laboratory projects involving digital computer control of various motor types. Cross-list: MECH 435. Graduate/Undergraduate Equivalency: ELEC 532. Mutually Exclusive: Cannot register for ELEC 435 if student has credit for ELEC 532.

ELEC 436 - FUNDAMENTALS OF CONTROL SYSTEMS  
**Short Title:** FUNDAMENTALS OF CONTROL SYST  
**Department:** Electrical & Computer Eng.  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** (CAAM 335 or MATH 335) and ((MECH 343 or (ELEC 242 and ELEC 244)) )  
**Description:** Linear systems and the fundamental principles of classical feedback control, state variable analysis of linear dynamic systems, stability of linear control systems, time-domain analysis and control of linear systems, root-locus analysis and design and pole-zero synthesis, frequency domain techniques for the analysis and design of control systems. Required for mechanical engineering majors in B.S. program.  
Cross-list: MECH 420.

ELEC 437 - INTRODUCTION TO COMMUNICATION NETWORKS  
**Short Title:** INTO COMMUNICATION NETWORK  
**Department:** Electrical & Computer Eng.  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** ELEC 303  
**Description:** Introduction to design and analysis of communication networks. Topics include wireless networks, media access, routing traffic modeling, congestion control, and scheduling. Graduate/Undergraduate Equivalency: ELEC 539. Mutually Exclusive: Cannot register for ELEC 437 if student has credit for ELEC 539.

ELEC 438 - WIRELESS NETWORKING FOR UNDER-RESOURCED URBAN COMMUNITIES  
**Short Title:** WIRELESS NETWKG UNDER-RESRC'D  
**Department:** Electrical & Computer Eng.  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** The Rice Networks Group and the non-profit organization Technology For All have recently deployed a state-of-the art wireless network in one of Houston’s most economically disadvantaged neighborhoods. The objective of this network is to empower under-resourced communities with access to technology and educational and work-at-home tools. In this course project teams will perform measurement studies both in the Rice Networks Lab and in the East End neighborhood to characterize the system capacity; optimize placement of wireless nodes; study the effects of traffic and channel characteristics on system-wide performance; and plan deployment of additional nodes to extend the coverage area.
ELEC 439 - DATA SCIENCE AND DYNAMICAL SYSTEMS
Short Title: DATA AND SYSTEMS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: In many applications one is faced with the task of simulating or controlling complex dynamical systems. Such applications include for instance, weather prediction, air quality management, VLSI chip design, molecular dynamics, active noise reduction, chemical reactors, etc. In all these cases complexity manifests itself as the number of first order differential equations which arise. Model (order) reduction (MOR) seeks to replace a large-scale system described in terms of differential or difference equations by a system of much lower dimension that has nearly the same response characteristics. The ensuing methods have been an indispensable tool for speeding up the simulations arising in various engineering applications involving large-scale dynamical systems. In this course we will develop the underlying approximation theory paying particular attention to its data-driven aspects. Graduate/Undergraduate Equivalency: ELEC 519. Recommended Prerequisite(s): ELEC 301 OR MATH 355 OR CAAM 335 Mutually Exclusive: Cannot register for ELEC 439 if student has credit for ELEC 519.

ELEC 440 - ARTIFICIAL INTELLIGENCE
Short Title: ARTIFICIAL INTELLIGENCE
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 310 and (STAT 310 or ECON 307 or ECON 382 or STAT 312 or STAT 331 or ELEC 331 or ELEC 303) and (MATH 354 or MATH 355 or CAAM 335)
Description: This is a foundational course in artificial intelligence, the discipline of designing intelligent agents. The course will cover the design and analysis of agents that do the right thing in the face of limited information and computational resources. The course revolves around two main questions: how agents decide what to do, and how they learn from experience. Tools from computer science, probability theory, and game theory will be used. Interesting examples of intelligent agents will be covered, including poker playing programs, bots for various games (e.g. WoW), DS1 – the spacecraft that performed an autonomous flyby of Comet Borrely in 2001, Stanley – the Stanford robot car that won the Darpa Grand Challenge, Google Maps and how it calculates driving directions, face and handwriting recognizers, FedEx package delivery planners, airline fare prediction sites, and fraud detectors in financial transactions. Cross-list: COMP 440. Graduate/Undergraduate Equivalency: ELEC 557. Mutually Exclusive: Cannot register for ELEC 440 if student has credit for ELEC 557.
Course URL: www.owlnet.rice.edu/~comp440

ELEC 441 - COMPUTATIONAL IMAGING
Short Title: COMPUTATIONAL IMAGING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A upper-level introduction to imaging systems as an integral part of the sense-process-decide-act cycle. This cycle is central to the operation of any goal-directed system, biological or engineered. Students will gain a basic understanding of the mechanisms by which information about a scene is encoded on an electro-magnetic wave. Furthermore, the students will learn to analyze the information extraction process realized via the imaging chain of front-end optics, transduction, and post-processing. The objective of the course is to understand the limits of modern image formation and how optics, photonic-to-electronic transduction, and post-detection processing can be jointly designed to enable imagers with unique capabilities. Graduate/Undergraduate Equivalency: ELEC 579.

ELEC 442 - INTRODUCTION TO ANALOG INTEGRATED CIRCUITS
Short Title: ANALOG INTEGRATED CIRCUITS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 242
Description: There has been growing interest in analog computing in both academia and industry in the era of artificial intelligence. This course provides a comprehensive introduction to various aspects of modern analog integrated circuits. Students will learn how to 1) analyze, simulate and design a complementary metal oxide semiconductor (CMOS) analog integrated circuit, 2) analyze and simulate elementary transistor stages, current mirrors, supply- and temperature-independent bias and reference circuits, and 3) explore performance evaluation using computer-aided design tools. Graduate/Undergraduate Equivalency: ELEC 516. Mutually Exclusive: Cannot register for ELEC 442 if student has credit for ELEC 516.
ELEC 446 - MOBILE DEVICE APPLICATIONS PROJECT
Short Title: MOBILE DEVICE APPLICATIONS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Connected mobile devices require updated programming models and design concepts to take advantage of their capabilities. We will explore applications primarily on the Apple iPhone and iPad but will also cover smart watches, Google Android and intelligent voice assistants like Amazon Echo and Google Home. We will briefly touch on the development of web services to support mobile applications. The course culminates with a large project taking up most of the second half of the semester. Although the curriculum centers around and teaches iOS and Xcode, final projects may be completed in any major mobile system including Android and Alexa, etc. Cross-list: COMP 446. Recommended Prerequisite(s): COMP 310 or prior Object Oriented Programming experience highly recommended.

ELEC 447 - INTRODUCTION TO COMPUTER VISION
Short Title: INTRO TO COMPUTER VISION
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 301 or ELEC 475 or COMP 314 or ELEC 322 or COMP 330
Description: An introduction to the basic concepts, algorithms and applications in computer vision. Topics include: cameras, camera models and imaging pipeline, low-level vision/image processing methods such as filtering and edge detection; mid-level vision topics such as segmentation and clustering; shape reconstruction from stereo, introduction to high-level vision tasks such as object recognition and face recognition. The course will involve programming and implementing basic computer vision algorithms in Matlab. Cross-list: COMP 447. Graduate/Undergraduate Equivalency ELEC 546. Mutually Exclusive: Cannot register for ELEC 447 if student has credit for ELEC 345/ELEC 546.

ELEC 450 - ALGORITHMIC ROBOTICS
Short Title: ALGORITHMIC ROBOTICS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (COMP 221 or COMP 321) and COMP 215
Description: Robots have fascinated people for generations. Today, robots are built for applications as diverse as exploring remote planets, de-mining war zones, cleaning toxic waste, assembling cars, inspecting pipes in industrial plants and mowing lawns. Robots are also interacting with humans in a variety of ways: robots are museum guides, robots assist surgeon sin life threatening operations, and robotic cars can drive us around. The field of robotics studies not only the design of new mechanisms but also the development of artificial intelligence frameworks to make these mechanism useful in the physical world, integrating computer science, engineering, mathematics and more recently biology and sociology, in a unique way. This class will present fundamental algorithmic advances that enable today’s robots to move in real environments and plan their actions. It will also explore fundamentals of the field of Artificial Intelligence through the prism of robotics. The class involves a significant programming project. Cross-list: COMP 450, MECH 450. Graduate/Undergraduate Equivalency: ELEC 550. Mutually Exclusive: Cannot register for ELEC 450 if student has credit for ELEC 550.

ELEC 460 - PHYSICS OF SENSOR MATERIALS AND NANOSENSOR TECHNOLOGY
Short Title: PHYSICS OF SENSORS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 261 and ELEC 305
Description: Topics covered include MEMS, MOEMS, and NEMS systems along with special materials such as liquid crystals, piezoelectrics, memory metal, and topological insulators. Graduate/Undergraduate Equivalency: ELEC 560. Mutually Exclusive: Cannot register for ELEC 460 if student has credit for ELEC 560.

ELEC 461 - SOLID STATE PHYSICS
Short Title: SOLID STATE PHYSICS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Junior or Senior. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 261
Description: This is a course for juniors and seniors whose specialization is in photonics, electronics, and nanoengineering. This course will provide an introduction to elementary topics in solid state physics, including free electron Fermi gas, crystal structure, reciprocal lattice, lattice vibrations, electronic band structure, Bloch electron dynamics, superconductivity, magnetism, and optical properties.

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ELEC 462 - OPTOELECTRONIC DEVICES
Short Title: OPTOELECTRONIC DEVICES
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 305
Description: This course provides an introduction to the fundamental principles of semiconductor optoelectronic devices. After reviewing the basic elements of quantum mechanics of electrons and photons, light-matter interaction (including laser oscillations), and semiconductor physics (band structure, heterostructures and alloys, optical processes), we will study the details of modern semiconductor devices for the generation, detection, and modulation of light. Graduate/Undergraduate Equivalency: ELEC 562. Mutually Exclusive: Cannot register for ELEC 462 if student has credit for ELEC 562.
Course URL: www.ece.rice.edu/~kono/ELEC462.html (http://www.ece.rice.edu/~kono/ELEC462.html)

ELEC 475 - LEARNING FROM SENSOR DATA
Short Title: LEARNING FROM SENSOR DATA
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The first half of this course develops the basic machine learning tools for signals images, and other data acquired from sensors. Tools covered include principal components analysis, regression, support vector machines, neural networks, and deep learning. The second half of this course overviews a number of applications of sensor data science in neuroscience, image and video processing, and machine vision. Graduate/Undergraduate Equivalency: ELEC 575. Mutually Exclusive: Cannot register for ELEC 475 if student has credit for ELEC 575.

ELEC 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

ELEC 478 - INTRODUCTION TO MACHINE LEARNING
Short Title: INTRO TO MACHINE LEARNING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (STAT 405 or CAAM 210 or COMP 140) and (CAAM 335 or MATH 355)
Description: The course provides an introduction to concepts, methods, best practices, and theoretical foundations of machine learning. Topics covered include regression, classification, kernels, clustering, decision trees, ensemble learning, empirical risk minimization and regularization, and learning theory. Graduate/Undergraduate Equivalency: ELEC 578. Recommended Prerequisite(s): ELEC 301 and ELEC 475. Mutually Exclusive: Cannot register for ELEC 478 if student has credit for DSCI 303.

ELEC 481 - COMPUTATIONAL NEUROSCIENCE AND NEURAL ENGINEERING
Short Title: COMP/NEUROSCIENCE/NEURAL ENGNR
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An introduction to the anatomy and physiology of the brain. Includes basic electrophysiology of nerve and muscle. Develops mathematical models of neurons, synaptic transmission and natural neural networks. Leads to a discussion of neuromorphic circuits which can represent neuron and neural network behavior in silicon. Recommended: Knowledge of electrical circuits, operational amplifier circuits and ordinary differential equations. Involves programming Matlab. Cross-list: BIOE 481, NEUR 481. Graduate/Undergraduate Equivalency: ELEC 583. Recommended Prerequisite(s): Knowledge of basic electrical and operational amplifier circuits; and ordinary differential equations. Mutually Exclusive: Cannot register for ELEC 481 if student has credit for ELEC 583.

ELEC 482 - PHYSIOLOGICAL CONTROL SYSTEMS
Short Title: PHYSIOLOGICAL CONTROL SYSTEMS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A study of the somatic and autonomic nervous system control of biological systems. Simulation methods, as well as, techniques common to linear and nonlinear control theory are used. Also included is an introduction to sensors and instrumentation techniques. Examples are taken from the cardiovascular, respiratory, and visual systems. Cross-list: BIOE 482. Graduate/Undergraduate Equivalency: ELEC 582. Recommended Prerequisite(s): Knowledge of basic electrical and operational amplifier circuits; and ordinary differential equations. Mutually Exclusive: Cannot register for ELEC 482 if student has credit for ELEC 582.
## ELEC 483 - MACHINE LEARNING AND SIGNAL PROCESSING FOR NEURO ENGINEERING

**Short Title:** NEURAL SIGNAL PROCESSING  
**Department:** Electrical & Computer Eng.  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** (MATH 354 or MATH 355 or CAAM 335) and (ELEC 303 or STAT 305 or STAT 310 or ECON 307) and (CAAM 210 or COMP 140)  
**Description:** This course covers advanced statistical signal processing and machine learning approaches for modern neuroscience data (primarily many-channel spike trains). Topics include latent variable models, point processes, Bayesian inference, dimensionality reduction, dynamical systems, and spectral analysis. Neuroscience applications include modeling neural firing rates, spike sorting, decoding. Graduate/Undergraduate Equivalency: ELEC 548. Recommended Prerequisite(s): ELEC 475 and STAT 413 and COMP 540 and (ELEC 242 or ELEC 243)  
**Restrictions:** Cannot register for ELEC 483 if student has credit for ELEC 548.

## ELEC 484 - FUNDAMENTALS OF HUMAN NEUROIMAGING

**Short Title:** HUMAN NEUROIMAGING  
**Department:** Electrical & Computer Eng.  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Course Level:** Undergraduate Upper-Level  
**Description:** A survey of methods and results for human brain imaging. Describes the physical and physiological mechanisms of image formation. Provides examples from clinical and basic research, particularly in visual cortex. Emphasis on magnetic resonance imaging, but surveys other imaging modalities including PET, optical, and EEG/MEG source localization. Course taught at Baylor College of Medicine. Cross-list: NEUR 430. Graduate/Undergraduate Equivalency: ELEC 584.  
**Restrictions:** Cannot register for ELEC 484 if student has credit for ELEC 584.

## ELEC 485 - FUNDAMENTALS OF MEDICAL IMAGING I

**Short Title:** FUND MEDICAL IMAGING I  
**Department:** Electrical & Computer Eng.  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course will introduce basic principles of image acquisition, formation and processing of several medical imaging modalities such as X-Ray, CT, MRI, and US that are used to evaluate the human anatomy. The course also includes visits to a clinical site to gain experience with the various imaging modalities covered in class. Cross-list: BIOE 485, COMP 485. Graduate/Undergraduate Equivalency: ELEC 585. Recommended Prerequisite(s): MATH 211 and MATH 212.  
**Restrictions:** Cannot register for ELEC 485 if student has credit for ELEC 585.

## ELEC 486 - FUNDAMENTALS OF MEDICAL IMAGING II

**Short Title:** FUND MEDICAL IMAGING II  
**Department:** Electrical & Computer Eng.  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** ELEC 485 or BIOE 485 or COMP 485  
**Description:** This course focuses on functional imaging modalities used specifically in nuclear medicine such as Gamma cameras, SPECT, and PET imaging. The course will introduce the basic principles of image acquisition, formation, processing and the clinical applications of these imaging modalities and lays the foundations for understanding the principles of radiotracer kinetic modeling. A trip to a clinical site is also planned to gain experience with nuclear medicine imaging. Cross-list: BIOE 486, COMP 486. Graduate/Undergraduate Equivalency: ELEC 586.  
**Restrictions:** Cannot register for ELEC 486 if student has credit for ELEC 586.

## ELEC 488 - THEORETICAL NEUROSCIENCE: FROM CELLS TO LEARNING SYSTEMS

**Short Title:** THEORETICAL NEUROSCIENCE  
**Department:** Electrical & Computer Eng.  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Course Level:** Undergraduate Upper-Level  
**Description:** We present the theoretical foundations of cellular and systems neuroscience from distinctly quantitative point of view. We develop the mathematical and computational tools as they are needed to model, analyze, visualize and interpret a broad range of experimental data. Cross-list: CAAM 415, NEUR 415. Graduate/Undergraduate Equivalency: ELEC 588. Recommended Prerequisite(s): CAAM 210 or MATH 211 or CAAM 335 or MATH 355.  
**Restrictions:** Cannot register for ELEC 488 if student has credit for ELEC 588.
ELEC 489 - NEURAL COMPUTATION
Short Title: NEURAL COMPUTATION
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level
Description: How does the brain work? Understanding the brain requires sophisticated theories to make sense of the collective actions of billions of neurons and trillions of synapses. Word theories are not enough; we need mathematical theories. The goal of this course is to provide an introduction to the mathematical theories of learning and computation by neural systems. These theories use concepts from dynamical systems (attractors, oscillations, chaos) and concepts from statistics (information, uncertainty, inference) to relate the dynamics and functions of neural networks. We will apply these theories to sensory computation, learning and memory, and motor control. Students will learn to formalize and mathematically answer questions about neural computations, including “what does a network compute?”, “how does it compute?”, and “why does it compute that way?” Prerequisites: knowledge of calculus, linear algebra, and probability and statistics. Cross-list: CAAM 416, NEUR 416. Graduate/Undergraduate Equivalency: ELEC 589. Mutually Exclusive: Cannot register for ELEC 489 if student has credit for ELEC 589.

ELEC 490 - UNDERGRADUATE ELECTRICAL ENGINEERING RESEARCH PROJECTS
Short Title: UG ELEC ENG'G RES PROJECTS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level
Description: Theoretical and experimental investigations under staff direction. A research project plan should be prepared and approved by the faculty member advising the project. Information about ELEC 490 project plans is available on the ECE Web site on the Academics section under ECE forms. May be repeated for a total of 6 credit hours for undergraduates. Instructor Permission Required. Repeatable for Credit.

ELEC 491 - UNDERGRADUATE ELECTRICAL ENGINEERING RESEARCH PROJECTS - VERTICALLY INTEGRATED PROJECTS
Short Title: UG ELEC ENG'G RESEARCH VIP
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level
Description: Vertically Integrated Projects (VIP) teams include students from multiple years working on one larger, multi-year project defined by the instructor. Students participating in VIP for 3 or more semesters may be eligible for the Distinction in Research and Creative Work graduation award. Instructor Permission Required. Graduate/Undergraduate Equivalency: ELEC 591. Mutually Exclusive: Cannot register for ELEC 491 if student has credit for ELEC 591. Repeatable for Credit.

ELEC 494 - SENIOR DESIGN
Short Title: SENIOR DESIGN
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level
Description: Senior Design is a year-long course required of all BSEE-degree students. In order to fulfill the BSEE degree requirements, students must register for ELEC 494 for both fall and spring semesters of the same academic year. The course is taught in conjunction with the Senior Design courses in BioEngineering and in Mechanical Engineering and Materials Science. Teams of students will design, construct, and document a prototype system to meet specifications determined by the team and the instructor. Senior design projects are the culmination of the Rice engineering experience. Cross-departmental projects are allowed and encouraged, and extensive use will be made of the Oshman Engineering Design Kitchen. Many projects will involve advisors from industrial affiliates. Throughout the year there will be several opportunities for presentations on the project. Top projects will be eligible for several awards from within Rice and outside the university, including some nation-wide competitions. Instructor Permission Required. Repeatable for Credit.

ELEC 495 - TRANSFER CREDIT - SENIOR
Short Title: TRANSFER CREDIT - SENIOR
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Transfer
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level
Description: This course is intended for transfer credit for courses not offered at Rice. Permission of ECE Undergraduate Committee and review by faculty in related specialization area is required. ELEC 495 is for Senior level ECE Specialization course credit. Department Permission Required. Repeatable for Credit.

ELEC 497 - DESIGN OF ANALOG PRINTED CIRCUIT BOARDS
Short Title: ANALOG PRINTED CIRCUIT BOARDS
Department: Electrical & Computer Eng.
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 494 (may be taken concurrently) or BIOE 451 (may be taken concurrently) or MECH 407 (may be taken concurrently)
Description: This course covers the basics of designing, fabricating, and testing daughter cards for microcontrollers such as the Arduino. Using PCB design software such as Eagle, students will design, fabricate, and test their printed circuit board. Prerequisites may be taken concurrently.
ELEC 498 - INTRODUCTION TO ROBOTICS
Short Title: INTRODUCTION TO ROBOTICS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 354 or MATH 355 or CAAM 335
Description: The course will provide the student with a mathematical introduction to many of the key ideas used in today's intelligent robot systems. The focus of the course is on the analysis and control of manipulators. The course will also give an overview of common approaches to building intelligent robot systems. Cross-list: COMP 498, MECH 498. Graduate/Undergraduate Equivalency: ELEC 598. Recommended Prerequisite(s): MECH 211 or CEVE 211 or MECH 310
Mutually Exclusive: Cannot register for ELEC 498 if student has credit for ELEC 598.

ELEC 502 - NEURAL MACHINE LEARNING I
Short Title: NEURAL MACHINE LEARNING I
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Review of major neural machine learning (Artificial Neural Network) paradigms. Analytical discussion of supervised and unsupervised neural learning algorithms and their relation to information theoretical methods. Practical applications to data analysis such as pattern recognition, clustering, classification, function approximation/ regression, non-linear PCA, projection pursuit, independent component analysis, with lots of examples from image and digital processings. Details are posted at www.ece.rice.edu/~erzsebet/ANNcourse.html. Cross-list: COMP 502, STAT 502. Recommended Prerequisite(s): ELEC 430 and ELEC 431 or equivalent or permission of instructor.
Course URL: www.ece.rice.edu/~erzsebet/ANNcourse.html (http://www.ece.rice.edu/~erzsebet/ANNcourse.html)

ELEC 507 - NON LINEAR DYNAMIC SYSTEMS ANALYSIS
Short Title: NONLINEAR DYNAMIC SYSTEMS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Analytical methods for the study of nonlinear systems are introduced, including singular point and phase plane analysis, the describing function technique, Lyapunov and Lagrangian state functions, stability analysis, bifurcation analysis, and chaotic behavior in nonlinear dynamic systems. As a substrate for the study of nonlinear systems, numerical analysis of ordinary and partial differential equations, boundary value problems, simulation methods, parameter estimation and sensitivity analysis methods are also included.

ELEC 508 - NONLINEAR SYSTEMS: ANALYSIS AND CONTROL
Short Title: NONLINEAR SYSTEM
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

ELEC 510 - SECURE AND CLOUD COMPUTING
Short Title: SECURE & CLOUD COMPUTING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 327 or COMP 427 or COMP 541 or COMP 429 or COMP 556 or ELEC 429 or ELEC 556 or COMP 421 or COMP 521 or ELEC 421 or COMP 552 or ELEC 437 or COMP 539
Description: What is “cloud computing?” How do we build cloud-scale systems and components that are secure against malicious attacks, and scale to millions of users? Many of today’s services run inside the cloud – a set of geographically distributed data centers running heterogeneous software stacks. Cloud systems must scale across tens of thousands of machines, support millions of concurrent requests, and they must do so with high security guarantees. This course will start with the fundamentals of cloud computing, introduce key techniques in building scalable and secure systems and expose students to state-of-the-art research advances as well as emerging security threats and defenses in today’s cloud systems. Cross-list: COMP 536. Mutually Exclusive: Cannot register for ELEC 510 if student has credit for ELEC 410.

ELEC 511 - DESIGN AND ANALYSIS OF SECURE EMBEDDED SYSTEMS FOR IoT ERA
Short Title: SECURE EMBEDDED SYS FOR IoT T
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course emphasizes the security of small embedded devices that are central to the Internet of Things (IoT) Era. We discuss the practical security attacks, challenges, constraints, and opportunities that arise in the IoT domain. Covered topics include security engineering, real world attacks, practical and side channel attacks, and hands-on lab/ projects. Cross-list: COMP 508. Repeatable for Credit.
ELEC 512 - GRADUATE DESIGN AND ANALYSIS OF ALGORITHMS
Short Title: GR DESGN ANALY OF ALGORITHMS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 310 or ECON 307 or STAT 331 or ELEC 331 or ELEC 303 or STAT 312
Description: Methods for designing and analyzing computer algorithms and data structures. The focus of this course will be on the theoretical and mathematical aspects of algorithms and data structures. Cross-list: COMP 582.

ELEC 513 - COMPLEXITY IN MODERN SYSTEMS
Short Title: COMPLEXITY IN MODERN SYSTEMS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A modern computer is a system with enormous complexity in both software and hardware. The course presents the principles for managing such complexity using examples from modern computing systems. It covers emergent issues from system complexity such as energy efficiency, bug finding, and heterogeneous hardware. It also covers designing experiments and writing systems papers. The course consists of lectures, student presentation of classic papers, and a final project. Cross-list: COMP 513.

ELEC 514 - WIRELESS INTEGRATED CIRCUITS AND SYSTEMS
Short Title: WIRELESS IC
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics covered include system architectures for modern wireless transceivers and transistor-level design considerations for circuit building blocks (low noise amplifier, mixer, power amplifier, etc.) in a wireless transceiver. Recommended Prerequisite(s): ELEC 305, ELEC 342, or Equivalent Courses with the Key Concepts Listed Below • Transistor-level CMOS analog circuits (basic configurations, small signal models, parasitic effects) • Frequency response of transistor-level CMOS circuits (pole/zero calculations) • Frequency response of simple passive networks (1st order and 2nd order RLC networks) • Noise analysis of transistor-level CMOS circuits (noise sources in CMOS transistors, input referred voltage/current noise for CMOS transistor-level circuits)

ELEC 515 - MACHINE LEARNING FOR RESOURCE-CONSTRAINED PLATFORMS
Short Title: EMBEDDED MACHINE LEARNING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Machine learning is in tremendous demand in numerous applications; however, its often prohibitive complexity remains a major challenge for its extensive deployment in resource constrained platforms. This course will introduce techniques which enable the development of energy/time efficient machine learning systems, taking a path from algorithm to architecture down to the circuit level. In particular, you will first learn commonly used machine learning algorithms, and then algorithm-, architecture-, circuit-level techniques for reducing the energy/time cost of machine learning systems while maintaining their powerful performance. Finally, we will do a deep dive into state-of-the-art efficient machine learning systems, such as Google's TPU and Eyeriss.
Course URL: http://yl150.web.rice.edu/course2019fall_home.html

ELEC 516 - ANALOG INTEGRATED CIRCUITS
Short Title: ANALOG INTEGRATED CIRCUITS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course provides a comprehensive introduction to various aspects of modern analog integrated circuits. Students will learn how to 1) analyze, simulate and design a complementary metal oxide semiconductor (CMOS) analog integrated circuit, 2) analyze and simulate elementary transistor stages, current mirrors, supply- and temperature-independent bias and reference circuits, and 3) explore performance evaluation using computer-aided design tools. Graduate/Undergraduate Equivalency: ELEC 516. Mutually Exclusive: Cannot register for ELEC 442 if student has credit for ELEC 516. Graduate/Undergraduate Equivalency: ELEC 442. Mutually Exclusive: Cannot register for ELEC 516 if student has credit for ELEC 442.

ELEC 517 - MICROWAVE ENGINEERING
Short Title: MICROWAVE ENGINEERING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics covered include transmission line, Smith Chart, scattering parameters, impedance matching, passive microwave circuits (power divider, coupler, 180° hybrid, filter), and antenna design fundamentals. Graduate/Undergraduate Equivalency: ELEC 411. Mutually Exclusive: Cannot register for ELEC 517 if student has credit for ELEC 411.
ELEC 519 - DATA SCIENCE AND DYNAMICAL SYSTEMS
Short Title: DATA AND SYSTEMS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In many applications one is faced with the task of simulating or controlling complex dynamical systems. Such applications include for instance, weather prediction, air quality management, VLSI chip design, molecular dynamics, active noise reduction, chemical reactors, etc. In all these cases complexity manifests itself as the number of first order differential equations which arise. Model (order) reduction (MOR) seeks to replace a large-scale system described in terms of differential or difference equations by a system of much lower dimension that has nearly the same response characteristics. The ensuing methods have been an indispensable tool for speeding up the simulations arising in various engineering applications involving large-scale dynamical systems. In this course we will develop the underlying approximation theory paying particular attention to its data-driven aspects. Additional coursework required beyond the undergraduate course requirements Graduate/Undergraduate Equivalency: ELEC 439. Mutually Exclusive: Cannot register for ELEC 519 if student has credit for ELEC 439.

ELEC 520 - DISTRIBUTED SYSTEMS
Short Title: DISTRIBUTED SYSTEMS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Course URL: www.cs.rice.edu/~alc/comp520/ (http://www.cs.rice.edu/~alc/comp520/)

ELEC 521 - ADVANCED DIGITAL INTEGRATED CIRCUITS DESIGN
Short Title: ADV DIGITAL IC DESIGN
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course addresses advanced issues in custom digital IC design. Topics range from physical-level analysis and modeling of new devices, interconnect, and power supply, to circuit-level design techniques for low power and high performance, to application-oriented digital circuits/systems for security and machine learning. Recommended Prerequisite(s): ELEC 326/COMP 326 or ELEC 342 or Digital Circuit Courses.

ELEC 522 - ADVANCED VLSI DESIGN
Short Title: ADV VLSI DESIGN
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Design and analysis of algorithm-specific VLSI processor architectures. Topics include the implementation of pipelined and systolic processor arrays. Techniques for mapping numerical algorithms onto custom processor arrays. Course includes design project using high-level VLSI synthesis tools.
Course URL: www.owlnet.rice.edu/~elec522 (http://www.owlnet.rice.edu/~elec522/)

ELEC 524 - MOBILE AND WIRELESS NETWORKING
Short Title: MOBILE AND WIRELESS NETWORKING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 429 or ELEC 429
Description: Study of network protocols for mobile and wireless networking, particularly at the media access control, network, and transport protocol layers. Focus is on the unique problems and challenges presented by the properties of wireless transmission and host or router mobility. Cross-list: COMP 524. Recommended Prerequisite(s): COMP 421 OR ELEC 421.

ELEC 525 - VIRTUALIZATION AND CLOUD RESOURCE MANAGEMENT
Short Title: VIRTUAL & CLOUD RESOURCE MGMT
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (ELEC 425 or COMP 425)

ELEC 526 - HIGH PERFORMANCE COMPUTER ARCHITECTURE
Short Title: HIGH PERFORMANCE COMPUTER ARCH
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Design of high performance computer systems, including shared-memory and message-passing multiprocessors and vector systems. Hardware and software techniques to tolerate and reduce memory and communication latency. Case studies and performance simulation of high-performance systems. Cross-list: COMP 526. Recommended Prerequisite(s): ELEC 425 or COMP 425
ELEC 527 - VLSI SYSTEMS DESIGN
Short Title: VLSI SYSTEMS DESIGN
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A study of VLSI technology and design. MOS devices, Characteristics and fabrication. Logic design and implementation. VLSI design methodology, circuit simulation and verification. Additional course work required beyond the undergraduate course requirement. Graduate/Undergraduate Equivalency: ELEC 422. Mutually Exclusive: Cannot register for ELEC 527 if student has credit for ELEC 422.

ELEC 528 - SECURITY TOPICS OF EMBEDDED SYSTEMS
Short Title: EMBEDDED HW SYSTEMS SECURITY
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course covers wide range of topics pertaining to security of Hardware Embedded systems, including cryptographic processors, secure memory access, hardware IT protection by monitoring and watermarking FPGA security, physical and side-charmed attacks, Trojan horses. Cross-list: COMP 538. Repeatable for Credit.
Course URL: www.ece.rice.edu/~fk1/ (http://www.ece.rice.edu/~fk1/)

ELEC 529 - ADVANCED COMPUTER NETWORKS
Short Title: ADVANCED COMPUTER NETWORKS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 429 or ELEC 429
Description: This course explores advanced solutions in computer networks that are driven by the need to go beyond the best-effort capabilities of the Internet. Topics include network fault tolerance, traffic engineering, scalable data center network architectures, network support for big data processing, network support for cloud computing, extensible network control via software defined networking, denial-of-service-attack defense mechanisms. Readings from original research papers. Also include design project and oral presentation components. This course assumes students already have a good understanding of the best-effort Internet. Cross-list: COMP 529. Repeatable for Credit.
Course URL: www.clear.rice.edu/comp529/ (http://www.clear.rice.edu/comp529/)

ELEC 530 - DETECTION THEORY
Short Title: DETECTION THEORY
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Classic and modern methods of optimal decisions in communications and signal processing. Continuous- and discrete-time methods. Gaussian and non-Gaussian problems.

ELEC 531 - STATISTICAL SIGNAL PROCESSING
Short Title: STATISTICAL SIGNAL PROCESSING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Statistical models for single- and multi-channel signals. Optimal detection and estimation solutions for Gaussian and non-Gaussian environments. Recommended Prerequisite(s): ELEC 533 and knowledge of digital signal processing at the level of ELEC 431

ELEC 532 - INTRODUCTION TO ENERGY-EFFICIENT MECHATRONICS
Short Title: INTRO MECHATRONICS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to electromechanical systems, focusing on motor mechanics, electric drives & electronics, & modern digital control algorithms. Covers basic principles of electromechanical energy conversion & motor control. Students are introduced to energy efficiency considerations of modern electric drives. Includes hands-on laboratory projects involving digital computer control of various motor types. Additional coursework required beyond the undergraduate course requirements. Cross-list: MECH 535. Graduate/Undergraduate Equivalency: ELEC 435. Mutually Exclusive: Cannot register for ELEC 532 if student has credit for ELEC 435.

ELEC 533 - INTRODUCTION TO RANDOM PROCESSES AND APPLICATIONS
Short Title: INTRO RANDOM PROCESSES & APPL
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Review of basic probability; Sequences of random variables; Random vectors and estimation; Basic concepts of random processes; Random processes in linear systems; expansions of random processes; Wiener filtering; Spectral representation of random processes, and white-noise integrals. Cross-list: CAAM 583, STAT 583.
ELEC 534 - MOBILE BIO-BEHAVIORAL SENSING
Short Title: MOBILE BIO-BEHAVIORAL SENSING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In the next-generation of devices, designed for diverse fields as healthcare and education, the devices will understand the human user. At the core of this understanding will be data that is gathered from a new class of sensors, that can measure both biological and behavioral markers. This course introduces the fundamentals of bio- and behavioral sensing. Additional coursework required beyond the undergraduate course requirements. Graduate/Undergraduate Equivalency: ELEC 432. Mutually Exclusive: Cannot register for ELEC 534 if student has credit for ELEC 432.

ELEC 535 - INFORMATION THEORY
Short Title: INFORMATION THEORY
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to information theory concepts; basic theorems of channel coding and source coding with a fidelity criterion. The course material requires background of a first course in probability, like Rice ELEC 303.

ELEC 536 - ARCHITECTURE FOR WIRELESS COMMUNICATIONS
Short Title: ARCH - WIRELESS COMMUNICATIONS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is an FPGA laboratory course. Students will embark upon a detailed study and implementation of digital communications systems. Major functional blocks of end-to-end wireless communication systems will be discussed, built, and tested in hardware. Course will also cover analysis and design of communication systems, especially modulation, demodulation and detection. Students will benefit from a combined theory-lab approach to communications and work in groups on weekly lab assignments and a major semester project. Graduate/Undergraduate Equivalency: ELEC 433. Mutually Exclusive: Cannot register for ELEC 536 if student has credit for ELEC 433.

ELEC 537 - COMMUNICATION NETWORKS
Short Title: COMMUNICATION NETWORKS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate-level introduction to design and analysis of communication networks. Topics include wireless networks, medium access, routing, traffic modeling, congestion control, and scheduling. Cross-list: MECH 537.

ELEC 538 - ADVANCED TOPICS IN COMPUTER NETWORKING
Short Title: ADV TOP COMPUTER NETWORKING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced topics in next generation mobile and wireless networks.

ELEC 539 - INTRODUCTION TO COMMUNICATION NETWORKS
Short Title: INTRO TO COMMUNICATION NETWORK
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to design and analysis of communication networks. Topics include wireless networks, media access, routing traffic modeling, congestion control, and scheduling. Additional coursework required beyond the undergraduate course requirements. Graduate/Undergraduate Equivalency: ELEC 437. Mutually Exclusive: Cannot register for ELEC 539 if student has credit for ELEC 437.

ELEC 540 - ADVANCED WIRELESS COMMUNICATIONS
Short Title: ADVANCED WIRELESS COMM
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Course will teach advanced techniques in wireless, e.g. MIMO, Massive MIMO, Full-duplex and Coordinated Multi-point. The focus will be on both the theoretical foundations and practical use in actual systems, explored with a combination of lectures, homeworks, data-driven evaluations and mini-projects. Recommended Prerequisite(s): ELEC 430 or ELEC 551 or ELEC 535.

ELEC 541 - ERROR CORRECTING CODES
Short Title: ERROR CORRECTING CODES
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ELEC 430
Description: Introductory course on error correcting codes. Topics covered include linear block codes, convolutional codes, turbo codes and LDPC codes.
ELEC 542 - THE APPLICATION OF VECTOR SPACE METHODS AND OTHER ADVANCED TECHNIQUES TO DSP
Short Title: VECTOR SPACES AND DSP
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ELEC 431 (may be taken concurrently)
Description: The course will introduce the application of vector space methods to digital signal processing. This includes topics such as representing a signal using basis expansions, Gram-Schmidt orthogonalization, linear inverse problems, gradient-descent, the use of regularization in approximation, and other advanced topics. The course may be taken in the same semester as ELEC 431.

ELEC 543 - ADVANCED HIGH-SPEED SYSTEM DESIGN
Short Title: ADV H-S SYSTEM DESIGN
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers practical aspects of high-speed system design, highlights system design and simulation challenges, and demonstrates common pitfalls and how to prevent them. In this course, students will learn how to design, do gigahertz speed PCB layout, simulate (spice and Hyperlynx), and apply good design practices to minimize both component and system noise and to ensure system design success. Additional coursework required beyond the undergraduate course requirements. Graduate/Undergraduate Equivalency: ELEC 434. Recommended Prerequisite(s): Knowledge of mixed analog/digital circuits, active filters and transmission line theories. Mutually Exclusive: Cannot register for ELEC 543 if student has credit for ELEC 434.

ELEC 544 - ADVANCED DSP
Short Title: ADVANCED DSP
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course will cover advanced topics in FIR and IIR digital filter design, advanced topics in signal processing algorithms, especially in FFTs and high speed convolution and correlation, and in wavelet based signal processing and the discrete wavelet transform. The course will be one-half lecture based and one-half project based.

ELEC 545 - THIN FILMS
Short Title: THIN FILMS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Deposition methods, structure, properties, performance and failure mechanisms of thin solid films for various applications. Deposition methods include sputtering, plating, evaporation and chemical vapor deposition. Material types include crystalline and amorphous metals as well as semiconductors and insulators. Applications are primarily in microelectronics; data storage; micro-electro-mechanical systems, wear and corrosion prevention and thermal barriers. NOTE: Not offered every year. Cross-list: MSNE 545.

ELEC 546 - INTRODUCTION TO COMPUTER VISION
Short Title: INTRO TO COMPUTER VISION
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An introduction to the basic concepts, algorithms and applications in computer vision. Topics include: cameras, camera models and imaging pipeline, low-level vision/image processing methods such as filtering and edge detection; mid-level vision topics such as segmentation and clustering; shape reconstruction from stereo, introduction to high-level vision tasks such as object recognition and face recognition. The course will involve programming and implementing basic computer vision algorithms in Matlab. Additional coursework required beyond the undergraduate course requirements. Additional coursework required beyond the undergraduate requirements. Cross-list: COMP 546. Graduate/Undergraduate Equivalency: ELEC 447. Mutually Exclusive: Cannot register for ELEC 546 if student has credit for ELEC 447.

ELEC 547 - COMPUTER VISION
Short Title: COMPUTER VISION
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The goal of computer vision is to make sense of the three dimensional world from captured images and videos. This requires understanding how light interacts with objects in the environment and then captured by a camera. The goal is to solve problems such as estimating 3D shape of an environment (How does Kinect work?), how to detect and recognize people (How to build your own iPhoto?), detect and track how things move. The course provides an introduction to solving such problems using vision tools such as feature detection, image segmentation, motion estimation, image mosaics, 3D shape reconstruction, and object recognition.
ELEC 548 - MACHINE LEARNING AND SIGNAL PROCESSING FOR NEURO ENGINEERING
Short Title: NEURAL SIGNAL PROCESSING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers advanced statistical signal processing and machine learning approaches for modern neuroscience data (primarily many-channel spike trains). Topics include latent variable models, point processes, Bayesian inference, dimensionality reduction, dynamical systems, and spectral analysis. Neuroscience applications include modeling neural firing rates, spike sorting, decoding. Cross-list: BIOE 548. Graduate/Undergraduate Equivalency: ELEC 483. Mutually Exclusive: Cannot register for ELEC 548 if student has credit for ELEC 483.

ELEC 549 - COMPUTATIONAL PHOTOGRAPHY
Short Title: COMPUTATIONAL PHOTOGRAPHY
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Computational photography is an emerging field that aims to overcome the limitations of conventional digital imaging and display devices by using novel optics, signal processing and computer vision to perform more efficient and accurate measurement as well as produce more compelling and meaningful visualizations of the world around us. It is a convergence of many areas, such as optics, computer vision, computer graphics, image processing, photography, and so on. We will cover topics such as computational sensors with assorted pixel, mobile camera control, light field capture and rendering, computational flash photography, computational illumination for appearance acquisition and 3D reconstruction, reflectance transformation imaging, light transport analysis and novel displays.

ELEC 550 - ALGORITHMIC ROBOTICS
Short Title: ALGORITHMIC ROBOTICS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (COMP 221 or COMP 321) and COMP 215
Description: Robots have fascinated people for generations. Today, robots are built for applications as diverse as exploring remote planets, de-mining war zones, cleaning toxic waste, assembling cars, inspecting pipes in industrial plants and mowing lawns. Robots are also interacting with humans in a variety of ways: robots are museum guides, robots assist surgeon sin life threatening operations, and robotic cars can drive us around. The field of robotics studies not only the design of new mechanisms but also the development of artificial intelligence frameworks to make these mechanism useful in the physical world, integrating computer science, engineering, mathematics and more recently biology and sociology, in a unique way. This class will present fundamental algorithmic advances that enable today's robots to move in real environments and plan their actions. It will also explore fundamentals of the field of Artificial Intelligence through the prism of robotics. The class involves a significant programming project. Cross-list: COMP 550, MECH 550. Graduate/Undergraduate Equivalency: ELEC 450. Mutually Exclusive: Cannot register for ELEC 550 if student has credit for ELEC 450.

ELEC 551 - MODERN COMMUNICATION THEORY AND PRACTICE
Short Title: MODERN COMM. THEORY & PRACTICE
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is an upper-level course in digital communications, which is designed to prepare students for engineering work in high-tech industries and for graduate work in communications, signal processing, and computer systems. The course covers basic concepts and useful tools for design and performance analysis of transmitters and receivers in the physical layer of a communication system, including multiple antenna MIMO systems. A hands-on laboratory using a state-of-the-art radio testbed illustrates course concepts. Additional coursework required beyond the undergraduate course requirements. Mutually Exclusive: Cannot register for ELEC 551 if student has credit for ELEC 430. Graduate/Undergraduate Equivalency: ELEC 430. Mutually Exclusive: Cannot register for ELEC 551 if student has credit for ELEC 430.
ELEC 552 - OPERATING SYSTEMS AND CONCURRENT PROGRAMMING
Short Title: OP SYS/CONCURRENT PROGRAMMING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 215 and (COMP 221 or COMP 321)
Description: Introduction to the design, construction, and analysis of concurrent programs with an emphasis on operating systems, including filing systems, schedulers, and memory allocators. Specific attention is devoted to process synchronization and communication within concurrent programs. Additional coursework required beyond the undergraduate course requirements. Cross-list: COMP 521. Graduate/Undergraduate Equivalency: ELEC 421. Mutually Exclusive: Cannot register for ELEC 552 if student has credit for ELEC 421.
Course URL: www.ruf.rice.edu/~mobile/elec424/ (http://www.ruf.rice.edu/~mobile/elec424/)

ELEC 553 - MOBILE & EMBEDDED SYSTEM DESIGN AND APPLICATION
Short Title: MOBILE & EMBEDDED SYSTEM
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: ELEC 553 introduces mobile and embedded system design and applications to students and provides them hands-on design experience. It consists of three interlearning parts: lectures, student project, and student presentations. Additional coursework required beyond the undergraduate course requirements. Graduate/Undergraduate Equivalency: ELEC 424. Mutually Exclusive: Cannot register for ELEC 553 if student has credit for ELEC 424.
Course URL: www.ruf.rice.edu/~mobile/elec424/ (http://www.ruf.rice.edu/~mobile/elec424/)

ELEC 554 - COMPUTER SYSTEMS ARCHITECTURE
Short Title: COMPUTER SYSTEMS ARCHITECTURE
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Evolution of key architecture concepts found in advanced uniprocessor systems. Fundamental and advanced pipelining techniques and associated issues for improving processor performance. Illustrated with RISC processors such as the ARM processor. Examine several metrics for processor performance, such as Amdahl's law. Key concepts of data and program memory systems found in modern systems with memory hierarchies and caches. Perform experiments in cache performance analysis. Influence of technology trends, such as Moore's law, on processor implementation Approaches for exploiting instruction level parallelism, such as VLIW. Introduction to parallel and multicore architectures. Introduction to processor architectures targeted for embedded applications. Additional coursework required beyond the undergraduate course requirements. Cross-list: COMP 554. Graduate/Undergraduate Equivalency: ELEC 425. Mutually Exclusive: Cannot register for ELEC 554 if student has credit for ELEC 425.

ELEC 555 - ADVANCED DIGITAL HARDWARE DESIGN, IMPLEMENTATION, AND OPTIMIZATION
Short Title: ADV DIGITAL DESIGN & IMPLEMENT
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This graduate level course will investigate design and implementation of modern digital signal processing, machine learning, and security algorithms in hardware (including FPGAs and ASICs). Along with learning the principals of design, students will acquire hands-on experience in hardware implementation and the use of the hardware in modern applications including but not limited to mobile phones, biomedical devices, and smart cards. Emphasis is on digital processors, design implementation on FPGA/ASIC fabrics and testing real systems on board, architectures, control, functional units, and circuit topologies for increased performance and reduced circuit size and power dissipation. Additional coursework required beyond the undergraduate course requirements. Graduate/Undergraduate Equivalency: ELEC 427. Mutually Exclusive: Cannot register for ELEC 555 if student has credit for ELEC 427. Repeatable for Credit.

ELEC 556 - INTRODUCTION TO COMPUTER NETWORKS
Short Title: INTRO TO COMPUTER NETWORKS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 221 or COMP 321
ELEC 557 - ARTIFICIAL INTELLIGENCE
Short Title: ARTIFICIAL INTELLIGENCE
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 310 and (STAT 310 or ECON 307 or ECON 382 or STAT 312 or STAT 331 or ELEC 331 or ELEC 303) and (MATH 354 or MATH 355 or CAAM 335)
Description: This is a foundational course in artificial intelligence, the discipline of designing intelligent agents. The course will cover the design and analysis of agents that do the right thing in the face of limited information and computational resources. The course revolves around two main questions: how agents decide what to do, and how they learn from experience. Tools from computer science, probability theory, and game theory will be used. Interesting examples of intelligent agents will be covered, including poker playing programs, bots for various games (e.g. WoW), DS1 -- the spacecraft that performed an autonomous flyby of Comet Borrely in 2001, Stanley -- the Stanford robot car that won the Darpa Grand Challenge, Google Maps and how it calculates driving directions, face and handwriting recognizers, FedEx package delivery planners, airline fare prediction sites, and fraud detectors in financial transactions. Additional coursework required beyond the undergraduate course requirements. Cross-list: COMP 557. Graduate/Undergraduate Equivalency: ELEC 440. Mutually Exclusive: Cannot register for ELEC 557 if student has credit for ELEC 440.
Course URL: www.owlnet.rice.edu/~comp440 (http://www.owlnet.rice.edu/~comp440/)

ELEC 558 - DIGITAL SIGNAL PROCESSING
Short Title: DIGITAL SIGNAL PROCESSING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Methods for analysis of discrete-time signals and design of discrete-time systems including topics of: discrete-time linear systems, difference equations, z-transforms, discrete convolution, stability, discrete-time Fourier transforms, analog-to-digital and digital-to-analog conversion, digital filter design, discrete Fourier transforms, fast Fourier transforms, multi-rate signal processing, filter banks, and spectral analysis. Additional coursework required beyond the undergraduate course requirements. Graduate/Undergraduate Equivalency: ELEC 431. Mutually Exclusive: Cannot register for ELEC 558 if student has credit for ELEC 431.

ELEC 559 - INNOVATION LAB FOR MOBILE HEALTH
Short Title: INNOVATION LAB - MOBILE HEALTH
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will be an innovation lab for mobile health products. The students will organize themselves in groups with complementary skills and work on a single project for the whole semester. The aim will be to develop a product prototype which can then be demonstrated to both medical practitioners and potential investors. For successful projects with an operational prototype, the next steps could be applying for OWLspark (Rice accelerator program) or crowd sourcing (like Kickstarter) and/or work in Scalable Health Labs over summer. ELEC Juniors can also continue the project outcomes as a starting point for their senior design. Additional course work required beyond the undergraduate course requirements. Cross-list: BIOE 534. Graduate/Undergraduate Equivalency: ELEC 419. Mutually Exclusive: Cannot register for ELEC 559 if student has credit for ELEC 419. Repeatable for Credit.
Course URL: www.ece.rice.edu/~ashu/ELEC419.html (http://www.ece.rice.edu/~ashu/ELEC419.html)

ELEC 560 - PHYSICS OF SENSOR MATERIALS AND NANOSENSOR TECHNOLOGY
Short Title: PHYSICS OF SENSORS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics covered include MEMS, MOEMS, and NEMS systems along with special materials such as liquid crystals, piezoelectrics, memory metal, and topological insulators. Additional coursework required beyond the undergraduate course requirements. Graduate/Undergraduate Equivalency: ELEC 460. Mutually Exclusive: Cannot register for ELEC 560 if student has credit for ELEC 460.

ELEC 561 - OPTICAL TECHNIQUES FOR IMAGING THROUGH SCATTERING MEDIA
Short Title: IMAGING THROUGH SCATTERS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics covered include basics of Physical optics, and Fourier optics with a strong emphasis on its applications to imaging through scattering media.
ELEC 562 - OPTOELECTRONIC DEVICES
Short Title: OPTOELECTRONIC DEVICES
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course provides an introduction to the fundamental principles of semiconductor optoelectronic devices. After reviewing the basic elements of quantum mechanics of electrons and photons, light-matter interaction (including laser oscillations), and semiconductor physics (band structure, heterostructures and alloys, optical processes), we will study the details of modern semiconductor devices for the generation, detection, and modulation of light. Additional coursework required beyond the undergraduate course requirements. Graduate/ Undergraduate Equivalency: ELEC 462. Mutually Exclusive: Cannot register for ELEC 562 if student has credit for ELEC 462.

ELEC 563 - INTRODUCTION TO SOLID STATE PHYSICS I
Short Title: INTRO TO SOLID STATE PHYSICS I
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Fundamental concepts of crystalline solids, including crystal structure, band theory of electrons, and lattice vibration theory. Cross-list: PHYS 563.

ELEC 564 - SOLID-STATE PHYSICS II
Short Title: INTRO SOLID STATE PHYSICS II
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Continuation of PHYS 563, including scattering of waves by crystals, transport theory, and magnetic phenomena. Cross-list: PHYS 564.

ELEC 565 - MATERIALS FOR ENERGY AND PHOTOCATALYSIS
Short Title: MATERIALS FOR ENERGY&CATALYSIS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will cover the basic physics and chemistry of solar energy conversion and storage devices, and the current state of the art and future challenges in materials for energy and photocatalysis. In addition, physical and chemical characterization techniques will be covered.

ELEC 566 - NANOPHOTONICS AND METAMATERIALS
Short Title: NANOPHOTONICS & METAMATERIALS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course will discuss basic concepts of nanophotonics and focus on what metamaterials are, how they work and how to build them. The course will conclude with applications of various meta-devices and upcoming research topics.

ELEC 567 - NANO-OPTICS
Short Title: NANO-OPTICS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the theory and practice of laser spectroscopy as applied to atomic and molecular systems. The course covers fundamentals of spectroscopy, lasers and spectroscopic light sources, high resolution and time resolved laser spectroscopy with applications in atmospheric chemistry, environmental science and medicine. Repeatable for Credit.

ELEC 568 - LASER SPECTROSCOPY
Short Title: LASER SPECTROSCOPY
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Concepts include mode locking, the effects of dispersion, optical pulse measurement of short laser pulses, of duration less than one picosecond. The course will cover the generation, propagation, and measurement of short laser pulses, of duration less than one picosecond. Concepts include mode locking, the effects of dispersion, optical pulse amplification, and time-domain non-linear optical phenomena. Intended as an introduction to ultrafast phenomena for graduate students or advanced undergraduates; a basic understanding of electromagnetic waves and of quantum mechanics is assumed. Cross-list: PHYS 569.

ELEC 569 - ULTRAFAST OPTICAL PHENOMENA
Short Title: ULTRAFAST OPTICAL PHENOMENA
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers the generation, propagation, and measurement of short laser pulses, of duration less than one picosecond. Concepts include mode locking, the effects of dispersion, optical pulse amplification, and time-domain non-linear optical phenomena. Intended as an introduction to ultrafast phenomena for graduate students or advanced undergraduates; a basic understanding of electromagnetic waves and of quantum mechanics is assumed. Cross-list: PHYS 569.
Course URL: www.ece.rice.edu/~daniel/569/569files.html (http://www.ece.rice.edu/~daniel/569/569files.html)
ELEC 571 - IMAGING AT THE NANOSCALE  
Short Title: IMAGING AT THE NANOSCALE  
Department: Electrical & Computer Eng.  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: A survey of the techniques used in imaging micron and nanometer structures with an emphasis on applications in chemistry, physics, biology, and engineering. The course includes an introduction to scanning probe, submicron optical, and electron microscopies, as well as discussions on the fundamental and practical aspects of image acquisition, artifacts, filtering, and machine learning analysis of such data. Homeworks will involve some familiarity and proficiency with Matlab. The final project will include analysis of the student’s own research data.

ELEC 572 - FINITE ELEMENT METHOD FOR MULTIPHYSICS MODELING  
Short Title: MULTIPHYSICS MODELING  
Department: Electrical & Computer Eng.  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course will provide a hands-on experience on the modeling of micro and nano systems based on the mutual interaction among different physical phenomena. COMSOL Multiphysics, based on the Finite Element Method (FEM), will be utilized as flexible modeling tool to learn how to design a wide range of devices or describe coupled physical mechanisms including electromagnetic waves, heat transfer, fluid dynamics and mass transport. The course will focus in particular on the interaction between light and nanomaterials and how electromagnetic heat dissipation can play a major role in different applications. Recommended Prerequisite(s): Basic electromagnetism and basic calculus.

ELEC 573 - NETWORK SCIENCE AND ANALYTICS  
Short Title: NETWORK SCIENCE AND ANALYTICS  
Department: Electrical & Computer Eng.  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Course Level: Graduate  
Description: This course provides an introduction to complex networks, their structure, and function, with examples from engineering, biology, and social sciences. Topics include spectral graph theory, notions of centrality, community detection, random graph models, inference in networks, opinion dynamics, and contagion phenomena. Our main goal is to study network structures and how they can be leveraged to better understand data defined on them. Recommended Prerequisite(s): Linear algebra, probability and statistics, and basic ability to program in Python.

ELEC 574 - UBIQUITOUS AND WEARABLE COMPUTING  
Short Title: UBIQ AND WEARABLE COMPUTING  
Department: Electrical & Computer Eng.  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Wireless and mobile computing, affordable sensors and interaction devices being woven into our daily life and invisible, has created boundless opportunities for in-the-world computing applications that can transform our lives. This course will introduce students to the field of Ubiquitous and Wearable Computing - a multidisciplinary research area that draws from sensors, machine learning, signal processing, as well as human computer interaction. This class combines lectures, hands-on exercises and assignments, reading state of the art research papers, class discussions and a final project.

ELEC 575 - LEARNING FROM SENSOR DATA  
Short Title: LEARNING FROM SENSOR DATA  
Department: Electrical & Computer Eng.  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: The first half of this course develops the basic machine learning tools for signals images, and other data acquired from sensors. Tools covered include principal components analysis, regression, support vector machines, neural networks, and deep learning. The second half of this course overviews a number of applications of sensor data science in neuroscience, image and video processing, and machine vision. Additional course work required beyond the undergraduate course requirements. Graduate/Undergraduate Equivalency: ELEC 475. Mutually Exclusive: Cannot register for ELEC 575 if student has credit for ELEC 475. Repeatable for Credit.

ELEC 576 - A PRACTICAL INTRODUCTION TO DEEP MACHINE LEARNING  
Short Title: INTRODUCTION TO DEEP LEARNING  
Department: Electrical & Computer Eng.  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Deep Machine Learning has recently made many advances in difficult perceptual tasks, including object and phoneme recognition, and natural language processing. However, the field has a steep learning curve, both conceptually and practically. The point of this course is to engage students by jumping into the deep end, and building their own architectures and algorithms. Cross-list: COMP 576.
ELEC 577 - ALGORITHMS AND OPTIMIZATION FOR DATA SCIENCE
Short Title: OPTIMIZATION FOR DATA SCIENCE
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this course, we study algorithms for analyzing data with provable performance, statistical, and computational guarantees. We focus on applications in machine learning and signal processing. Topics include: efficient algorithms for convex optimization, inverse problem, low-rank and sparse models, dimensionality reduction, and randomized algorithms. Recommended Prerequisite(s): MATH 355 and (ECON 307 or STAT 310) or digital circuit courses.

ELEC 578 - INTRODUCTION TO MACHINE LEARNING
Short Title: INTRO TO MACHINE LEARNING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course provides an introduction to concepts, methods, best practices, and theoretical foundations of machine learning. Topics covered include regression, classification, kernels, clustering, decision trees, ensemble learning, empirical risk minimization and regularization, and learning theory. Additional work is required for graduate students beyond the undergrad requirement. Graduate/Undergraduate Equivalency: ELEC 478. Mutually Exclusive: Cannot register for ELEC 578 if student has credit for DSCI 303.

ELEC 579 - COMPUTATIONAL IMAGING
Short Title: COMPUTATIONAL IMAGING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A graduate-level introduction to imaging systems as an integral part of the sense-process-decide-act cycle. This cycle is central to the operation of any goal-directed system, biological or engineered. Students will gain a basic understanding of the mechanisms by which information about a scene is encoded on an electro-magnetic wave. Furthermore, the students will learn to analyze the information extraction process realized via the imaging chain of front-end optics, transduction, and post-processing. The objective of the course is to understand the limits of modern image formation and how optics, photonic-to-electronic transduction, and post-detection processing can be jointly designed to enable imagers with unique capabilities. Additional coursework required beyond the undergraduate course requirements. Graduate/Undergraduate Equivalency: ELEC 441.

ELEC 581 - CARDIOVASCULAR AND RESPIRATORY SYSTEM DYNAMICS
Short Title: CARDIO - RESP SYSTEM DYNAMICS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Autonomic nervous system control of the cardiovascular and respiratory systems. Development of models of neuron and cardiac cell activity; models of ventricular and vascular system mechanics; models of pulmonary mechanics and gas transport. Includes a study of instrumentation and techniques used in the cardiovascular and respiratory system laboratory. Discussions of different types of ventricular assist devices is also included. The course serves as an introduction to engineering in cardiovascular and respiratory system diagnosis and critical care medicine. Cross-list: BIOE 581. Recommended Prerequisite(s): Knowledge of ordinary differential equations; electricity and magnetism, and solid mechanics form elementary physics; linear control theory and elementary physiology of the cardiovascular and respiratory systems.

ELEC 582 - PHYSIOLOGICAL CONTROL SYSTEMS
Short Title: PHYSIOLOGICAL CONTROL SYSTEMS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A study of the somatic and autonomic nervous system control of biological systems. Simulation methods, as well as, techniques common to linear and nonlinear control theory are used. Also included is an introduction to sensors and instrumentation techniques. Examples are taken from the cardiovascular, respiratory, and visual systems. Additional coursework required beyond the undergraduate course requirements. Cross-list: BIOE 582. Graduate/Undergraduate Equivalency: ELEC 482. Mutually Exclusive: Cannot register for ELEC 582 if student has credit for ELEC 482.

ELEC 583 - COMPUTATIONAL NEUROSCIENCE AND NEURAL ENGINEERING
Short Title: COMP/NEUROSCIENCE/NEURAL ENGNR
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An introduction to the anatomy and physiology of the brain. Includes basic electrophysiology of nerve and muscle. Develops mathematical models of neurons, synaptic transmission and natural neural networks. Leads to a discussion of neuromorphic circuits which can represent neuron and neural network behavior in silicon. Recommendation: Knowledge of electrical circuits, operational amplifier circuits and ordinary differential equations. Involves programming Matlab. Cross-list: BIOE 583, NEUR 583. Graduate/Undergraduate Equivalency: ELEC 481. Recommended Prerequisite(s): Knowledge of basic electrical and operational amplifier circuits; and ordinary differential equations. Mutually Exclusive: Cannot register for ELEC 583 if student has credit for ELEC 481.
ELEC 584 - FUNDAMENTALS OF HUMAN NUEROIMAGING
Short Title: HUMAN NUEROIMAGING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A survey of methods and results for human brain imaging. Describes the physical and physiological mechanisms of image formation. Provides examples from clinical and basic research, particularly in visual cortex. Emphasis on magnetic resonance imaging, but surveys other imaging modalities including PET, optical, and EEG/MEG source localization. Course taught at Baylor College of Medicine. Cross-list: NEUR 584. Graduate/Undergraduate Equivalency: ELEC 484. Mutually Exclusive: Cannot register for ELEC 584 if student has credit for ELEC 484.

ELEC 585 - FUNDAMENTALS OF MEDICAL IMAGING I
Short Title: FUND MEDICAL IMAGING I
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will introduce basic principles of image acquisition, formation and processing of several medical imaging modalities such as X-Ray, CT, MRI, and US that are used to evaluate the human anatomy. The course also includes visits to a clinical site to gain experience with the various imaging modalities covered in class. Additional coursework required beyond the undergraduate course requirements. Cross-list: BIOE 485. Graduate/Undergraduate Equivalency: ELEC 485. Mutually Exclusive: Cannot register for ELEC 585 if student has credit for ELEC 485.

ELEC 586 - FUNDAMENTALS OF MEDICAL IMAGING II
Short Title: FUND MEDICAL IMAGING II
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course focuses on functional imaging modalities used specifically in nuclear medicine such as Gamma cameras, SPECT, and PET imaging. The course will introduce the basic principles of image acquisition, formation, processing and the clinical applications of these imaging modalities and lays the foundations for understanding the principles of radiotracer kinetic modeling. A trip to a clinical site in also planned to gain experience with nuclear medicine imaging. Additional coursework required beyond the undergraduate course requirements. Cross-list: BIOE 596. Graduate/Undergraduate Equivalency: ELEC 486. Mutually Exclusive: Cannot register for ELEC 586 if student has credit for ELEC 486.

ELEC 587 - INTRODUCTION TO NEUROENGINEERING: MEASURING AND MANIPULATING NEURAL ACTIVITY
Short Title: INTRO TO NEUROENGINEERING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will serve as an introduction to quantitative modeling of neural activity and the methods used to stimulate and record brain activity. Additional coursework required beyond the undergraduate course requirements. Graduate/Undergraduate Equivalency: ELEC 380. Mutually Exclusive: Cannot register for ELEC 587 if student has credit for BIOE 480/BIOE 590/ELEC 380/ELEC 480/ELEC 580.

ELEC 588 - THEORETICAL NEUROSCIENCE I: BIOPHYSICAL MODELING OF CELLS AND CIRCUITS
Short Title: THEORETICAL NEUROSCIENCE
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: We present the theoretical foundations of cellular and systems neuroscience from distinctly quantitative point of view. We develop the mathematical and computational tools as they are needed to model, analyze, visualize and interpret a broad range of experimental data. Additional course work required beyond the undergraduate course requirements. Cross-list: CAAM 615, NEUR 615. Graduate/Undergraduate Equivalency: ELEC 488. Mutually Exclusive: Cannot register for ELEC 588 if student has credit for ELEC 488.

ELEC 589 - NEURAL COMPUTATION
Short Title: NEURAL COMPUTATION
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: How does the brain work? Understanding the brain requires sophisticated theories to make sense of the collective actions of billions of neurons and trillions of synapses. Word theories are not enough; we need mathematical theories. The goal of this course is to provide an introduction to the mathematical theories of learning and computation by neural systems. These theories use concepts from dynamical systems (attractors, oscillations, chaos) and concepts from statistics (information, uncertainty, inference) to relate the dynamics and functions of neural networks. We will apply these theories to sensory computation, learning and memory, and motor control. Students will learn to formalize and mathematically answer questions about neural computations, including "what does a network compute?", "how does it compute?", and "why does it compute that way?" Prerequisites: knowledge of calculus, linear algebra, and probability and statistics. Graduate/Undergraduate Equivalency: ELEC 489. Mutually Exclusive: Cannot register for ELEC 589 if student has credit for ELEC 489.
ELEC 590 - GRADUATE NON-THESIS RESEARCH PROJECTS
Short Title: GR NON-THESIS RES PROJECTS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Theoretical and experimental investigations under staff direction. Instructor Permission Required. Repeatable for Credit.

ELEC 591 - GRADUATE ELECTRICAL ENGINEERING RESEARCH PROJECTS-VERTICALLY INTEGRATED PROJECTS
Short Title: GRAD ELEC ENG'G RESEARCH VIP
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Vertically Integrated Projects (VIP) teams include students from multiple years working on one larger, multi-year project defined by the instructor. Instructor Permission Required. Graduate/Undergraduate Equivalency: ELEC 491. Mutually Exclusive: Cannot register for ELEC 591 if student has credit for ELEC 491. Repeatable for Credit.

ELEC 598 - INTRODUCTION TO ROBOTICS
Short Title: INTRODUCTION TO ROBOTICS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the kinematics, dynamics, and control of robot manipulators and to applications of artificial intelligence and computer vision in robotics. Additional work required for Graduate course. Cross-list: COMP 598, MECH 598. Graduate/Undergraduate Equivalency: ELEC 498. Mutually Exclusive: Cannot register for ELEC 598 if student has credit for ELEC 498.

ELEC 599 - FIRST YEAR GRAD STUDENT PROJECTS
Short Title: 1ST YEAR GRAD STUDENTS PROJECT
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Supervised project required of all first-year graduate students in the Ph.D. program.

ELEC 602 - NEURAL MACHINE LEARNING AND DATA MINING II
Short Title: NEURAL MACHINE LEARNING II
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ELEC 502 or COMP 502 or STAT 502
Description: Advanced topics in ANN theories, with a focus on learning high-dimensional complex manifolds with neural maps (Self-Organizing Maps, Learning Vector Quantizers and variants). Application to data mining, clustering, classification, dimension reduction, sparse representation. The course will be a mix of lectures and seminar discussions with active student participation, based on most recent research publications. Students will have access to professional software environment to implement theories. Cross-list: COMP 602, STAT 602. Repeatable for Credit.
Course URL: www.ece.rice.edu/~erzsebet/NMLcourseII.html

ELEC 603 - TOPICS IN NANOPHOTONICS
Short Title: TOPICS IN NANOPHOTONICS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is designed as a cornerstone for the NSF funded Integrative Graduate Research and Educational Training (IGERT) program in nanophotonics. It is also an official ‘home’ for the Laboratory for Nanophotonics (LANP) seminars that serve as a forum for the interaction between researchers in nanophotonics at Rice. The conversational atmosphere of the seminar continues the relatively unstructured spirit of the interaction that has been the hallmark of past LANP meetings and collaboration. The course is open to graduate students who are interested in pursuing research in Nanophotonics. Repeatable for Credit.

ELEC 604 - NANO-OPTICS
Short Title: NANO-OPTICS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is designed as a cornerstone for the NSF funded Integrative Graduate Research and Educational Training (IGERT) program in nanophotonics. It is also an official ‘home’ for the Laboratory for Nanophotonics (LANP) seminars that serve as a forum for the interaction between researchers in nanophotonics at Rice. The conversational atmosphere of the seminar continues the relatively unstructured spirit of the interaction that has been the hallmark of past LANP meetings and collaboration. The course is open to graduate students who are interested in pursuing research in Nanophotonics. Repeatable for Credit.

ELEC 605 - COMPUTATIONAL ELECTRODYNAMICS AND NANOPHOTONICS
Short Title: COMPUTATIONAL ELECTRODYNAMICS & NANOPHOTONICS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: See PHYS 605. Cross-list: PHYS 605. Repeatable for Credit.
ELEC 631 - ADVANCED TOPICS IN SIGNAL PROCESSING AND MACHINE LEARNING
Short Title: TOPICS-SIGNAL PROCESSING & ML
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ELEC 531 and ELEC 533
Description: There is a long history of algorithmic development for solving inferential and estimation problems that play a central role in a variety of learning, sensing, and processing systems, including medical imaging scanners, numerous machine learning algorithms, and compressive sensing, to name just a few. Until recently, most algorithms for solving inferential and estimation problems have iteratively applied static models derived from physics or intuition. In this course, we will explore a new approach that is based on "learning" various elements of the problem including i) stepsizes and parameters of iterative algorithms, ii) regularizers, and iii) inverse functions. For example, we will explore a new approach for solving inverse problems that is based on transforming an iterative, physics-based algorithm into a deep network whose parameters can be learned from training data. For a range of different inverse problems, deep networks have been shown to offer faster convergence to a better quality solution. Specific topics to be discussed include: Ill-posed inverse problems, iterative optimization, deep learning, neural networks, learning regularizers. This is a "reading course," meaning that students will read and present classic and recent papers from the technical literature to the rest of the class in a lively debate format. Discussions will aim at identifying common themes and important trends in the field. Students will also get hands on experience with optimization problems and deep learning software through a group project. Repeatable for Credit.

ELEC 632 - ADVANCED TOPICS IN IMAGE AND VIDEO PROCESSING
Short Title: ADV TOPIC IMAGE&VIDEO PROCESS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar on topics of current research interest in image and video processing. Students participate in selecting and presenting papers from technical literature. Discussions aim at identifying common themes and important trends in the field.

ELEC 635 - NETWORK INFORMATION THEORY
Short Title: NETWORK INFORMATION THEORY
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ELEC 535
Description: This course will introduce the key building blocks in network information theory: multiple access, broadcast, relay and interference channels. Further topics will be explored as part of projects.

ELEC 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Laboratory, Lecture, Seminar, Lecture/Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

ELEC 680 - NANO-NEUROTECHNOLOGY
Short Title: NANO-NEUROTECHNOLOGY
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will review current nanofabricated technologies for measuring, manipulating, and controlling neural activity. The course will be based on reviewing current academic literature and topics will include nano-electronic, -photonic, -mechanical, and -fluidic neural devices. Cross-list: BIOE 680.

ELEC 681 - FUNDAMENTALS OF MACHINE LEARNING
Short Title: FUNDAMENTALS MACHINE LEARNING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines the fundamentals of machine learning, including supervised learning, unsupervised learning, and reinforcement learning. This course will provide the student with the formal concepts and the basic intuition for the different topics of machine learning, from artificial neural networks to value function approximation. Because of the shared problems of machine learning, statistical inference, and signal processing, a focus of the course will be on share solution, e.g., dimensionality reduction, of these three fields. Repeatable for Credit.

ELEC 691 - NANOPHOTONICS, SPECTROSCOPY, AND MATERIALS FOR SUSTAINABILITY
Short Title: NANOPHOT, SPECT, MAT4SUST
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar will cover the contributions that nanophotonic concepts and advanced spectroscopy techniques can make to the development and characterization of novel materials for energy and sustainability. We will cover nanophotonic concepts for novel materials and characterization techniques, ultrafast and nanoscale spectroscopy techniques, and applications in energy and sustainability. Repeatable for Credit.
ELEC 692 - ADVANCED TOPICS IN DISTRIBUTED SYSTEMS
Short Title: ADV TOPICS IN DISTRIBUTED SYST
Department: Electrical & Computer Eng.
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: We will learn about and discuss recent advances in various areas in computer systems, including topics on security, distributed systems, networking, operating systems, and databases. The seminar will be divided into several sections, with each section focusing on one research trend. In each class, students will read one classic paper on the topic, and present two recent papers that describe the state of the art. Students can also team up and do a semester-long research project on any relevant topics. All students will need to make a final presentation at the end of the class on a potential project idea; for students that choose to do a semester-long project, they will also submit a six-page report on their project, in addition to giving a final presentation. Instructor Permission Required. Cross-list: COMP 645. Repeatable for Credit.

ELEC 693 - ADVANCED TOPICS-COMPUTER SYSTEMS
Short Title: ADV TOPICS - COMPUTER SYSTEMS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is a discussion based seminar about state of the art embedded and digital signal processing systems, with emphasis on both hardware architectures as well as software tools, programming models, and compilers. The seminar focuses on state of the art academic and commercial offerings in these areas. Cross-list: COMP 693. Repeatable for Credit.

ELEC 694 - HOW TO BE A CHIEF TECHNOLOGY OFFICER
Short Title: HOW TO BE A CTO
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Survey of the component and standards trends that are the basis of personal computers and digital appliances with the aim of predicting technologies, solutions, and new products five years into the future. Examples of these technologies are dual Core processors, iPods and their evolution, mobile wireless data devices, and even Google vs. Microsoft. Students will each pick a topic important to the digital lifestyle and through a series of one-on-one sessions develop a depth of understanding that is presented to the class. Formerly 'Future Personal Computing Technologies.' Cross-list: COMP 694. Repeatable for Credit.
Course URL: www.ece.rice.edu/Courses/694/ (http://www.ece.rice.edu/Courses/694/)

ELEC 695 - ADVANCED TOPICS IN COMMUNICATIONS AND STATISTICAL SIGNAL PROCESSING
Short Title: INNOVATIONS IN MOBILE HEALTH
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Section 1: - Innovations in Mobile Health - In this seminar, we will study the merging area of mobile health, enabled by prevalent data connectivity, highly portable medical sensors, smart-phones and inexpensive cloud computing. The seminar will involve a mix of lectures, paper reading, case studies and group projects. The course is suitable for both undergraduate (junior and seniors) and graduate students. The course is part of the new ECE initiative on scalable health (http://sh.rice.edu). Open to both undergraduate and graduate students. Section 2: - This is a graduate seminar class focused on the role of information theory in engineering wireless networks. Students will survey, read, and present both classic as well as recent papers in the area. Repeatable for Credit.

ELEC 698 - ECE PROFESSIONAL MASTERS SEMINAR SERIES
Short Title: ECE PROFESSIONAL MASTER SEM
Department: Electrical & Computer Eng.
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Electrical Eng degree.
Course Level: Graduate
Description: The Professional Masters Seminar Series presents a combination of seminars on emerging research topics in the many areas of ECE and industry-focused professional development. This course includes attendance and reports based on the seminars, colloquia, and distinguished lectures held each semester. Repeatable for Credit.

ELEC 699 - FRONTIERS OF ELECTRICAL AND COMPUTER ENGINEERING
Short Title: FRONTIERS OF ECE
Department: Electrical & Computer Eng.
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to students with a major in Electrical & Computer Eng. Enrollment is limited to Graduate level students. Enrollment limited to students in a Doctor of Philosophy or Master of Electrical Eng degrees.
Course Level: Graduate
Description: Frontiers of Electrical and Computer Engineering presents emerging research topics in the many areas of ECE. This course includes attendance and reports based on the seminars, colloquia, and distinguished lectures held each semester. Repeatable for Credit.

ELEC 800 - RESEARCH AND THESIS
Short Title: RESEARCH AND THESIS
Department: Electrical & Computer Eng.
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.
Emergency Med Studies/Practice (EMSP)

EMSP 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

EMSP 282 - ADVANCED EMT
Short Title: ADVANCED EMT
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is a state-sanctioned EMT-B Certification course which includes practical and didactic exploration into pre-hospital care. This class culminates with a national certification to practice pre-hospital care on the EMT-B level. This course will discuss anatomy, body systems, and the biochemical basis of emergency intervention in addition to practical application of EMT-B skills. Formerly HEAL 308 and BIOS 281 and NSCI 281. Instructor Permission Required.

EMSP 281 - EMT-B: INTRODUCTION TO EMERGENCY CARE
Short Title: EMT-B INTO EMERGENCY CARE
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is a state-sanctioned EMT-B Certification course which includes practical and didactic exploration into pre-hospital care. This class culminates with a national certification to practice pre-hospital care on the EMT-B level. This course will discuss anatomy, body systems, and the biochemical basis of emergency intervention in addition to practical application of EMT-B skills. Formerly HEAL 308 and BIOS 281 and NSCI 281. Instructor Permission Required.

EMSP 375 - EMS INCHARGE LEADERSHIP COURSE
Short Title: EMS INCHARGE LEADERSHIP COURSE
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Students preparing to hold leadership positions in EMS will expand their competency in emergency services, including emergency management and incident response, in addition to improving patient care and leadership skills. Participants will achieve certification in national emergency services courses, and will work as a team to manage a major event. Formerly UNIV 275. Instructor Permission Required.

EMSP 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

EMSP 491 - EMERGENCY MEDICAL SERVICES RESEARCH COURSE
Short Title: EMS RESEARCH COURSE
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: EMSP 491 is an independent program of study for students interested in research in prehospital medicine. All students will complete a research project under the supervision of a physician faculty member from Baylor College of Medicine. Projects may vary based on each student’s interest and faculty projects. Formerly NSCI 491. Instructor Permission Required. Repeatable for Credit.

EMSP 492 - EMERGENCY MEDICAL SERVICES RESEARCH COURSE
Short Title: EMS RESEARCH COURSE
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: EMSP 492 is an independent program of study for students interested in research in prehospital medicine. All students will complete a research project under the supervision of a physician faculty member from Baylor College of Medicine. Projects may vary based on each student’s interest and faculty projects. Formerly NSCI 492. Instructor Permission Required. Repeatable for Credit.

EMSP 499 - EMT TEACHING PRACTICUM
Short Title: EMT TEACHING PRACTICUM
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course is open to an undergraduate student who serves as an instructor for the Emergency Medical Technician course. As an instructor, he/she would need to participate in course planning, course assignments, and student evaluation. They would also be expected to present course material through preparing and delivering lectures, presentations, and practical skills instructions. Grade would be assigned based on student self-evaluation, class evaluation, and primary instructor assessment. Formerly NSCI 289. Instructor Permission Required. Repeatable for Credit.
ENGI 100 - INTRODUCTION TO SPATIAL VISUALIZATION
Short Title: INTRO SPATIAL VISUALIZATION
Department: Engineering Division
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The ability to mentally visualize in three dimensions is an important skill for engineers and scientists. In this course, students will move through ten different modules that will strengthen spatial reasoning and visualization skills. All assigned work will be completed during the scheduled class time. Only students scoring <70% on the PSVT:R will be allowed into the course. Course is limited to new first time matriculants only. Instructor Permission Required.

ENGI 101 - INTRODUCTION TO ENGINEERING PROGRAMS AT RICE
Short Title: INTRODUCTION TO ENGINEERING
Department: Engineering Division
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Students will learn about the different engineering majors and career paths. In presentations by faculty members, the students will gain an understanding of the curricular requirements, professional skills and extracurricular activities that will prepare them to succeed at Rice and beyond.

ENGI 120 - INTRODUCTION TO ENGINEERING DESIGN
Short Title: INTRO TO ENGINEERING DESIGN
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Students learn the engineering design process and use it to solve meaningful problems drawn from the community and around the world. Teams of students evaluate design requirements and construct innovative solutions in the Oshman Engineering Design Kitchen. Students develop teaming and communication skills. Only first year students may enroll. Non-first year students wishing to take introductory engineering design may enroll in ENGI 220. ENGI 120 does not fulfill the FWIS requirement or carry D3 credit. Mutually Exclusive: Cannot register for ENGI 120 if student has credit for FWIS 188.

ENGI 128 - INTRODUCTION TO ENGINEERING SYSTEMS
Short Title: INTRO TO ENGINEERING SYSTEMS
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will be a fun, hands-on introduction to the key concepts of electrical/mechanical/computational systems. Each student will use a small mobile robot to learn about block diagrams, abstraction and modularity, energy storage and conservation, feedback and control, digital communications, and software design. All interested freshmen are welcome, no previous experience or prerequisites are required. The course will conclude with a multi-robot final project.

ENGI 140 - ENGINEERING LEADERSHIP DEVELOPMENT
Short Title: ENG'S LEADERSHIP DEVELOPMENT
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The purpose of this course is to prepare students to begin developing the skills, knowledge, and motivations needed to become an engineering leader. Learning methods for the class include assessments of current leadership skills, skill-learning via lectures and discussions, skill-practice and feedback via experiential exercises, and skill development via self-directed action planning. Major deliverables for the class include an autobiographical paper, an engineering leadership portfolio, and a leadership development plan. Mutually Exclusive: Cannot register for ENGI 140 if student has credit for RCEL 100/RCEL 200.
Course URL: rcel.rice.edu

ENGI 150 - SURVEY OF ENGINEERING DISCIPLINES
Short Title: SURVEY OF ENGR DISCIPLINES
Department: Engineering Division
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This seminar provides an overview of the practice of engineering, including traditional and non-traditional career paths; graduate and professional options; and introductions to ethics, intellectual property, and written and oral communication. Engineering departments will provide overviews of their specific disciplines. Assignments include team presentations. Instructor Permission Required.
ENGI 200 - ENGINEERING DESIGN STUDIO
Short Title: ENGINEERING DESIGN STUDIO
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ENGI 120 or FWIS 188 or ENGI 220
Description: Graduates of ENGI 120 and ENGI 220 will have the opportunity to gain a more in-depth knowledge of the engineering design process by furthering progress on specific engineering design projects. Students may extend their project work by completing advanced prototyping for their designs and conduct testing. Students will be held accountable through technical mentorship, weekly meetings, and prototype evaluations. Students will only work in design teams. Student teams wishing to continue their projects from ENGI 120/220 may apply.

ENGI 210 - PROTOTYPING AND FABRICATION
Short Title: PROTOTYPING & FABRICATION
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ENGI 120 or FWIS 188 or ENGI 220
Description: Students in ENGI 210 will learn and practice advanced prototyping and fabrication skills useful in the construction of physical objects for engineering design projects. The course is structured as lecture and demonstration of basic and advanced prototyping techniques and out-of-class work practicing and honing the application of these techniques. Example techniques include low fidelity prototyping, 2D and 3D Computer Aided Design, electronics, foam cutting, laser cutting, plasma cutting, 3D printing, and molding/casting methods. Students will individually apply these techniques to create physical objects.
Course URL: engi210blogs.rice.edu (http://engi210blogs.rice.edu)

ENGI 218 - ENGINEERING LEADERSHIP LAB I
Short Title: ENGINEERING LEADERSHIP LAB I
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Students develop a variety of leadership skills and abilities by solving weekly engineering challenges in small teams. Students practice various roles as team members and leaders, then receive rapid performance assessments and mentoring from fellow students and staff. Mutually Exclusive: Cannot register for ENGI 218 if student has credit for RCEL 100/RCEL 200.

ENGI 219 - ENGINEERING LEADERSHIP LAB II
Short Title: ENGINEERING LEADERSHIP LAB II
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ENGI 218
Description: Students develop a variety of leadership skills and abilities by solving weekly engineering challenges in small teams. Students practice various roles as team members and leaders, then receive rapid performance assessments and mentoring from fellow students and staff. Instructor Permission Required. Mutually Exclusive: Cannot register for ENGI 219 if student has credit for RCEL 300/RCEL 400.
Course URL: rcel.rice.edu/courses (http://rcel.rice.edu/courses/)

ENGI 220 - INTRODUCTION TO ENGINEERING DESIGN II
Short Title: INTRO TO ENGINEERING DESIGN II
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Students with a class of Freshman may not enroll. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Students learn the engineering design process and use it to solve meaningful problems drawn from the community and around the world. Teams of students evaluate design requirements and construct innovative solutions in the Oshman Engineering Design Kitchen. Students develop teaming and communication skills. Students may not be in their first year of school. First year students wishing to take introductory engineering design may enroll in ENGI 120. ENGI 220 is taught as the same time as ENGI 120.

ENGI 221 - NEW ENTERPRISES
Short Title: NEW ENTERPRISES
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: In this course, students will learn and experience a process for innovation-based venture development. During the semester, students will form teams and create a plan for a new venture. Cross-list: BUSI 221.

ENGI 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.
ENGI 241 - PROFESSIONAL EXCELLENCE FOR ENGINEERS
Short Title: PROF EXCELLENCE FOR ENGINEERS
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Guided career and professional development course for engineering students, which includes required practicum and workplace experience. Instructor Permission Required. Mutually Exclusive: Cannot register for ENGI 241 if student has credit for RCEL 241.
Course URL: rcel.rice.edu/courses (http://rcel.rice.edu/courses/)

ENGI 242 - PROFESSIONAL COMMUNICATION FOR ENGINEERING LEADERS
Short Title: PROFESSIONAL COMMUNICATION
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Students develop communication skills starting with critical thinking about communication strategy and how to best organize a message for different audiences. They will build skills in oral presentations, writing, data visualization, and interpersonal communication to communicate clearly and confidently in a variety of professional situations. Graduate/Undergraduate Equivalency: ENGI 542. Mutually Exclusive: Cannot register for ENGI 242 if student has credit for ENGI 542.
Course URL: rcelconnect.org (http://rcelconnect.org)

ENGI 300 - ENGINEERING DESIGN WORKSHOP
Short Title: ENGINEERING DESIGN WORKSHOP
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Advanced design students will have the opportunity to further their design projects in an independent study course. Students will work with faculty to develop their own schedule, set their own deadlines, goals, and expectations to be met for grading purposes. Students may complete advanced prototyping for their designs, conduct tests, perform safety evaluations with external committee and/or write up their work for publication. The specific tasks that will be completed are dependent on the project needs. Students will be held accountable through technical mentorship, weekly meetings, and prototype evaluations. To be eligible for ENGI 300 students must have taken ENGI 120 (or equivalent), ENGI 210, and ENGI 200. Instructor Permission Required. Repeatable for Credit.

ENGI 301 - INTRODUCTION TO PRACTICAL ELECTRICAL ENGINEERING
Short Title: INTRO TO PRACTICAL EE
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ENGI 120 or ENGI 220
Description: Students will acquire intermediate-level proficiency in the tools (both physical and software) used to design, build and debug embedded hardware designs. Students will learn the basics of electronic components and how to use those components in a successful embedded hardware design.

ENGI 302 - SUSTAINABLE DESIGN
Short Title: SUSTAINABLE DESIGN
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The objective of this course is to develop skills in formulating and solving problems arising from emerging technologies for the energy and water industries, such as green construction or renewable energy technologies, in the context of sustainable design. Students will be challenged to examine the economic, social, and environmental dimensions of emerging challenges and opportunities, by identifying the relevant objectives, constraints, and decision variables as viewed by various stakeholders. Grad students will have extra research assignments involving some aspect of a design solution. Cross-list: CEVE 302.

ENGI 303 - ENGINEERING ECONOMICS
Short Title: ENGINEERING ECONOMICS
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Introduction to the evaluation of alternative investment opportunities with emphasis on engineering projects and capital infrastructure. Time value of money concepts are developed in the context of detailed project evaluation and presentations. In addition, concepts and applications of risk analysis and investment under uncertainty are introduced. Requires oral and written presentations by students. Cross-list: CEVE 322. Graduate/Undergraduate Equivalency: ENGI 528. Mutually Exclusive: Cannot register for ENGI 303 if student has credit for ENGI 528.
ENGI 311 - LEADING CHANGE - REVOLUTIONARY MOMENTS IN ENGINEERING AND SOCIETY
Short Title: LEADING CHANGE IN ENGINEERING
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The course examines the impact of engineering on human history by exploring the social context, leadership frameworks, and societal impact of advances in technology. Students explore the social and political implications of emergent technology, with an emphasis on how these advances build upon and reify ideological paradigms and socio-economic systems. Graduate/Undergraduate Equivalency: ENGI 511. Mutually Exclusive: Cannot register for ENGI 311 if student has credit for ENGI 511.

ENGI 315 - LEADING TEAMS AND INNOVATION
Short Title: LEADING TEAMS AND INNOVATION
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Students learn the principles of engineering leadership, strategies for launching and leading engineering teams, and methods for utilizing creativity and innovation in engineering environments. Learning methods include case studies, simulations, group projects, and interactions with industry professionals. Graduate/Undergraduate Equivalency: ENGI 515. Mutually Exclusive: Cannot register for ENGI 315 if student has credit for ENGI 515/RCEL 300/RCEL 400.
Course URL: rcel.rice.edu (http://rcel.rice.edu)

ENGI 317 - LEADERSHIP ACTION LEARNING
Short Title: LEADERSHIP ACTION LEARNING
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course allows students to practice leadership skills in an applied context as the leader of a team or project with a defined scope, schedule, and goal. Students will identify areas of leadership growth, and receive guided mentorship and feedback as they develop these skills through practice. Mutually Exclusive: Cannot register for ENGI 317 if student has credit for RCEL 450.

ENGI 318 - LEADING ENGINEERING LEADERSHIP LAB I
Short Title: LEADING ENG LEADERSHIP LAB I
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ENGI 315
Description: Students organize, execute, and debrief the leadership development activities completed by novice students in ENGI 218 (Engineering Leadership Lab I). ENGI 318 students learn advanced leadership and communication skills; get frequent practice delivering feedback; and receive intensive mentoring from course staff.

ENGI 319 - LEADING ENGINEERING LEADERSHIP LAB II
Short Title: LEADING ENG LEADERSHIP LAB II
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ENGI 315
Description: Students organize, execute, and debrief the leadership development activities completed by novice students in ENGI 219 (Engineering Leadership Lab II). ENGI 319 students learn advanced leadership and communication skills; get frequent practice delivering feedback; and receive intensive mentoring from course staff. This course is a continuation of ENGI 318. Instructor Permission Required.

ENGI 320 - ETHICS AND ENGINEERING LEADERSHIP
Short Title: ETHICS & ENGINRNG LEADERSHIP
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Civil & Environmental Engineer, Civil Engineering or Environment Analysis&Decisions. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CEVE 101
Description: Seminar introduces students to a framework for discussing and making ethical engineering and professional decisions. Using case studies and exercises, students will look at their own profession and its Engineering Code of Ethics as well as at the issues and risks they may face as managers and executives. Cross-list: CEVE 320. Graduate/Undergraduate Equivalency: ENGI 529. Mutually Exclusive: Cannot register for ENGI 320 if student has credit for ENGI 529.

Courses and restrictions subject to change.
**ENGI 330 - ENGINEERING PRACTICUM**

**Short Title:** ENGINEERING PRACTICUM  
**Department:** Engineering Division  
**Grade Mode:** Satisfactory/ Unsatisfactory  
**Course Type:** Internship/ Practicum  
**Credit Hour:** 1  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This undergraduate course is designed to supplement technical coursework in the school of engineering with practical application and reflection on the challenges and value of applying knowledge to real-world problems in professional settings. Student undertakes a work internship and writes a report under supervision of a faculty member. NOTE: Instructor permission required, and must be obtained prior to the start of the internship. Instructor Permission Required. Repeatable for Credit.

**ENGI 350 - NEEDS IDENTIFICATION AND DESIGN IMPLEMENTATION**

**Short Title:** NEEDS ID & DESIGN IMPLEMENT  
**Department:** Engineering Division  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** ENGI 120 or ENGI 200 or FWIS 188  
**Description:** Students in this course will identify needs situated in two or more environments, and learn to ask questions that elucidate the problem, needed features and criteria for success. Students also develop implementation plans and conduct testing for refined design solutions that may include standards and safety compliance, patent applications, and manufacturing and user documents.

**ENGI 355 - DIGITAL DESIGN AND VISUALIZATION**

**Short Title:** DIGITAL DESIGN & VISUALIZATION  
**Department:** Engineering Division  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** ENGI 120 or ENGI 220 or FWIS 188  
**Description:** Students will acquire intermediate-level proficiency in the creation of virtual models and engineering drawings using computer aided design. Emphasis will be placed on best modeling practices including efficient part creation, dimensioning, tolerancing, and formatting of engineering drawings. Students will use a number of programs to format data and create models.

**ENGI 428 - ENTREPRENEURSHIP INDEPENDENT STUDY**

**Short Title:** ENTREPRENEURSHIP IND STUDY  
**Department:** Engineering Division  
**Grade Mode:** Standard Letter  
**Course Type:** Independent Study  
**Credit Hour:** 1  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Students who have completed entrepreneurship coursework/ training may use this course to learn the process of developing startups or launching new ventures. Students will meet weekly with course instructors and complete periodic assignments on advancing ventures. Instructor Permission Required.

**ENGI 477 - SPECIAL TOPICS**

**Short Title:** SPECIAL TOPICS  
**Department:** Engineering Division  
**Grade Mode:** Standard Letter  
**Course Type:** Internship/ Practicum, Seminar, Lecture, Laboratory  
**Credit Hours:** 1-4  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

**ENGI 501 - WORKPLACE COMMUNICATION FOR PROFESSIONAL MASTER’S STUDENTS IN ENGINEERING**

**Short Title:** WORKPLACE COMMUNICATION  
**Department:** Engineering Division  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students. Enrollment limited to students in a Master Materials Sci & NanoEng, Master of Bioengineering, Master of Chemical Eng, Master of Civil & Env Eng, Master of Comp & Appl Math, Master of Comp Sci & Eng, Master of Computer Science, Master of Electrical Eng, Master of Industrial Eng, Master of Mechanical Eng or Master of Statistics degrees.  
**Course Level:** Graduate  
**Description:** This course will equip students with strategies to communicate more successfully on the job. Students will improve their written, oral, visual and interpersonal communication skills through formal and informal assignments, in-class activities, practice, and feedback.

**ENGI 510 - TECHNICAL AND MANAGERIAL COMMUNICATIONS**

**Short Title:** TECHNICAL AND MANAGERIAL COMM  
**Department:** Engineering Division  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** In this communications course designed for Professional Masters students, the approach will be experiential and interactive, with in-class exercises, analyses and numerous presentations. The focus will be on your practicing and refining the oral and written presentation skills you will need in your professional career. You should be prepared to participate in class and must be very comfortable speaking and writing English. You should not take this course in your first semester at Rice. Preference will be given to PM students.
ENGI 511 - LEADING CHANGE - REVOLUTIONARY MOMENTS IN ENGINEERING AND SOCIETY
Short Title: LEADING CHANGE IN ENGINEERING
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course examines the impact of engineering on human history by exploring the social context, leadership frameworks, and societal impact of advances in technology. Students explore the social and political implications of emergent technology, with an emphasis on how these advances build upon and reify ideological paradigms and socio-economic systems. Graduate/Undergraduate Equivalency: ENGI 311. Mutually Exclusive: Cannot register for ENGI 511 if student has credit for ENGI 311.

ENGI 515 - LEADING TEAMS AND INNOVATION
Short Title: LEADING TEAMS AND INNOVATION
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students learn the principles of engineering leadership, strategies for launching and leading engineering teams, and methods for utilizing creativity and innovation in engineering environments. Learning methods include case studies, simulations, group projects, and interactions with industry professionals. Graduate students are required to complete an additional paper focusing on leadership development. Instructor Permission Required. Graduate/Undergraduate Equivalency: ENGI 315. Mutually Exclusive: Cannot register for ENGI 515 if student has credit for ENGI 315.

Course URL: rcel.rice.edu (http://rcel.rice.edu)

ENGI 528 - ENGINEERING ECONOMICS
Short Title: ENGINEERING ECONOMICS
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the evaluation of alternative investment opportunities with emphasis on engineering projects and capital infrastructure. Time value of money concepts are developed in the context of detailed project evaluation and presentations. In addition, concepts and applications of risk analysis and investment under uncertainty are developed. Requires oral and written presentations by students. Grad students will have an extra case study to perform. Cross-list: CEVE 528. Graduate/Undergraduate Equivalency: ENGI 303. Mutually Exclusive: Cannot register for ENGI 528 if student has credit for ENGI 303.

ENGI 529 - ETHICS AND ENGINEERING LEADERSHIP
Short Title: ETHICS & ENGINEERING LEADERSHIP
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Civil & Environmental Engineer, Civil Engineering or Environment Analysis&Decisions. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar introduces students to a framework for discussing and making ethical engineering and professional decisions. Using case studies and exercises, students will look at their own profession and its Engineering Code of Ethics as well as at the issues and risks they may face as managers and executives. Graduate students will do an extra paper. Instructor Permission Required. Cross-list: CEVE 529. Graduate/Undergraduate Equivalency: ENGI 320. Mutually Exclusive: Cannot register for ENGI 529 if student has credit for ENGI 320.

ENGI 530 - ENGINEERING PRACTICUM
Short Title: ENGINEERING PRACTICUM
Department: Engineering Division
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This graduate course is designed to supplement technical coursework in the school of engineering with practical application and reflection on the challenges and value of applying knowledge to real-world problems in professional settings. Students undertake a work internship and write a report under supervision of a faculty member. NOTE: Instructor permission required, and must be obtained prior to the start of the internship. Instructor Permission Required. Repeatable for Credit.

ENGI 542 - PROFESSIONAL COMMUNICATION FOR ENGINEERING LEADERS
Short Title: PROFESSIONAL COMMUNICATION
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students develop communication skills starting with critical thinking about communication strategy and how to best organize a message for different audiences. They will build skills in oral presentations, writing, data visualization, and interpersonal communication to communicate clearly and confidently in a variety of professional situations. Additional assignments apply for grad students. Instructor Permission Required. Graduate/Undergraduate Equivalency: ENGI 242. Mutually Exclusive: Cannot register for ENGI 542 if student has credit for ENGI 242.

Course URL: rcelconnect.org (http://rcelconnect.org)
ENGI 600 - WRITTEN AND ORAL COMMUNICATION SEM FOR ENGINEERING GRADUATE STUDENTS
Short Title: GRADUATE COMMUNICATIONS SEM
Department: Engineering Division
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 0
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: You have important research results, but unless you can explain them clearly and persuasively, you won't advance in your field. This interactive seminar is open to engineers actively writing a paper for publication, an extended PhD proposal, a Master's thesis, or a PhD dissertation. The written and oral assignments will help you present your research findings to a wide range of audiences - whether expert, interdisciplinary, international, or general. Topics include content and organization, plagiarism and paraphrase, crafting a persuasive abstract and literature review, effective visuals, and giving feedback to others. Apply directly to jhewitt@rice.edu. Instructor Permission Required.

ENGI 601 - ENGINEERING COMMUNICATIONS WORKSHOP
Short Title: ENGINEERING COMM WORKSHOP
Department: Engineering Division
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture/Laboratory
Credit Hours: 0
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students will learn to communicate effectively about their work using 21st-century skills. They will learn what distinguishes high-quality written, oral, and visual communication in their field, and apply these criteria in crafting and revising their own poster, elevator speech, news release, professional website, conference presentation, research statement, and portion of their thesis or dissertation. Instructor Permission Required.

ENGI 610 - MANAGEMENT FOR SCIENCE AND ENGINEERING
Short Title: MGT FOR SCIENCE/ENGINEERING
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is for graduate and undergraduate students who want to understand the basics of management in new and/or small technology-based businesses and is particularly relevant to students who are interested in careers in technology or entrepreneurial ventures. NSCI 610/ENGI 610 is team taught to provide insight into how technology oriented firms manage people, projects, accounting, marketing, strategy, intellectual property, organizations and entrepreneurship. Student's active participation is essential. Students who take this course are eligible for MGMT 625. Cross-list: NSCI 610.

ENGI 614 - LEARNING HOW TO INNOVATE?
Short Title: LEARNING HOW TO INNOVATE?
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Innovation has become a buzzword. Many of us aspire to be successful innovators, but how? There is ample attention for entrepreneurship, but less is available to support your innovation ambition. This course aims to give you an unconventional innovation experience. Repeatable for Credit.

ENGI 615 - LEADERSHIP COACHING FOR ENGINEERS
Short Title: LEADERSHIP COACHING FOR ENGR
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Leadership coaching is a professional skill that leaders use to enhance another person's ability to achieve their goals. Students will learn how to lead others in their own professional development through the use of coaching. This course emphasizes experiential learning and some graduates will be selected to become coaches to Rice engineering undergraduates. Repeatable for Credit.

ENGI 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

ENGI 779 - BUSINESS AND URBAN ANALYTICS
Short Title: BUSINESS & URBAN ANALYTICS
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The project based class offers the unique opportunity for students from distinct fields of business and engineering to solve a real world data driven problem in a collaborative way. The data and the problem statement will come from the Rice University's Administrative Center for Sustainability and Energy Management (ACSEM) at the start of the semester. Instructor Permission Required. Cross-list: MGMT 779.
ENGLISH (ENGL)

ENGL 100 - INTRODUCTION TO LITERATURE
Short Title: INTRODUCTION TO LITERATURE
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is designed to introduce students from a variety of academic backgrounds to the major literary genres of fiction, poetry, drama, and creative non-fiction. Students will learn and practice the skills of close reading, interpretation, and literary analysis through discussion and critical writing about literature and language. Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 121 - AP/OTH CREDIT IN ENGLISH
Short Title: AP/OTH CREDIT IN ENGLISH
Department: English
Grade Mode: Standard Letter
Course Type: Transfer
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 122 - AP/OTH CREDIT IN ENGLISH
Short Title: AP/OTH CREDIT IN ENGLISH
Department: English
Grade Mode: Standard Letter
Course Type: Transfer
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 175 - GLOBAL LITERATURES IN ENGLISH
Short Title: GLOBAL LITERATURES IN ENGLISH
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is designed to introduce students from a variety of academic backgrounds to the major literary genres of fiction, poetry, drama, and creative non-fiction. Students will learn and practice the skills of close reading, interpretation, and literary analysis through discussion and critical writing about literature and language. Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 200 - GATEWAYS TO LITERARY STUDY
Short Title: GATEWAYS TO LITERARY STUDY
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A course designed for and required of all prospective English majors. Emphasis is on close reading, literary interpretation, and critical writing. Attention is paid to the major genres (poetry, drama, and fiction) across a range of historical periods.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 201 - INTRODUCTION TO CREATIVE WRITING
Short Title: INTRO TO CREATIVE WRITING
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A course dedicated to the study and craft of fiction, nonfiction, and poetry. Through engaged reading and creative exercises, students will analyze the use of various elements of creative writing - including image, voice, tension, character, setting, and story. Students will develop a writing portfolio as well as a sense of the possibilities inherent in and unique to each genre.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 203 - TOPICS IN CREATIVE WRITING
Short Title: TOPICS IN CREATIVE WRITING
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An introductory, variable topics workshop in creative writing that asks students to work in multiple genres (fiction, non-fiction, poetry, reviewing, etc.). Topics will vary from semester to semester and may include 'Food Writing,' 'Writing Green,' 'Persona,' and more. Repeatable for Credit.
Course URL: english.rice.edu (http://english.rice.edu)
ENGL 204 - FORMS OF POETRY
Short Title: FORMS OF POETRY
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course examines the fundamental architecture of poetry. How do poets create a sense of shape? What are the nuts and bolts of a poem? Students will read widely in the history of poetry from traditional meters and historical forms to contemporary free verse and experimental or open forms. Part workshop and part seminar, this course will feature critical and creative assignments and is designed for majors and non-majors, writers and non-writers alike.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 210 - BEGINNINGS: BRITISH LITERATURE TO 1800
Short Title: BEGINNINGS: BRIT LIT TO 1800
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A survey of representative British authors of the Middle Ages, the Renaissance, and the 18th century for both majors and non-majors.

ENGL 211 - BRITISH LITERATURE FROM ROMANTICISM TO THE PRESENT
Short Title: BRIT LIT ROMANTICISM-PRESENT
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction to important 20th and 21st-century writers in English from South Asia - the region that includes India, Pakistan, Bangladesh and Sri Lanka. Readings include award-winning and bestselling works (fiction and non-fiction) by writers who address a wide range of issues including national and cultural identity, colonialism, sexuality, religion, globalization and political violence. Cross-list: ASIA 222.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 213 - THE RICE REVIEW: INTRODUCTION TO LITERARY EDITING & PUBLISHING
Short Title: R2:LITERARY EDITING/PUBLISHING
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will explore the contemporary means and methods of literary publishing. The class will involve students in the real-world issues of producing Rice's own nationally award-winning undergraduate literary journal, R2: The Rice Review. The course will explore the methods and best-practices required to produce and sustain a high-quality literary journal on both print and digital platforms. Assignments will include: promotions, blog posts, book reviews, interviews, articles for web, editing, layout and graphic design. Repeatable for Credit.

ENGL 222 - THE WORLD AND SOUTH ASIA
Short Title: WORLD AND SOUTH ASIA
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction to important 20th and 21st-century writers in English from South Asia - the region that includes India, Pakistan, Bangladesh and Sri Lanka. Readings include award-winning and bestselling works (fiction and non-fiction) by writers who address a wide range of issues including national and cultural identity, colonialism, sexuality, religion, globalization and political violence. Cross-list: ASIA 222.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: English
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.
ENGL 245 - INTERDISCIPLINARY APPROACHES
Short Title: INTERDISCIPLINARY APPROACHES
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Interdisciplinary study of cultural forms as diverse as poetry, advertisement, and film as well as topical interdisciplinary courses on literature and the arts, psychology, cultural studies, film media, anthropology, social theory, philosophy, law, and ethics. Topics vary each semester. Taught by English Department Ph.D. candidates. Cross-list: HURC 245. Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 250 - HISTORY OF THE NOVEL
Short Title: HISTORY OF THE NOVEL
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Course designed to introduce students to the intellectual, historical and aesthetic importance of the novelistic tradition. Selection of works from the 19th century to the present may include Austen, Dickens, Flaubert, James, Woolf, Ellison, Nabokov, Rushdie, and Franzen, and others.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 255 - THE IDEA OF SHAKESPEARE
Short Title: THE IDEA OF SHAKESPEARE
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Who was Shakespeare? How do we understand the global multimedia icon that is 'Shakespeare'? Designed for non-majors or for potential English majors, this course offers an introductory approach to the works of William Shakespeare and to the Shakespeare 'phenomenon' through close attention to his poems, play texts, and after effects.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 260 - WHAT IS AMERICAN LITERATURE
Short Title: WHAT IS AMERICAN LITERATURE
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A survey of representative U.S. authors from the 18th century to the present designed for both majors and non-majors. Students will read fiction, poetry, and non-fiction prose, and film in context of the literary, social and political movements of the last century. Writers may include: Kahane, Yezierska, Miller, Stein, Olsen, Ginsberg, Ozick, Roth, Rich, Chaybon, Foer.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 265 - JEWISH-AMERICAN LITERATURE AND CULTURE
Short Title: JEWISH-AMERICAN LITERATURE
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A survey of Jewish-American literature from the early 20th century to the present. The course explores novels, poems, non-fiction prose, and film in context of the literary, social and political movements of the last century. Writers may include: Kahane, Yezierska, Miller, Stein, Olsen, Ginsberg, Ozick, Roth, Rich, Chaybon, Foer.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 267 - INTRODUCTION TO AFRICAN AMERICAN LITERATURE
Short Title: INTRO TO AFRICAN AMER LIT
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An introduction to the history and traditions of African American literature. Course will examine the poetry, essays, and fiction by people of African descent from the 18th to the 21st centuries.
Course URL: www.english.rice.edu (http://www.english.rice.edu)
ENGL 268 - INTRODUCTION TO NATIVE AMERICAN LITERATURE
Short Title: NATIVE AMERICAN LITERATURE
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This multi-genre course introduces students to Native American literature through the contemporary novel, autobiography, critical essays, poetry, and film. An awareness of historical, cultural, and political movements important to American Indian peoples will supplement literary analysis. The class will address issues of sovereignty, land claims, activism, and identity.
Course URL: www.english.rice.edu

ENGL 269 - SCIENCE FICTION AND THE ENVIRONMENT
Short Title: SCI FI AND THE ENVIRONMENT
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Examines the ways that science fiction has expressed and challenged ideas about nature, culture, society, and politics. Cross-list: ENST 265.

ENGL 270 - ASPECTS OF MODERN LITERATURE
Short Title: ASPECTS OF MODERN LITERATURE
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An introduction to modern/postmodern culture that may include readings of novels, plays, short stories, poems, psychoanalytic theory, and art criticism/philosophy. The emphasis is on reading and interpreting different kinds of texts in broad cultural contexts.
Course URL: www.english.rice.edu

ENGL 271 - LITERATURE AND RELIGION
Short Title: LITERATURE AND RELIGION
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This pre-law course develops the skills necessary for legal and other argumentative writing. We learn the tactics associated with the interpretation of texts, muster evidence, and employ persuasive rhetorics. The course doubles its forensic investment by working through literary, historical and legal texts.
Course URL: www.english.rice.edu

ENGL 272 - LITERATURE AND MEDICINE
Short Title: LITERATURE AND MEDICINE
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Designed for, but not limited to, students interested in the medical profession, this course introduces the study of medicine through reading imaginative literature--novels, plays, essays, poems--by and about doctors and patients, focusing on understanding ethical issues and on developing critical and interpretive skills.
Course URL: www.english.rice.edu

ENGL 273 - MEDICINE AND MEDIA
Short Title: MEDICINE AND MEDIA
Department: English
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An interdisciplinary exploration of the role of imaging technologies in the practice of medicine, and the role of mass media in shaping our understandings of the body, health, and disease. This course examines visual media structure ‘ways of seeing’ for physicians and for the public. Emphasis will be placed on developing media literacy skills.
Cross-list: SWGS 273.
Course URL: www.english.rice.edu

ENGL 274 - LITERATURE AND FORENSICS
Short Title: LITERATURE AND FORENSICS
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Literature and Religion examines the place of religious thought in literature and culture from the pre-modern to the modern world. The course examines how religious problems and questions – from an investment in a theological world view to the critique of God and providence -- have shaped literary form and function.

ENGL 277 - LITERATURE AND FORENSICS
Short Title: LITERATURE AND FORENSICS
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This pre-law course develops the skills necessary for legal and other argumentative writing. We learn the tactics associated with the interpretation of texts, muster evidence, and employ persuasive rhetorics. The course doubles its forensic investment by working through literary, historical and legal texts.
Course URL: www.english.rice.edu
ENGL 278 - MEDICINE IN THE AGE OF NETWORKED INTELLIGENCE
Short Title: MED IN AGE OF NETWORKED INTELL
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course imagines and predicts the future of medicine at its evolving intersection with technology. Examines how developments in mobile, social, personal and global health are transforming medical research, communication, practice. Emphasis on active learning through hands-on creative projects. Topics include social media, quantified self, big data, ethics, doctor-patient relationship.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 286 - CLASSICAL AND CONTEMPORARY FILM AND THEORY
Short Title: CLASSICAL & CONTEMPORARY FILM
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A course focusing on contexts such as movies and ads, familiar plots and conventions define their significance. Cross-list: HART 286.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 290 - TOPICS IN LITERARY AND CULTURAL ANALYSIS
Short Title: LITERARY CULTURAL ANALYSIS
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introductory courses that cover a range of texts in social, political and aesthetic contexts, and can also include introductory courses on literary theory, cultural theory, and narrative. Please consult English department website for specific details. Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 299 - ENGLISH LITERATURE AND THE PUBLIC HUMANITIES
Short Title: HISTORY AND MEANING
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: In this course, students learn to apply critical humanistic methods to issues of public importance, especially in the Houston area. Participants study necessary applications of humanistic inquiry to civic life and contribute to this work themselves. Topics vary each semester. Past topics have included: Surreal Houston; Curating Heritage; (Dis)locating Art. Consult the Humanities Research Center or the English Department for more information. Cross-list: HURC 299. Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 300 - PRACTICES OF LITERARY STUDY: READING METHODS
Short Title: PRACTICES OF LITERARY STUDY
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course that identifies and explores key concepts of recent critical theory. Students read short texts of contemporary theory and discuss the relation between theory and literature. Required for English majors.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 301 - INTRODUCTION TO FICTION WRITING
Short Title: INTRO TO FICTION WRITING
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course that teaches the fundamentals of fiction writing, and includes a mixture of reading and writing assignments. The goal is for each student to produce two short stories possessing imaginative ingenuity, structural integrity, and literary merit by the end of the semester.
Course URL: www.english.rice.edu (http://www.english.rice.edu)
ENGL 302 - SCREENWRITING
Short Title: SCREENWRITING
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course in reading and writing creative nonfiction prose for the beginning writer. Sections may focus on a range of nonfiction genres or one specific form, e.g. personal essay/memoir, travel narratives, literary journalism, science and nature writing.
Course URL: www.english.rice.edu

ENGL 303 - PLAYWRITING
Short Title: PLAYWRITING
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Playwriting will explore and engage in various rudiments, skills, practices, stagings and performances of stage plays.
Course URL: www.english.rice.edu

ENGL 304 - INTRODUCTION TO POETRY WRITING
Short Title: INTRO TO POETRY WRITING
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will introduce students to the art and craft of screenwriting through a focused study of terminology, formatting and cinematic technique. Assignments will include writing exercises, weekly viewing of films and readings of screenplays. Students will write their own treatments, outlines and full-length screenplays. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 305 - INTRODUCTION TO CREATIVE NONFICTION WRITING
Short Title: INTRO CREATIVE NONFICT WRITING
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will introduce students to the art and craft of screenwriting through a focused study of terminology, formatting and cinematic technique. Assignments will include writing exercises, weekly viewing of films and readings of screenplays. Students will write their own treatments, outlines and full-length screenplays. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 306 - TOPICS IN FICTION WRITING
Short Title: TOPICS IN FICTION WRITING
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A variable topics workshop in the writing of fiction. Topics will vary from semester to semester and may include 'Fairytales, Folklore, Fantasy, and Fright,' 'Persona,' 'Experiments in Fiction,' and more. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 307 - TOPICS IN POETRY WRITING
Short Title: TOPICS IN POETRY WRITING
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A variable topics workshop in the writing of poetry. Topics will vary from semester to semester and may include 'Sonnet, Elegy, Ode,' 'Writing Green,' 'The Art of the Archive,' 'Poems and Paintings,' and more. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 308 - INTRODUCTION TO PODCASTING
Short Title: INTRODUCTION TO PODCASTING
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This project-based course will lead us through an introduction to the ever-expanding medium of podcasting, specifically radio storytelling. We will unpack and discuss the techniques of practiced podcasters and use those elements in our own attempts at radio reportage: arts & culture shorts, vox pops, sonic ID's, and short and long-form interviews. We will become proficient in capturing sound, interviewing strangers, writing scripts, pitching ideas for stories, and using GarageBand software to edit and shape that content. NOTE: If a student previously enrolled in ENGL 309 Special Topics - Podcasting, the student cannot take ENGL 308.
Course URL: www.english.rice.edu

ENGL 309 - TOPICS IN CREATIVE NONFICTION WRITING
Short Title: TOPICS IN CREATIVE NONFICTION WRITING
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A variable topics workshop in the writing of creative nonfiction. Topics will vary from semester to semester and may include 'Nature Writing,' 'Life Writing,' 'History of the Essay,' and more. Repeatable for Credit.
Course URL: www.english.rice.edu
ENGL 310 - NONFICTION NATURE WRITING
Short Title: NONFICTION NATURE WRITING
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: In this creative writing seminar, students will explore some of the ways that creative nonfiction can become a vehicle for questions about how to imagine our place in the world, as well as the relationships between memory and landscape, politics and place, and inclusion and exile. NOTE: If a student previously enrolled in ENGL 309 Special Topics - Topics in Nonfiction Writing, the student cannot take ENGL 310.

ENGL 311 - TOPICS IN MEDIEVAL LITERATURE AND/OR CULTURE
Short Title: MEDIEVAL TOPICS
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A special course in Medieval literature and/or culture. Topics will vary.

ENGL 312 - OLD ENGLISH LITERATURE AND LANGUAGE
Short Title: OLD ENGL LIT AND LANGUAGE
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A survey course in Old English literature and language. Cross-list: MDEM 312. Repeatable for Credit.

ENGL 314 - MEDIEVAL ROMANCE
Short Title: MEDIEVAL ROMANCE
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course that examines the development of romance as a genre during the medieval period. Cross-list: MDEM 319.

ENGL 316 - CHAUCER
Short Title: CHAUCER
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An introduction to Geoffrey Chaucer's The Canterbury Tales, Middle English, and the political and cultural climate of the fourteenth century. Cross-list: MDEM 316, SWGS 305.

ENGL 317 - ARTHURIAN LITERATURE
Short Title: ARTHURIAN LITERATURE
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A survey of the origins and development of the Arthurian legend from the earliest chronicles in the sixth century and later medieval French, Welsh, Irish, and English Arthurian poems to modern adaptations of Arthurian material, including films. Cross-list: MDEM 317, SWGS 301.

ENGL 318 - FAIRYTALES AND FEAR TALES
Short Title: FAIRYTALES AND FEAR TALES
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: In this class students will read, discuss and analyze a variety of classical and contemporary genres in order to compose and revise adaptations and original versions of classical fairy tales and horror stories. NOTE: If a student previously enrolled in ENGL 306 Special Topics - Topics in Fiction Writing, the student cannot take ENGL 318.

ENGL 319 - FANTASY AND SCIENCE FICTION
Short Title: FANTASY AND SCIENCE FICTION
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: In this class students will read, discuss and analyze a variety of classical and contemporary genres in order to compose and revise adaptations and original versions of fantasy and science fiction stories. NOTE: If a student previously enrolled in ENGL 306 Special Topics - Topics in Fiction Writing, the student cannot take ENGL 319.
ENGL 320 - SHAKESPEARE ON FILM
Short Title: SHAKESPEARE ON FILM
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course that examines both the text of selected Shakespearean plays and films based on them, focusing on the difference between film and drama.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 321 - EARLY SHAKESPEARE
Short Title: EARLY SHAKESPEARE
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An examination of representative early Shakespearean plays, including tragedies, comedies, and histories. Plays vary from year to year.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 322 - LATE SHAKESPEARE
Short Title: LATE SHAKESPEARE
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An examination of representative Shakespearean works.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 323 - RENAISSANCE DRAMA
Short Title: RENAISSANCE DRAMA
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course focusing on selected plays of Elizabethan and Jacobean England, read both for their literary significance and for the way they were part of the period's social, economic, and political forces. Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 325 - STUDY ABROAD: RICE ENGL MAJORS AT THE UNIVERSITY OF EXETER
Short Title: STUDY ABROAD: RICE AT EXETER
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ENGL 200 and ENGL 300
Description: Special course for the transfer credit of pre-approved coursework taken at the University of Exeter, as part of the English department's study abroad program for English majors at the University of Exeter. Department Permission Required. Repeatable for Credit.

ENGL 326 - TOPICS IN RENAISSANCE LITERATURE AND CULTURE
Short Title: TOPICS IN REN. LIT. AND CULT.
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course focusing on various genres of English literature from the early modern period. Topics vary and have recently included 'Love, Sex and Death in the Renaissance' and 'Heaven and Hell.' Repeatable for Credit.

ENGL 327 - GRAPHIC NOVEL
Short Title: GRAPHIC NOVEL
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: In this course students will use the study of the Graphic Novel as an opportunity to explore imagination both analytically and creatively (and to recognize that the two modes are not at odds). Students shall read widely and deeply and with great pleasure and intensity. NOTE: If a student previously enrolled in ENGL 306 Special Topics - Topics in Fiction Writing, the student cannot take ENGL 327.

ENGL 328 - JOHN MILTON: RADICAL THOUGHT THEN AND NOW
Short Title: JOHN MILTON: RADICAL
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course on the major poems of John Milton, with an emphasis on "Paradise Lost" and the theological and philosophical issues that it engages (then and now). Mutually Exclusive: Cannot register for ENGL 328 if student has credit for ENGL 528.
ENGL 330 - ORIGINS OF THE ENGLISH NOVEL
Short Title: ORIGINS OF THE ENGLISH NOVEL
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course focusing on the most important literary innovation of the 18th-century: the birth of the novel. We will examine the modern social and cultural forces crucial to and inextricable from this watershed development: the emergence of liberalism, conservatism, feminism, class, secular culture, the sex/gender system, individualism, and the separation of public and private spheres.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 332 - LITERATURE OF THE BRITISH ENLIGHTENMENT
Short Title: LIT OF BRITISH ENLIGHTENMENT
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course that explores the emergence and consolidation of the English novel and its dynamic relationship to many other 18th-century legacies: the modern individual, capitalism, civil society, the middle class, democracy, and colonialism.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 333 - 18TH CENTURY BRITISH FICTION
Short Title: 18TH CENTURY BRITISH FICTION
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course that examines a representative range of British prose and poetry from 1660-1790, the period known as the Enlightenment. This was a volatile age of plots, revolution, philosophical and scientific innovation, and literary transformation. Our readings will cover poems of several genres, short prose narratives, essays and philosophical treatises.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 336 - IRISH LITERATURE
Short Title: IRISH LITERATURE
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course that surveys Irish Literature since the 19th century and includes poetry, drama, and fiction. It focuses upon the political turmoil preceding and following the War of independence as well as debates concerning the ideological operations of literature. Some authors covered may be, Yeats, Joyce, Beckett, O'Brien, Bowen, Heaney and Boland. Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 338 - BRITISH ROMANTICISM
Short Title: BRITISH ROMANTICISM
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course that examines how this concern forms in the Romantic Period and the debates concerning the ideological operations of literature. Some authors covered may be, Yeats, Joyce, Beckett, O'Brien, Bowen, Heaney and Boland. Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 339 - ROMANTICISM IN RUINS
Short Title: ROMANTICISM IN RUINS
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course that explores the excesses, extremes, and diversities of British Romanticism across a variety of media: plays, tales, confessions, novels, and satires (including illustrations, paintings, and visual spectacles).
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 342 - LITERATURE OF THE BRITISH ENLIGHTENMENT
Short Title: LIT OF BRITISH ENLIGHTENMENT
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course that surveys Irish Literature since the 19th century and includes poetry, drama, and fiction. It focuses upon the political turmoil preceding and following the War of independence as well as debates concerning the ideological operations of literature. Some authors covered may be, Yeats, Joyce, Beckett, O'Brien, Bowen, Heaney and Boland. Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)
ENGL 341 - VICTORIAN LITERATURE AND CULTURE  
**Short Title:** VICTORIAN LITERATURE & CULTURE  
**Department:** English  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** A multi-genre course that explores the array of creative works that examine the Victorian period through poetry, non-fiction prose, fiction, art and material culture.

ENGL 342 - SURVEY OF VICTORIAN FICTION  
**Short Title:** VICTORIAN FICTION  
**Department:** English  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** A survey of the many genres of the nineteenth-century novel, this course will try to come to terms with some of the insistent questions posed by and through the fiction of the period. Cross-list: SWGS 372.  
**Course URL:** [www.english.rice.edu](http://www.english.rice.edu)

ENGL 343 - JANE AUSTEN’S WORLDS  
**Short Title:** JANE AUSTEN’S WORLDS  
**Department:** English  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** An exploration of Jane Austen as Regency writer and contemporary icon. The course will focus both on Austen's writing her novels, her juvenilia and her letters and on visual and textual adaptations of her work. Cross-list: SWGS 343.  
**Course URL:** [www.english.rice.edu](http://www.english.rice.edu)

ENGL 346 - THE MODERN NOVEL IN BRITAIN  
**Short Title:** THE MODERN NOVEL IN BRITAIN  
**Department:** English  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** A survey of the modernist novel in 20th-century Britain.  
**Course URL:** [www.english.rice.edu](http://www.english.rice.edu)

ENGL 340 - MODERN SHORT STORY  
**Short Title:** MODERN SHORT STORY  
**Department:** English  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Study of great modern short fiction with emphasis on reading as an ethical enterprise. Selected critical essays complement works from Melville to Maupassant, Flaubert to Kafka to O’Connor as we talk about alienation and solitude, death and violence and the vicissitudes of family. Does not count toward French major. Cross-list: FREN 355. Recommended Prerequisite(s): Any 200-level course or above in English or French Studies, or HUMA 101 or 102.  
**Course URL:** [www.english.rice.edu](http://www.english.rice.edu)

ENGL 350 - SURVEY OF EUROPEAN FICTION: 20TH CENTURY  
**Short Title:** EUROPEAN FICTION: 20TH CENTURY  
**Department:** English  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** A survey of a political and formal developments in French, German, Russian, and Eastern European novels by writers such as Proust, Hacek, Pasternak, Hrabal, and Boll.  
**Course URL:** [www.english.rice.edu](http://www.english.rice.edu)

ENGL 353 - MODERN DRAMA  
**Short Title:** MODERN DRAMA  
**Department:** English  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** An examination of plays from traditions of 20th century and contemporary theatre and performance, including work by O'Neill, Williams, Beckett, Pinter, Stoppard, Albee, Shepard, Mamet, Parks, and Kane. Course will include writing critical papers and some performance.  
**Course URL:** [www.english.rice.edu](http://www.english.rice.edu)

ENGL 354 - QUEER LITERARY CULTURES  
**Short Title:** QUEER LITERARY CULTURES  
**Department:** English  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** An introduction to queer literary theory by reading works in several genres, from Sappho to the present day, including Shakespeare, Dickinson, Tennyson, Whitman, Proust, Stein and Woolf. Cross-list: SWGS 364.  
**Course URL:** [www.english.rice.edu](http://www.english.rice.edu)

ENGL 355 - MODERN SHORT STORY: TOWARDS AN ETHICS OF FICTION  
**Short Title:** MODERN SHORT STORY  
**Department:** English  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Study of great modern short fiction with emphasis on reading as an ethical enterprise. Selected critical essays complement works from Melville to Maupassant, Flaubert to Kafka to O’Connor as we talk about alienation and solitude, death and violence and the vicissitudes of family. Does not count toward French major. Cross-list: FREN 355. Recommended Prerequisite(s): Any 200-level course or above in English or French Studies, or HUMA 101 or 102.  
**Course URL:** [www.english.rice.edu](http://www.english.rice.edu)
ENGL 356 - MODERNISMS
Short Title: MODERNISMS
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An exploration of modernist work from the late 19th century to World War II. Course includes fiction, poetry, film, painting, theatre, music and theories of art.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 357 - ORIGINS OF THE POSTMODERN
Short Title: ORIGINS OF THE POSTMODERN
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An examination of diverse cultural manifestations of the 'postmodern' through the last half of the twentieth century. Popular music, novels, plays, film, art, and fairy tales may be discussed.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 358 - CONSUMPTION AND CONSUMERISM
Short Title: CONSUMPTION & CONSUMERISM
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An exploration of the history, philosophy and culture of eating, drinking, shopping and other forms of consuming. Featuring detailed analysis of literatures in English, visual art, music, film and food.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 359 - WRITING ON/Writing Off NEW ORLEANS
Short Title: WRITING ON/OFF NEW ORLEANS
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An examination of the relation between New Orleans and the writing in and about it. Works by Kate Chopin, William Faulkner, Tennessee Williams, Walker Percy, Eudora Welty, John Kennedy Toole, Michael Ondaatje, and others will be studied. Students will create their own New Orleans text in a final paper.
Course URL: english.rice.edu (http://english.rice.edu)

ENGL 360 - AMERICAN LITERATURE BEFORE THE CIVIL WAR
Short Title: AMER LIT BEFORE THE CIVIL WAR
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A survey of American literatures spanning the Age of Discovery, Atlantic Revolutions, and onset of the U.S. Civil War.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 361 - US LITERATURE FROM THE CIVIL WAR TO WWI
Short Title: US LITERATURE CIVIL WAR TO WWI
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A survey of American literatures from Reconstruction to WWI.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 362 - MODERN AMERICAN FICTION
Short Title: MODERN AMERICAN FICTION
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A survey of the fiction of the first half of the 20th century, one of the great periods of social turmoil and intense artistic experimentation. Authors may include Chopin, Hemingway, Fitzgerald, Toomer, Faulkner, Hurston, Barnes.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 363 - THE US NOVEL POST-WORLD WAR II
Short Title: US NOVEL POST-WORLD WAR II
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An examination of the narrative experiments and trends of the period, from 1950 to the present.
Course URL: www.english.rice.edu (http://www.english.rice.edu)
ENGL 364 - MODERN AMERICAN POETRY
Short Title: MODERN AMERICAN POETRY
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A survey of representative American poets of the period. These may include Gertrude Stein, Amy Lowell, Robert Frost, Wallace Stevens, William Carlos Williams, Ezra Pound, Marianne Moore, T.S. Eliot.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 365 - AMERICAN POETRY 1960-PRESENT
Short Title: AMERICAN POETRY 1960-PRESENT
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A survey of 20th - 21st century U.S. poetry: poets studied may include Elizabeth Bishop, Robert Hayden, Randall Jareff, John Berryman, Robert Lowell, Gwendolyn Brooks, Denise Levertov, James Merrill, John Ashbury, Philip Levine, Anne Sexton, and others.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 366 - TOPICS IN AMERICAN LITERATURE
Short Title: TOPICS IN AMERICAN LITERATURE
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A mixed-genre course focusing on the Chicano movement, the Chicano renaissance, and alternative literary and mythic traditions associated with them. Cross-list: SPPO 354, SWGS 354.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 367 - LITERATURE AND THE ENVIRONMENT
Short Title: LITERATURE & THE ENVIRONMENT
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course that asks the question: How does literature express or shape environmental values? In this class we will read American fiction and nonfiction exploring the relationship between human and nonhuman nature. Cross-list: ENST 368.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 369 - THE AMERICAN WEST AND ITS OTHERS
Short Title: THE AMERICAN WEST & ITS OTHERS
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 370 - AFRICAN AMERICAN LITERATURE
Short Title: AFRICAN AMERICAN LITERATURE
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A variable topics course focusing on themes, movements or genres across several periods of American literature. Previous topics include Sea Stories, American Gothic, Bob Dylan and the '60s and Utopia. Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 371 - CHICANO/A LITERATURE
Short Title: CHICANO/A LITERATURE
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A mixed-genre course focusing on the Chicano movement, the Chicano renaissance, and alternative literary and mythic traditions associated with them. Cross-list: SPPO 354, SWGS 354.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 372 - SURVEY OF AMERICAN FILM AND CULTURE
Short Title: SURVEY OF AMER FILM & CULTURE
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course that explores the history of cinema in the U.S. from its origins to the present day. This course will examine the development of narrative, sound, the classical Hollywood form and style; film genres; the emergence of television; the influence of postwar "art cinemas"; the origins of the blockbuster; and the status of Hollywood as "global cinema." Cross-list: FILM 373, HART 380.
Course URL: www.english.rice.edu (http://www.english.rice.edu)
ENGL 374 - CINEMA STUDIES
Short Title: CINEMA STUDIES
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A variable topics course central to the study of cinema theory, criticism, and history. Repeatable for Credit.

ENGL 375 - FILM AND LITERATURE
Short Title: FILM AND LITERATURE
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An exploration of twelve masterpieces of world cinema, with special attention to the texts (when applicable) on which they are based. Some of the filmmakers covered: Akira Kurosawa, Jean Renoir, Bernardo Bertolucci, Jean-Luc Godard, Roberts Bresson, Ingmar Bergman, Howard Hawks, and Kar Wai Wong.
Course URL: www.english.rice.edu

ENGL 377 - ART AND LITERATURE
Short Title: ART AND LITERATURE
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course that explores how the languages of text and image can interrogate as well as clarify each other. We will focus on three key bodies of work: the paintings of Vermeer; a massive graphic novel by Charlotte Salomon, a 22 year old woman who died at Auschwitz; and Alfred Hitchcock’s revision of his novelistic source for “Psycho”.
Course URL: www.english.rice.edu

ENGL 379 - THIRD WORLD LITERATURE
Short Title: THIRD WORLD LITERATURE
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course that primarily surveys fiction, poetry, drama, film (in English) from postcolonial contexts, especially those of Africa, the Caribbean, and the Indian subcontinent. Authors discussed may include Rushdie, Narayan, Roy, Wolcott, Ngugi, Coetzee, and Achebe.

ENGL 380 - CONTEMPORARY ANGLOPHONE LITERATURES
Short Title: CONTEMPORARY ANGLOPHONE LIT
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course that focuses on literatures in English that emerge in the wake of European colonialism, except those from the United States. Writers might include those from Africa, Australia, Canada, India, or the Caribbean. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 381 - TOPICS IN WOMEN WRITERS
Short Title: TOPICS IN WOMEN WRITERS
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A variable topics course that focuses on women writers from various traditions. Cross-list: SWGS 327. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 382 - FEMINIST THEORY
Short Title: FEMINIST THEORY
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course focusing on concepts that drive and divide social movements centered on gender equality, women’s issues, and sexual identity in the two-thirds and one-third world, among them feminism; the body; race; labor; rights, needs, and desires. Cross-list: SWGS 380.
Course URL: www.english.rice.edu

ENGL 383 - GLOBAL FICTIONS
Short Title: GLOBAL FICTIONS
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course has two components: one, it looks at recent fiction in English by U.S., British, and international writers that deal with global and transnational issues; and two, it studies the work of recent cultural critics who provide new understandings of an increasingly networked world as well as the imaginative and narrative tools –fictional, artistic, cinematic, electronic and visual— that we use to process the fast-paced realities of contemporary globalization.
Course URL: www.english.rice.edu
ENGL 384 - AMERICAN INDEPENDENT CINEMA
Short Title: AMERICAN INDEPENDENT CINEMA
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course that explores the history of filmmaking outside of Hollywood in the United States throughout the 20th century, emphasizing the period from 1959 to the present. Special attention to the contributions of marginalized communities and the art world, innovative film styles, and the interdependence of alternative and mainstream media cultures. Cross-list: FILM 384.

ENGL 385 - FILM STUDIES
Short Title: FILM STUDIES
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A variable topics course that may focus on such areas as film genres, national cinemas, world cinema, directors or other thematically organized topics. Cross-list: FILM 385. Mutually Exclusive: Cannot register for ENGL 385 if student has credit for ENGL 589. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 386 - MEDICAL MEDIA ARTS LAB
Short Title: MEDICAL MEDIA ARTS LAB
Department: English
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Students will collaborate with health professionals to create solutions to real-world medical communication, visualization and design problems. Working individually and in teams, students will apply critical thinking and theory to hands-on design. Projects may include production of short videos, infographics, app development, 3-D virtual models, creative writing, and other media arts. Cross-list: FILM 381.
Course URL: www.english.rice.edu

ENGL 387 - TOPICS IN CULTURAL STUDIES
Short Title: CULTURAL STUDIES
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A variable topics course that may focus on one or more theorist, on a genre or theme, or on debates within the field of cultural studies. Recent topics have included mass culture and film; Marx; Science in Fiction and Film; contemporary ethnic studies; and more. Not limited in period, scope, or geography. Repeatable for Credit.

ENGL 388 - MEDIA STUDIES
Short Title: MEDIA STUDIES
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A variable topics course that addresses interdisciplinary approaches to studying the relationships between film, photography, television, and digital technologies such as the internet and computer-generated imaging. Cross-list: FILM 386. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 389 - YOUTH STUDIES
Short Title: YOUTH STUDIES
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A variable topics course exploring the cultural productions of youth, their social geographies, and youth as a critical field important to the theorization of activism, technology, law and incarceration, reproductive politics, sexuality, consumerism, citizenship, environment. Previous topics: Generation X, Third Wave Feminism, Obama and the Youth Vote, Harry Potter & Gen Y, Power, Politics, and Reading Issues of Access. Cross-list: SWGS 389. Repeatable for Credit.
Course URL: www.english.rice.edu

2019-2020 General Announcements
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ENGL 390 - INTRODUCTION TO THEATRE
Short Title: INTRODUCTION TO THEATRE
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A survey course of the art and theory of the theatre through an examination of dramatic literature and theatrical venues from the Greeks through the modern era. The course will also explore the craft of the theatre from a practitioner’s point of view as it is realized today. Requires attending several theatre productions in local Houston venues. Cross-list: THEA 303.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 392 - CONTEMPORARY POETRY
Short Title: CONTEMPORARY POETRY
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An in-depth analysis of contemporary poetry and poetics. Readings will focus on the rich variety of work written in English between the last decades of the twentieth century and to present. Topics will vary from semester to semester. Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 399 - THE BLACK IMAGINARY: 1775-PRESENT
Short Title: THE BLACK IMAGINARY: 1775-PRESENT
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course studies how twentieth century reconstructions of slavery in American literature and film engage contemporary anxieties regarding race, gender, sexuality, and national identity. These neo-slave narratives often critique modernity; challenge how we think about history, evidence, memory, and trauma; and trouble narrative conventions.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 401 - ADVANCED FICTION WRITING
Short Title: ADVANCED FICTION WRITING
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course addresses some of the leading questions that shaped black writings and expressive culture in the United States from the late 18th century forward. Our readings will include Wheatley, Walker, Delany, Douglass, Du Bois, Ellison, Baldwin, King, Malcolm X, Morrison, Percival Everett, and early and contemporary films and music.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 301 - ADVANCED FICTION WRITING
Short Title: ADVANCED FICTION WRITING
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ENGL 301
Description: A course conducted mostly as a workshop for advanced fiction writers. It will include assigned writing exercises and weekly readings of published stories to deepen students’ understanding of narrative technique. Repeatable for Credit.
ENGL 402 - WRITING LONGER FICTION: NARRATIVE DESIGN
Short Title: WRITING LONGER FICTION
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ENGL 301 or ENGL 306
Description: A course in writing of longer narrative forms for advanced fiction writers. At the start of the semester, students will write a proposal for an original novel in the genre of their choosing and complete no fewer than 100 pages by the end. The class will be a mixture of discussion of assigned reading, workshop, and one-on-one tutorial. Instructor Permission Required. Repeatable for Credit.

ENGL 404 - ADVANCED POETRY WRITING
Short Title: ADV POETRY WRITING
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ENGL 304
Description: An in-depth study of contemporary poetry, this course emphasizes the careful analysis of books by six to eight contemporary poets, the reading of selected essays on poetic technique, and the writing of poems with a view toward finding a personal voice. Repeatable for Credit.

Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 405 - ADVANCED CREATIVE NONFICTION WRITING
Short Title: ADV CREATIVE NONFICT WRITING
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An advanced reading and writing workshop for writers who have some familiarity with the nonfiction genre. Published works will be read as blueprints for the construction of student work. Repeatable for Credit.

Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 410 - SENIOR SEMINAR
Short Title: SENIOR SEMINAR
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Senior. Enrollment is limited to students with a major in English. Enrollment limited to students in the program. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ENGL 200 and ENGL 300
Description: The Senior Seminar is the first course in a 2 part sequence, required of all senior English majors. An immersive, research and writing methods course, the Senior Seminar prepares students to produce a significant piece of critical or creative work, guiding each year’s senior cohort through the methods and best-practices that invigorate longer-forms of creative inquiry and research. Similar to other senior design and research courses throughout the university, the Senior Seminar engages students in the deeper and more rewarding processes of sustained writing and research, and offers all students the opportunity to prepare and build an independent research project with sustained faculty support.

ENGL 411 - RESEARCH WORKSHOP
Short Title: RESEARCH WORKSHOP
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Senior. Enrollment is limited to students with a major in English. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Taught in the Spring, the Research Workshop is the 2nd course required of senior English majors. It follows from the Fall Senior Seminar. The course is co-taught by three faculty members from different areas of expertise, including one creative writer. The Spring Research Workshop guides the cohort of senior majors from the Fall Senior Seminar through the writing stage of their senior projects. In this course, the students will complete their in-depth critical or creative project, begun in the Fall semester. Recommended Prerequisite(s): ENGL 200 and ENGL 300 and ENGL 410

ENGL 418 - STUDIES IN RENAISSANCE DRAMA
Short Title: STUDIES IN RENAISSANCE DRAMA
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Junior or Senior. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ENGL 200 and ENGL 300
Description: A variable topics course designed to build on student knowledge gained earlier in the curriculum. Repeatable for Credit.
ENGL 419 - STUDIES IN SHAKESPEARE
Short Title: STUDIES IN SHAKESPEARE
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A variable topics course that provides an opportunity to explore some dimension of Shakespeare’s work with specialized focus. Please consult English department for specific details. Repeatable for Credit.

ENGL 430 - EMPIRE AND BRITISH LITERATURE 1700-1950
Short Title: EMPIRE & BRITISH LITERATURE
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ENGL 200 and ENGL 300
Description: This course provides detailed knowledge of a diverse range of eighteenth and nineteenth-century texts that engaged the realities, possibilities, fantasies and pitfalls of the British Empire. Course also includes historical and archival material as well as recent critical and historical approaches to the study of empire and its relationship to cultural identity. Repeatable for Credit.
Course URL: english.rice.edu

ENGL 438 - THE GROTESQUE
Short Title: THE GROTESQUE
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines the grotesque in literature and art. It covers a variety of textual and visual sources across periods; theoretical materials will include works from literary studies, visual culture, art history, critical theory and aesthetics. Cross-list: HART 430.
Course URL: www.english.rice.edu

ENGL 441 - VICTORIAN STUDIES
Short Title: VICTORIAN STUDIES
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Junior or Senior. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ENGL 200 and ENGL 300
Description: A variable topics course designed to build on student knowledge of Victorian literature and/or culture gained earlier in the curriculum. Recent topics have included the family, 'The Pre-Raphaelites', 'Around 1900' the 'Long Victorian Novel', and 'Victorian Legacies'. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 459 - STUDIES IN LITERATURE AND ECOLOGY
Short Title: STUDIES IN LIT. AND ECOLOGY
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A special topics course that addresses literature and culture from 1750 to the present, with a view to understanding the new geological era that humans have created, and its ecological implications. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 461 - 19TH-CENTURY AMERICAN STUDIES
Short Title: 19TH-CENTURY AMER STUDIES
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A variable topics course designed to build on student knowledge of 19th-century American literature and/or culture gained earlier in the curriculum. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 466 - STUDIES IN AMERICAN/U.S. LITERATURE AND CULTURE
Short Title: STUDIES IN AMER/ US LIT, CULT
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Junior or Senior. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ENGL 200 and ENGL 300
Description: A special topics course in American/U.S. literature and culture that transcends historical periods. Repeatable for Credit.
ENGL 470 - STUDIES IN AFRICAN AMERICAN LITERATURE
Short Title: AFRICAN AMERICAN STUDIES
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A variable topics course designed to build on student knowledge of African American literature gained earlier in the curriculum. Recent topics include black women writers. Cross-list: SWGS 453. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: English
Grade Mode: Standard Letter
Course Type: Laboratory, Internship/Practicum, Lecture, Seminar, Lecture/Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

ENGL 481 - FEMINIST STUDIES
Short Title: FEMINIST STUDIES
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A variable topics course designed to build on student knowledge of feminist theory gained earlier in the curriculum. Past topics have included sexualities, Marriage and Its Others, and Third Wave Feminism. Cross-list: SWGS 407. Repeatable for Credit.

ENGL 484 - STUDIES IN LITERARY GENRES
Short Title: STUDIES IN LITERARY GENRES
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ENGL 200 and ENGL 300
Description: A variable topics course designed to build on student knowledge gained earlier in the curriculum.
Course URL: www.english.rice.edu

ENGL 485 - STUDIES IN MODERN LITERATURE
Short Title: STUDIES IN MODERN LITERATURE
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A variable topics course designed to build on student knowledge of modern literature gained earlier in the curriculum. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 489 - SENIOR THESIS PREPARATION
Short Title: SENIOR THESIS PREPARATION
Department: English
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ENGL 200 and ENGL 300
Description: Special work, research and preliminary preparation of a substantive research project for advanced English majors under the supervision of a member of the English department. Prerequisites: ENGL 200 and ENGL 300. Consult English department website for procedures and application. Instructor and department approval must be granted prior to registration. Instructor Permission Required. Repeatable for Credit.
Course URL: www.english.rice.edu
ENGL 495 - SENIOR THESIS
Short Title: SENIOR THESIS
Department: English
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ENGL 200 and ENGL 300 and (ENGL 493 or ENGL 494)
Description: Writing and completion of a substantive research project under the supervision of a member of the English department. Prior approval of instructor and department approval must be granted prior to registration. Consult English department website for procedures and application. Instructor and department approval must be granted prior to registration. Prerequisites: ENGL 200; ENGL 300; ENGL 493 or 494, Instructor Permission Required. Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 497 - STUDIES IN LITERATURE AND CULTURE
Short Title: LITERATURE AND CULTURE
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ENGL 200 and ENGL 300
Description: A variable topics course in a variety of fields and genres, such as City in Literature; Writing On/Writing Off New Orleans; and Literatures of Environmental Justice. Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 509 - MASTER'S THESIS
Short Title: MASTER'S THESIS
Department: English
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 510 - PEDAGOGY SEMINAR
Short Title: PEDAGOGY SEMINAR
Department: English
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: For third-year graduate students preparing to teach their own classes in their fourth year. This course will help students put together syllabi and other teaching materials, address various pedagogical issues and problems, formulate their teaching philosophies.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 513 - THEORY AND MEDIEVAL LITERATURE
Short Title: THEORY AND MEDIEVAL LITERATURE
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A course in Literary and/or Critical Theory's engagement with Medieval Literature. Topics may include, “Gender Theory and Chaucer,” “The Neighbor in Medieval Romance,” “Medieval Ecologies,” “Postcolonial Medieval,” “Imagining Medieval Geographies/ Cartographies.” Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 521 - SHAKESPEARE
Short Title: SHAKESPEARE
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Please consult the English department website for additional information. Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 522 - SHAKESPEARE AND THEORY
Short Title: SHAKESPEARE AND THEORY
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Please consult the English department website for additional information. Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 525 - LITERATURE AND VISUAL ART
Short Title: LITERATURE AND VISUAL ART
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A course in Literary and/or Critical Theory's engagement with literature and visual art. It covers a variety of textual and visual sources; theoretical materials will include works from literary studies, visual culture, art history, critical theory and aesthetics. Cross-list: HART 518. Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 527 - STUDIES IN RENAISSANCE LITERATURE
Short Title: RENAISSANCE
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variables topics course. Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)
ENGL 532 - 18TH CENTURY BRITISH STUDIES
Short Title: 18TH CENTURY BRITISH STUDIES
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Please consult the English department website for additional information. Recent topics include Enlightenment Institutions, Origins of British Novel, Eighteenth-century Emergences, and Libertinism. Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 536 - ENLIGHTENMENT IN CONTEXT
Short Title: ENLIGHTENMENT IN CONTEXT
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Topics may include: British and European Enlightenment literature and culture broadly conceived (such as philosophy, science, religion, visual art, aesthetics, questions of gender etc.). Repeatable for Credit.

ENGL 537 - 19TH CENTURY STUDIES
Short Title: 19TH CENTURY STUDIES
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Please consult the English department website for additional information. Recent topics have included 'The Serialization of the Novel,' Victorian Nonhumans,' and 'Genealogy of Geopolitics.' Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 546 - SPECIAL TOPICS: 20TH CENTURY BRITISH LITERATURE
Short Title: SP 20TH CENTURY BRITISH LIT
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Please consult the English department website for additional course information. Cross-list: SWGS 542. Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 540 - 19TH CENTURY AMERICAN/US LITERATURE
Short Title: 19TH C. AMERICAN/US LITERATURE
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Please consult the English department website for additional course information. Cross-list: SWGS 546. Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)
ENGL 564 - FAULKNER AND CONTEMPORARY THEORY
Short Title: FAULKNER & CONTEMP THEORY
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An intensive examination of four or five of Faulkner’s major novels in the context of a broad range of twentieth-century interpretive strategies. The class will consider issues of narrative form, social context, gender, race, and modern and postmodern aesthetics. Consult the English department website for additional information.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 569 - TRANSNATIONAL AMERICAN STUDIES
Short Title: TRANSNATIONAL AMERICAN STUDIES
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Course introduces the major critical voices in the transnational turn that has been underway in American literary studies for the last decade. Further, it focuses on a series of literary texts and case studies that have occasioned reanalysis of the critical tools and assumptions governing American studies.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 570 - AFRICAN AMERICAN STUDIES
Short Title: AFRICAN AMERICAN STUDIES
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Please consult the English department website for additional course information. Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 577 - EMERGENT MEDIA: TECHNOLOGIES, NETWORKS, CULTURE
Short Title: EMERGENT MEDIA: TECH, NET, CULT
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will delve deeply into media theory, examining the complex interplay between the emergence of new media technologies in different historical periods (past, present and future), the networks of commerce and creativity that fuel and arise from these innovations, and the cultural productions that result.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 581 - CULTURAL STUDIES: CONTEMPORARY LITERATURE, CULTURE AND POLITICS
Short Title: CONTEMPLIT., CULTURE & POLI
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Please consult the English department website for additional course information. Recent topics have included Contemporary Issues in U.S. Culture and Studies in Sexuality. Thinking Sex Under Neo-Liberalism. Cross-list: SWGS 581. Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 585 - POSTCOLONIALISM AND BEYOND
Short Title: POSTCOLONIALISM AND BEYOND
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A course that serves both as an introduction to postcolonial theory and as a reevaluation of its political and ethical ends vis-a-vis recent debates around globalization and cosmopolitanism. For additional course information please consult the English department website. Cross-list: SWGS 585.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 591 - STUDIES IN LITERATURE AND OTHER DISCIPLINES
Short Title: STUDIES IN LIT & OTHER DISCIPL
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Please consult the English department website for additional information. Recent topics have included Visual Cultures 1550-1800; Problems of Close Reading in Literature and Film; and Ecology & Philosophy Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

ENGL 592 - STUDIES IN MODERNISM
Short Title: STUDIES IN MODERNISM
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Please consult the English department website for additional course information. Recent topics have included What Was Modernism; and Joyce and Modernism. Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)
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**Description:**

- **ENGL 600 - TOPICS IN LITERARY STUDIES:**
The first in a two-semester sequence of courses designed to introduce first-year graduate students to different methods and theoretical approaches, to the history and culture of the university as an institution, and to professional genres. Restricted to first-semester graduate students in the English Department.

- **ENGL 601 - FALL TEACHING PRACTICUM:**
  - Open only to those graduate students teaching independent courses in the English department in the fall semester. Repeatable for Credit.

- **ENGL 602 - SPRING TEACHING PRACTICUM:**
  - Open only to those graduate students serving as teaching assistants for courses in English. Repeatable for Credit.

- **ENGL 603 - FALL TEACHING OF LIT & COMP:**
  - Open only to graduate students teaching independent courses in the English department in the fall semester. Repeatable for Credit.

- **ENGL 604 - SPRING TEACHING OF LIT & COMP:**
  - Open only to those graduate students teaching independent courses in the English department in the spring semester. Repeatable for Credit.
ENGL 610 - TOPICS IN LITERARY STUDIES PART 2
Short Title: TOPICS IN LITERARY STUDIES 2
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ENGL 600
Description: The second in a two-semester sequence of courses designed to introduce first-year graduate students to different methods and theoretical approaches, to the history and culture of the university as an institution, and to professional genres.
Course URL: english@rice.edu

ENGL 621 - FALL DIRECTED READING
Short Title: FALL DIRECTED READING
Department: English
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A course designed for students who want to pursue intensive semester-long study of a particular topic not included in the curriculum. Students must identify and receive the approval on an English department faculty member. Instructor and Department approval must be granted prior to registration. Instructor Permission Required. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 622 - SPRING DIRECTED READING
Short Title: SPRING DIRECTED READING
Department: English
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A course designed for students who want to pursue intensive semester-long study of a particular topic not included in the curriculum. Students must identify and receive the approval of an English department faculty member. Instructor and Department approval must be granted prior to registration. Instructor Permission Required. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: English
Grade Mode: Standard Letter
Course Type: Laboratory, Lecture, Seminar, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

ENGL 703 - RESEARCH LEADING TO CANDIDACY YEAR 3
Short Title: CANDIDACY RESEARCH YEAR 3
Department: English
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-9
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Year 3 research leading to PhD candidacy. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 704 - RESEARCH LEADING TO CANDIDACY YEAR 4
Short Title: CANDIDACY RESEARCH YEAR 4
Department: English
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-9
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Year 4 research leading to PhD candidacy. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 705 - SUMMER RESEARCH LEADING TO CANDIDACY
Short Title: SUMMER CANDIDACY RESEARCH
Department: English
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Summer research leading to PhD candidacy. Repeatable for Credit.

ENGL 800 - PHD RESEARCH AND THESIS
Short Title: PHD RESEARCH AND THESIS
Department: English
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-9
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Dissertation research for PhD candidates. Repeatable for Credit.
Course URL: www.english.rice.edu
Environmental Studies (ENST)

ENST 100 - ENVIRONMENT, CULTURE AND SOCIETY
Short Title: ENVIRONMENT, CULTURE & SOCIETY
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This introductory course in environmental studies helps students to better understand the complex interrelationship between human cultures and their social and physical environments. Lectures and assignments draw upon the methods and expertise of architecture, the humanities and the social sciences. This is a core course of Rice's Environmental Studies minor. Cross-list: ARCH 105.

ENST 101 - THE EARTH
Short Title: THE EARTH
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Freshman, Junior, Sophomore or Senior. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level

ENST 102 - HISTORY OF THE EARTH AND LIFE
Short Title: HISTORY OF THE EARTH & LIFE
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Study of the earth's systems over the past 4.6 billion years. Topics include evolution of life, continents, ocean basins and climate. Cross-list: ESCI 102.

ENST 113 - ENVIRONMENTAL CRISIS SEMINAR
Short Title: ENVIRONMENTAL CRISIS SEMINAR
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level

ENST 114 - DISCOVERIES IN EARTH, ENVIRONMENTAL AND PLANETARY SCIENCES SEMINAR
Short Title: DISCOVERIES IN EEPS SEMINAR
Department: Environmental Studies
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Overview of exciting discoveries, research and recent advances in Earth, Environmental, and Planetary Sciences, facilitated through discussions with graduate students and faculty, as well as laboratory visits and demonstrations. Topics may vary. Distribution Credit for ESCI/ENST 114 no longer eligible beginning Fall 2019. Cross-list: ESCI 114.

ENST 117 - FRESHMAN SEMINAR IN LOCAL ENVIRONMENTAL SCIENCE RESEARCH
Short Title: FRESHMAN ENVIRONMENTAL SEMINAR
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A 7-week seminar course to introduce freshmen perspective environmental science researches to the excitement of research at Rice and in the broader Houston area, and to provide context with which to think about facts presented in textbooks. Small groups will meet weekly with a graduate student or postdoctoral researcher to explore a published research article by a local team of researchers, gaining background information about the subject and exposure to the research techniques. In the final session, the group will tour the lab that produced the feature article. Additional tours and activities TBA. All first year non-transfer students are eligible to enroll in ENST 117 regardless of AP credit. This course meets in the second half of the semester and features research in the Environmental Science Major. Distribution Credit for ENST 117 no longer eligible beginning Fall 2019.
ENST 201 - THE SCIENCE OF CLIMATE CHANGE
Short Title: SCIENCE OF CLIMATE CHANGE
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This undergraduate course will introduce students to the fundamentals of natural and anthropogenic climate change. After briefly reviewing Earth's composition and its fluid envelopes, we will cover the basic physics of the climate system, providing tools to understand weather and climate phenomena (e.g. monsoons, El Niño), the greenhouse effect, and climate feedbacks. Building on this understanding, a succinct tour of geologic history will help us paint a more complete picture of Earth's climate variations and how they affected human evolution and history. With this context, we will be able to judge the anomalous character of recent climate change, establish its anthropogenic nature, and discuss solutions to the current climate crisis. Students from any major are encouraged to enroll and engage on important topic. Cross-list: ESCI 201.

ENST 202 - CULTURE, ENERGY, AND THE ENVIRONMENT: AN INTRODUCTION TO ENERGY HUMANITIES
Short Title: CULTURE ENERGY & ENVIRONMENT
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Humanity faces extraordinary challenges in an era of climate change and energy transition. These challenges are not only technological but also questions of value, power, behavior, and understanding. This course draws upon new research across the arts, humanities and social sciences to help students better understand the cultural and social dimensions of our current patterns of energy use, their environmental impacts, and the possibility of new energy futures. Intended for both STEM majors and humanities and social science students. Cross-list: HUMA 202.

ENST 204 - ENVIRONMENTAL SUSTAINABILITY: THE DESIGN & PRACTICE OF COMMUNITY AGRICULTURE
Short Title: COMMUNITY GARDEN
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The course introduces the fundamentals of community garden design and practice. Responsibilities will center on developing and improving the Rice Community Garden. A strong emphasis will be on learning and applying ecological principles to the practice of community agriculture. Class has required meetings outside of regular class time. Distribution Credit for EBIO/ENST 204 no longer eligible beginning Fall 2019. Cross-list: EBIO 204. Repeatable for Credit.

ENST 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Laboratory, Lecture, Seminar, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

ENST 250 - UNDERSTANDING ENERGY: ENERGY LITERACY AND CIVICS
Short Title: UNDERSTANDING ENERGY
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Energy is a foundational driver of human development. Energy impacts our economy, politics, culture, and environment. In this course, students will learn the fundamentals of energy in the context of broader systems and will be asked to think critically about how and why we rely on particular energy resources. The course structure will be comprised of lectures and class discussions along with field trips to power plants, chemical plants, and/or refineries. This class is vital for students interested in the environment and/or the energy industry. Formerly offered as HURC 302. Mutually Exclusive: Cannot register for ENST 250 if student has credit for HURC 302.
Course URL: understandingenergy.rice.edu (http://understandingenergy.rice.edu)

ENST 255 - SCIENCE FICTION AND THE ENVIRONMENT
Short Title: SCI FI AND THE ENVIRONMENT
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Examines the ways that science fiction has expressed and challenged ideas about nature, culture, society, and politics. Cross-list: ENGL 269.
ENST 281 - ENGINEERING SOLUTIONS FOR SUSTAINABLE COMMUNITIES
Short Title: ENGRG SUSTAINABLE COMMUNITIES
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Students will work in teams to develop sustainable solutions for energy or environmental problems affecting our Houston and Rice communities. Emphasis will be placed on the integration of engineering fundamentals with societal issues, environmental and safety considerations, sustainability and professional communications. Prerequisites: introductory engineering courses, or permission of instructor. Cross-list: CHBE 281.

ENST 302 - ENVIRONMENTAL ISSUES: RICE INTO THE FUTURE
Short Title: ENVIRON ISSUES: RICE IN FUTURE
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Laboratory
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Students use the campus as a laboratory for learning about sustainability through group projects to reduce Rice's environmental impact or resolve environmental issues. Cross-list: SOCI 304.

ENST 307 - ENERGY AND THE ENVIRONMENT
Short Title: ENERGY AND THE ENVIRONMENT
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores the physical principles of energy use and its impacts on Earth's environment and climate. Topics will include energy mechanics, climate change, and the environmental impacts and future prospects of various fossil fuel and alternative energy sources. Cross-list: CEVE 307, ESCI 307. Recommended Prerequisite(s): MATH 101 and PHYS 101 or PHYS 111.

ENST 313 - SUSTAINABLE DESIGN
Short Title: CASE STUDIES IN SUSTAIN DESIGN
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will explore sustainable design from initial sustainable facility concepts and team organizations, to enlisting community support and process assessment. The course will develop into details about sustainable design, lessons learned, processes and outcomes. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day class by the individual instructor. Cross-list: ARCH 313. Graduate/Undergraduate Equivalency: ENST 613. Mutually Exclusive: Cannot register for ENST 313 if student has credit for ENST 613.

ENST 315 - ENVIRONMENTAL HEALTH
Short Title: ENVIRONMENTAL HEALTH
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (BIOS 201 or BIOC 201) and (BIOS 202 or EBIO 202)
Description: An overview of environmental health issues including discussion of epidemiologic methods, illnesses caused or exacerbated by environmental exposures, and the role of research in driving effective policies to protect and promote public health. The class includes numerous guest lectures by area experts (physicians, researchers, community activists, policymakers and others); a bus tour featuring disproportionately affected neighborhoods as well as cutting-edge "green" initiatives; original student research projects; and an opportunity to address the Houston City Council. The dynamic between research and action, i.e., "making a difference," is stressed. FORMERLY ENST 314.

ENST 316 - ENVIRONMENTAL FILM
Short Title: ENVIRONMENTAL FILM
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Explores the ways film represents the environment and environmental issues (food, water, energy, waste, environmental justice, sustainability), and both expresses and shapes environmental values. We will view and analyze a variety of genres, as well as reading supplementary material. Cross-list: SOCI 316.

ENST 318 - ENVIRONMENTAL FILM
Short Title: ENVIRONMENTAL FILM
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Explores the ways film represents the environment and environmental issues (food, water, energy, waste, environmental justice, sustainability), and both expresses and shapes environmental values. We will view and analyze a variety of genres, as well as reading supplementary material. Cross-list: SOCI 316.
ENST 321 - CASE STUDIES IN SUSTAINABILITY: THE HIGH PERFORMANCE BUILDING
Short Title: SUSTAINABILITY CASE STUDIES
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The project-based seminar will provide a means by which all those with an interest in the building science entailed in the design of commercial, institutional, and residential structures can investigate common issues, obtain information, discuss local strategies, and otherwise address subjects relating to building or campus performance over its lifecycle. To develop an approach of taking an existing Rice University building an optimizing its use via ‘repositioning’ or redesign the class will create an interdisciplinary forum where students of architecture, engineering (structural, mechanical, etc.), and human sciences will potentially collaborate with professional building consultants, materials manufacturers, contractors, developers, owners, and Rice campus facility managers Cross-list: ARCH 321. Graduate/Undergraduate Equivalency: ENST 621. Mutually Exclusive: Cannot register for ENST 321 if student has credit for ENST 621.

ENST 322 - CASE STUDIES IN SUSTAINABILITY: THE REGENERATIVE REPOSITIONING OF NEW OR EXISTING RICE CAMPUS BLDGS
Short Title: CASE STUDIES IN SUSTAINABILITY
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Description: This course will explore application of high performance, sustainable design to specific Rice University campus and facility targets. In partnership with Rice University leadership, the team effort will develop ‘regenerative redesign’ approaches based on investigation of other campuses’ case study. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day of class by the individual instructor. Cross-list: ARCH 322. Graduate/Undergraduate Equivalency: ENST 622. Mutually Exclusive: Cannot register for ENST 322 if student has credit for ENST 622.

ENST 323 - CONSERVATION BIOLOGY
Short Title: CONSERVATION BIOLOGY
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 201 and E BIO 202
Description: The course is designed to give students a broad overview of conservation biology. Lecture and discussions will focus on conservation issues such as biodiversity, extinction, management, sustained yield, invasive species and preserve design. Cross-list: E BIO 323.

ENST 332 - THE SOCIAL LIFE OF CLEAN ENERGY
Short Title: SOCIAL LIFE OF CLEAN ENERGY
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course considers the phenomenon of renewable energy, using a social scientific approach to analyze the various forces and interests involved in the development of renewable energy projects (such as hydropower, solar and wind) in both the global North and South. No prerequisites required. Cross-list: ANTH 332.

ENST 340 - GLOBAL BIOGEOCHEMICAL CYCLES
Short Title: GLOBAL BIOGEOCHEMICAL CYCLES
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course introduces students to the coupled nature of the biosphere, atmosphere and hydrosphere using as focal points elemental cycles such as those of carbon and nitrogen. This is a writing-intensive class, and will include 3 required Saturday field trips. Cross-list: E BIO 340, ESCI 340.

ENST 350 - ENVIRONMENTAL INTERNSHIP
Short Title: ENVIRONMENTAL INTERNSHIP
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Provides enrollment credit for approved internships with environmental organizations or agencies. Students must seek approval prior to beginning the internship. Weekly progress reports and a final paper are required. Instructor Permission Required.

ENST 367 - ENVIRONMENTAL SOCIOLOGY
Short Title: ENVIRONMENTAL SOCIOLOGY
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course focuses on the foundations of environmental sociology and takes a social and historical approach to examine how humans affect the environment and the environment affects humans. Topics include: agricultural sustainability, resource extraction and climate changes; environmental racism/sexism; globalization and development; population, and consumption, and environmental movements. Cross-list: SOCI 367.
ENST 368 - LITERATURE AND THE ENVIRONMENT
Short Title: LITERATURE & THE ENVIRONMENT
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course that asks the question: How does literature express or shape environmental values? In this class we will read American fiction and nonfiction exploring the relationship between human and nonhuman nature. Cross-list: ENGL 368.

ENST 379 - LAB MODULE IN AQUATIC ECOLOGY WITH SCUBA
Short Title: LAB MOD AQU ECOLOGY WITH SCUBA
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Students will learn some fundamentals of aquatic ecosystems and conduct lab exercises that involve SCUB-based fieldwork in a nationally recognized freshwater dive site. Course has required meetings outside of regular class time. Prerequisites: LPAP 194 or proof of Open Water Scuba certification from a professional organization (e.g., PADI, NAUI). A course fee ranging from $300 to $535 is associated with the class. Please send all enrollment requests to Mariah McClarty, mam22@rice.edu and include the following information: major, year, scuba certification level and issuing professional organization, and a brief statement about why you want to take the course. You will be notified of enrollment decisions by December 5th. Distribution Credit for ENST/EBIO 379 no longer eligible beginning Fall 2019. Department Permission Required. Cross-list: EBIO 379. Recommended Prerequisite(s): EBIO 213 and LPAP 194.

ENST 391 - SPECULATIVE FUTURES
Short Title: SPECULATIVE FUTURES
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Drawing from “CLIF,” “Speculative Fiction,” “and global anthropological case studies, this course analyzes a series of potential futures as earthly conditions continue to be altered by human activity. Students will develop speculative future models through assessing climate conditions, population displacement, ethics, ecological transformations and human practices and values. Cross-list: ANTH 391.

ENST 400 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Environmental Studies
Grade Mode: Independent Study
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level

ENST 406 - INTRODUCTION TO ENVIRONMENTAL LAW
Short Title: INTRO TO ENVIRONMENTAL LAW
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Introduction to Environmental Law is intended to introduce the student to the methods used by the United States and the international community to regulate and/or allocate air, water and land resources. A key focus of this course will be the emerging area of the law of sustainable development, including the implementation of full price costing, life cycle analysis, carbon cycle analysis, allocation of assimilative capacity and other similar issues. Cross-list: CEVE 406.

ENST 415 - THE ENVIRONMENTAL MOVEMENT
Short Title: THE ENVIRONMENTAL MOVEMENT
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Examines the environmental movement in the U.S. and globally. After a historical overview, we will use a social movement perspective to examine mobilization, organizations and tactics, ideologies and identities, as well as exploring aspects of contemporary environmentalism (e.g. green building and slow flood, wildlife management/biodiversity, sustainable development, environmental justice). Cross-list: SOC 415.

ENST 425 - ORGANIC GEOCHEMISTRY
Short Title: ORGANIC GEOCHEMISTRY
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course covers the organic geochemistry of the natural environment. Topics include: production, transport, decomposition, and storage of organic matter in the marine and terrestrial environments, use of isotopes to track biogeochemical processes and natural and perturbed carbon cycle issues, including past and recent climate shifts. Cross-list: CHEM 425, ESCI 425.
ENST 437 - ENERGY ECONOMICS
Short Title: ENERGY ECONOMICS
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 301 or ECON 370
Description: Discussion of key aspects in the supply and demand of energy. Topics include optimal extraction of depletable resources, transportation, storage, end-use and efficiency, and the relationship between economic activity, energy, and the environment. Cross-list: ECON 437.

ENST 441 - GOVERNING THE ENVIRONMENTAL COMMONS
Short Title: GOVERNING ENVIRONMNTL COMMONS
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Common Property Resources (CPRs), such as fisheries, aquifers, and the Internet, appear in many guises and pose a fundamental problem for governing. Exploration of theoretical underpinnings for CPRs, their growing literature, and the political and economic institutions mediating CPR dilemmas. Included is an original research project in conjunction with the instructor. Cross-list: POLI 441.

ENST 445 - SEMINAR IN URBAN SUSTAINABILITY AND LIVABILITY RESEARCH METHODS AND APPLICATIONS
Short Title: URBAN SUSTAINABILITY SEMINAR
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Corequisite: ENST 446
Description: Seminar in the practice and techniques for student-led engaged research in urban sustainability and livability. Techniques and methods applied in actual urban settings, including an understanding of intentional design, the use of psycho-geographic mapping, human geography, and derives to understand urban communities. Content includes multifaceted exploration of sustainability. Instructor Permission Required. Repeatable for Credit.
Course URL: culturesofenergy.com/enst-minor/ (http://culturesofenergy.com/enst-minor/)

ENST 446 - LAB IN ENGAGED URBAN SUSTAINABILITY AND LIVABILITY RESEARCH
Short Title: ENGAGED URBAN RESEARCH LAB
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Corequisite: ENST 445
Description: Lab in the practice and techniques for student-led engaged research in urban sustainability and livability. Techniques and methods applied in actual urban settings, including an understanding of intentional design, the use of psycho-geographic mapping, human geography, and derives to understand urban communities. Content includes multi-faceted exploration of sustainability. Instructor Permission Required. Repeatable for Credit.
Course URL: culturesofenergy.com/enst-minor/ (http://culturesofenergy.com/enst-minor/)

ENST 447 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Laboratory, Seminar
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact Department for current semester’s topic. Repeatable for Credit.

ENST 480 - ENVIRONMENTAL AND ENERGY ECONOMICS
Short Title: ENVIRONMENTAL ECONOMICS
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 or ECON 301 or ECON 370
Description: Uses economic theories of externalities and common property resources to analyze how markets, legal institutions, regulations, taxes and subsidies, and voluntary activity can affect the supply of environmental amenities, such as clean air, clean water, and wilderness areas. Also discusses methods for determining the demand for environmental amenities. Cross-list: ECON 480.

ENST 513 - SEMINAR: TOPICS RELATED TO THE EARTH'S DEEP INTERIOR
Short Title: SEM: EARTH’S DEEP INTERIOR
Department: Environmental Studies
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Readings and discussions about current topics related to the processes governing the Earth’s deep interior. General themes include mantle convection, thermal evolution, and volatiles. Repeatable for Credit.
ENST 613 - CASE STUDIES IN SUSTAINABLE DESIGN
Short Title: SUSTAINABLE DESIGN
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Cross-list: ARCH 613. Graduate/Undergraduate Equivalency:
ENST 313. Mutually Exclusive: Cannot register for ENST 613 if student
has credit for ENST 313.

ENST 620 - CASE STUDIES IN SUSTAINABILITY: THE HIGH PERFORMANCE BUILDING
Short Title: SUSTAINABILITY CASE STUDIES
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The project-based seminar will provide a means by which all those with an interest in the building science entailed in
the design of commercial, institutional, and residential structures can investigate common issues, obtain information, discuss local
strategies, and otherwise address subjects relating to building or campus performance over its lifecycle. To develop an approach of taking an
existing Rice University building an optimizing its use via ‘repositioning’ or redesign the class will create an interdisciplinary forum where
students of architecture, engineering (structural, mechanical, etc.), and human sciences will potentially collaborate with professional building

ENST 621 - CASE STUDIES IN SUSTAINABILITY: THE HIGH PERFORMANCE BUILDING
Short Title: SUSTAINABILITY CASE STUDIES
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The project-based seminar will provide a means by which all those with an interest in the building science entailed in
the design of commercial, institutional, and residential structures can investigate common issues, obtain information, discuss local
strategies, and otherwise address subjects relating to building or campus performance over its lifecycle. To develop an approach of taking an
existing Rice University building an optimizing its use via ‘repositioning’ or redesign the class will create an interdisciplinary forum where
students of architecture, engineering (structural, mechanical, etc.), and human sciences will potentially collaborate with professional building
consultants, materials manufactures, contractors, developers, owners, and Rice campus facility managers Cross-list: ARCH 621. Graduate/Undergraduate Equivalency: ENST 321. Mutually Exclusive: Cannot register for ENST 621 if student has credit for ENST 321.

ENST 622 - CASE STUDIES IN SUSTAINABILITY: THE REGENERATIVE REPOSITIONING OF NEW OR EXISTING RICE CAMPUS BLDGS
Short Title: CASE STUDIES IN SUSTAINABILITY
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will explore application of high performance, sustainable design to specific Rice University campus and facility
targets. In partnership with Rice University leadership, the team effort will develop ‘regenerative redesign’ approaches based on investigation of
other campuses’ case study. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated
on the first day of class by the individual instructor. Cross-list: ARCH 622. Graduate/Undergraduate Equivalency: ENST 322. Mutually Exclusive: Cannot register for ENST 622 if student has credit for ENST 322.

ENST 646 - ADVANCED TOPICS IN BIOMEDICAL ANTHROPOLOGY
Short Title: ADV BIOMEDICAL ANTHROPOLOGY
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar on contemporary research on the biomedical aspects of human health and disease. Includes topics from medical ecology and epidemiology. Cross-list: ANTH 646. Recommended Prerequisite(s): ANTH 381 or ANTH 581.

ENST 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Laboratory, Seminar
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

Executive Management (EMBA)

EMBA 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

EMBA 911 - EXECUTIVE SEMINAR I
Short Title: EXECUTIVE SEMINAR I
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.

EMBA 912 - EXECUTIVE SEMINAR II
Short Title: EXECUTIVE SEMINAR II
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

EMBA 913 - EXECUTIVE SEMINAR III
Short Title: EXECUTIVE SEMINAR III
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate level students.
EMBA 914 - EXECUTIVE SEMINAR IV
Short Title: EXECUTIVE SEMINAR IV
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate level students.
Description: What is the future form of the modern organization and the role of the manager? We will examine the impact of changes to the nature of work, organization, and society on the practice of management. An organization must be crafted to support its strategy. Nevertheless, strategy is always established in a particular social context. Our goal is to question the foundational assumptions of our most common organizational practices, assess their relevance as we look to the future, and attempt to separate fact from fiction in the advice given the modern manager.

EMBA 920 - MANAGING THE GLOBAL FIRM: MICRO FOUNDATIONS
Short Title: MNG GLOBAL FIRM: FOUNDATIONS
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.

EMBA 921 - GLOBAL MARKETS AND INSTITUTIONS
Short Title: GLOBAL MARKETS & INSTITUTIONS
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.

EMBA 922 - MANAGING THE GLOBAL FIRM: STRATEGY
Short Title: MANAGING GLOBAL FIRM: STRATEGY
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate level students.
Description: With an ever-growing number of industries becoming global in scope, managers are being increasingly challenged to manage firms with a global perspective. The course of “Global Strategy” seeks to provide students with the skills, knowledge and sensitivity required to attain and maintain sustainable competitive advantage within a global environment. This course highlights the following topics: motivations of going global, choices among various entry strategies, political risk in global businesses, and coordination and control of globally-distributed operations. Case discussions are adopted in the course.

EMBA 991 - EXECUTIVE FORUM I: STRATEGY AND LEADERSHIP FOUNDATIONS
Short Title: EXEC FORUM I:STRAT & LEADERSHIP
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

EMBA 992 - EXECUTIVE FORUM II: CRITICAL DECISION MAKING
Short Title: EXECUTIVE FORUM II
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate level students.

EMBA 993 - EXECUTIVE FORUM III: ENTERPRISE STRATEGY AND LEADERSHIP
Short Title: EXECUTIVE FORUM III
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate level students.

EMBA 994 - EXECUTIVE FORUM IV
Short Title: EXECUTIVE FORUM IV
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

Film (FILM)

FILM 180 - 14 FILMS YOU SHOULD SEE BEFORE YOU GRADUATE FROM RICE UNIVERSITY
Short Title: 14 FILMS BEFORE YOU GRADUATE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Featuring the important, but less familiar works of American and European directors from the 1930s - 1960s. This class represents an ideal mixture of modernist auteur cinema and shameless viewing pleasure. Cross-list: HART 180.

FILM 215 - MYSTIC CINEMA: KABBALAH IN FILM
Short Title: MYSTIC CINEMA
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course explores uses by the film industry of ideas drawn from Jewish mysticism. We will examine themes such as monsters, spirits, numerology and the paranormal, as portrayed in classic film and through to contemporary Hollywood. Emphasis will be placed on the medieval textual and folkloric traditions behind such portrayals. Cross-list: RELI 215. Mutually Exclusive: Cannot register for FILM 215 if student has credit for FILM 114/FSEM 141/RELI 114.
FILM 218 - HISTORY THROUGH FILM IN EAST AND NORTHEAST ASIA
Short Title: EAST/NORTH EAST ASIA FILM HIST
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level

FILM 225 - INTRODUCTION TO FILMMAKING AND EDITING
Short Title: INTRO TO FILMMAKING & EDITING
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course introduces the student to filmmaking in general through specific techniques of digital video production. The emphasis in this class will be the medium as a means of effective storytelling through the craft of filmmaking. All aspects of production will be discussed, including preproduction and postproduction. Core topics will include the basic principles and operation of digital video cameras, lighting instruments, and audio recording gear; concepts and practical use of nonlinear digital editing gear; planning and scripting using applications of various filmmaking techniques; and delivery of a finished project.

FILM 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

FILM 250 - CONTEMPORARY EUROPEAN CINEMA
Short Title: CONTEMPORARY EUROPEAN CINEMA
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This class examines trends in European cinema of the last fifteen years. Particular attention will be given to the issues of history, memory and national identity in Europe’s shifting geopolitical climate, and to the formal and aesthetic concerns with which filmmakers responded to these shifts. The discussion will include films by Michael Haneke, Fatih Akin, Christian Mingiu and others. Cross-list: HART 250.

FILM 275 - COMICS AND SEQUENTIAL ART
Short Title: COMICS AND SEQUENTIAL ART
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An introduction to the art of combining words and pictures: diverse applications such as storyboarding for stage and screen, comic books and graphic novels, and serial or multiples in a variety of media all fall under the umbrella of Sequential Art. Through instruction, demos, readings and practice, students will learn the history and implementation of linear visual narratives utilizing the Comics Art Teaching and Study Workshop as a resource. Students in this class will also participate in the construction and establishment of a permanent research center for the study of Comic Book Art within the Department of Visual and Dramatic Arts. This course has limited enrollment. The roster is formatted on the first day class by the instructor, who may allow additional registration for majors. It is necessary to attend the first class meeting to confirm your place on the class roster. Cross-list: ARTS 230.

FILM 280 - HISTORY & AESTHETICS OF FILM
Short Title: HISTORY & AESTHETICS OF FILM
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction to the art and aesthetics of film as an artifact produced within certain social contexts. Includes style, narrative, mise-en-scene, editing, sound, and ideology in classical Hollywood cinema, as well as in independent, alternative, nonfiction, and Third World cinemas. Cross-list: ARTS 280, HART 280.

FILM 281 - THE BEGINNINGS OF CINEMA
Short Title: THE BEGINNINGS OF CINEMA
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This class studies the emergence of cinema in the context of cultural developments at the turn of the 20th century. Early films will be examined together with such contemporaneous issues as technologies of vision, modern mass culture, urban expansion and consumerism. Cross-list: HART 281.
FILM 284 - NONFICTION FILM
Short Title: NONFICTION FILM
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction to the history and aesthetics of nonfiction film as both a social artifact and as a work of art. Includes discussions of actualities, the city film, the social documentary, surrealist cinema, propaganda, ethnography, the essay film, and the contemporary nonfiction film from around the world. Cross-list: HART 284.

FILM 285 - AUTEUR FILM: CASE STUDIES OF THREE AUTEURS
Short Title: AUTEUR FILM
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will explore the tradition of auteur filmmaking, with an emphasis on how this particular artistic mode situates itself within the evolving system of Hollywood institutional film. The auteur, in contrast to other filmmakers, exhibits unparalleled control over the production and post-production processes and is uniquely identifiable through the notable conventions of aesthetics, style, theme, content, atmosphere, etc. FILM 485/HART 481 ( 4 Credit Hours ) will require completion of additional coursework for the additional credit than the FILM 285/HART 283 (3 Credit Hours). Credit may not be received for more than one of FILM 285 or FILM 485 or Hart 283 or HART 481. Cross-list: HART 283. Equivalency: FILM 485. Mutually Exclusive: Cannot register for FILM 285 if student has credit for FILM 485.

FILM 287 - INTRODUCTION TO EXPERIMENTAL VIDEO AND INSTALLATION ART
Short Title: INTRO TO VIDEO AND INSTALL ART
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Learn to create unique experiences by sculpting time and space. With an emphasis on production and practice, this course introduces students to installation art and non-traditional, experimental uses of video. Students will learn the basic tools and techniques of digital video production using Adobe Premiere and After Effects.
Course URL: www.arts.rice.edu/ (http://www.arts.rice.edu/)

FILM 308 - IMPROVISATION FOR STAGE AND SCREEN
Short Title: IMPROV FOR STAGE AND SCREEN
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This is a course in the practical training of comedic, long-form, improvisation. Students will learn how to craft scenes spontaneously using tools like character dynamic, status, comedic pattern, beat structuring, and agreement. Classic forms of scenic improv will be taught and the course will also examine the role of improvisation in comedy films, video, and the creation of sketch comedy. Students will get to practice their skills by crafting videos in the class' culmination run of improv shows. Cross-list: THEA 308.

FILM 321 - LIFE IN REAL-TIME
Short Title: LIFE IN REAL-TIME
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores digital video as a contemporary art medium rich with possibilities of cultural critique. We will examine how artists deploy the speed of time-based media to underscore the urgency of specific environmental issues and offer observations on serious issues through the use of metaphor, irony, and humor. We will compare and contrast these ways through reading, films, and presentations.

FILM 323 - EXPERIMENTAL SOUND AND VIDEO
Short Title: EXPERIMENTAL SOUND AND VIDEO
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The purpose of this course is to create experimental, collaborative digital media artworks. Students will learn the basic tools and techniques of digital video and audio production. Students will engage in experiment with sound and moving images by working to complete a number of short projects. Pre-registration of this course is limited to 8 students. 4 additional places will be reserved for VADA and Shepherd School of Music majors. Instructor Permission Required. Cross-list: MUSI 316. Repeatable for Credit.
FILM 327 - DOCUMENTARY PRODUCTION
Short Title: DOCUMENTARY PRODUCTION
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of the expressive possibilities of documentary production using digital systems. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Cross-list: ANTH 324, ARTS 327.

FILM 328 - FILMMAKING I
Short Title: FILMMAKING I
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Dramatic film production class that requires the making of one digital video and one 16mm film. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Cross-list: ARTS 328.

FILM 329 - FILM FORM
Short Title: FILM FORM
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Viewing, analysis, and discussion of modern and classic films. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Cross-list: ARTS 329.

FILM 332 - CRITICAL STUDIES OF MULTIMEDIA ARTS
Short Title: CRITICAL STUDIES OF MULTIMEDIA ART
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Critical Studies for Multimedia Arts is a course designed to familiarize art and non-art majors with key theories and core concepts in modern and contemporary multimedia art. Students will examine a broad spectrum of specific topics in contemporary artwork related conceptually to: space/time; bodies and performance; 'sculptural' studies in an expanded field and video & film space. This is a multi-dimensional class consisting of guest lectures, artist-speakers, and field trips to local museums, galleries and alternative art spaces. This course will include discussions on readings, writings and special projects. This promises to be a fun and thought-provoking class and is designed to enhance studio practice and encourage interest in the visual arts. Cross-list: ARTS 332, FOTO 332, THEA 332.

FILM 333 - VIDEO ACTIVISM: CREATING CHANGE THROUGH VIDEO STORYTELLING
Short Title: VIDEO ACTIVISM
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course employs video as a tool to make and distribute stories about people and issues in our world aimed at affecting change. We will learn about the history of video activism and watch examples to inform our own work. Students in the course will complete a series of exercises and one central issue driven video work. All necessary equipment will be provided. Recommended Prerequisite(s): FILM 327

FILM 334 - FILM LITERATURE
Short Title: FILM LITERATURE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course engages a wide range of filmic adaptations of literary texts, with close attention to the specificity of the medium, genre and sub-genre, narrative and point of view.
FILM 336 - CINEMA AND THE CITY
Short Title: CINEMA AND THE CITY
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores representations of the city in the 20th and 21st century world cinema. Central concerns will include the city as cinematic protagonist, parallels between urban and cinematic space and the intertwined histories of both film and urban design over the last century. Cross-list: ASIA 355, HART 336.

FILM 339 - A REVOLUTION FROM WITHIN: TRENDS IN CONTEMPORARY CUBAN CULTURE
Short Title: TRENDS IN CUBAN CULTURE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This research seminar will explore contemporary trends in Cuban culture through literary texts, films, music and works of art. We will examine the ways in which politics and the practices of artistic representation intersect in post-revolutionary Cuba. A research trip to Cuba has been organized as part of this seminar. (The trip is optional. There is a course fee.) Course taught in Spanish. Instructor Permission Required. Cross-list: HART 304, SPPO 375. Recommended Prerequisite(s): Third year Spanish.

FILM 359 - CINEMAS OF URBAN ALIENATION
Short Title: HOLOCAUST REPRESENTATION IN LITERATURE, ART, AND FILM
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will address the representation of the Holocaust in literature, art, and film. Is the Holocaust representable? What literary and artistic techniques and devices have been employed to represent the unrepresentable? Through Holocaust narrative, poetry, fiction, art, memorials, documentary and narrative film, we will explore these questions. Cross-list: JWST 351. Mutually Exclusive: Cannot register for FILM 351 if student has credit for FILM 349/RELI 349.

FILM 359 - CINEMAS OF URBAN ALIENATION
Short Title: CINEMAS OF URBAN ALIENATION
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar examines cinematic engagements with urban spaces and experiences around the world spanning the last two centuries. Particular attention will be paid to issues of migration, marginality, colonialism, war and post-war, nostalgia and memory, race and gender. Cities of focus include Berlin, Istanbul, Moscow, Algiers, Beirut and Paris. Our weekly discussions of individual films will be grounded in critical writings of the cities' histories and theories of space and film. Cross-list: ARCH 359, HART 359.

FILM 361 - WHAT IS CINEMA? CLASSIC READINGS OF CLASSIC FILMS
Short Title: WHAT IS CINEMA?
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Using a variety of readings now considered classics as our guide, this class will look closely at a broad range of films and film movements discussed by critics and theorists such as Rudolf Amheim, Jean Epstein, Sergei Fisenstein, Walter Benjamin and Andre Bazin. Cross-list: HART 361.

FILM 373 - SURVEY OF AMERICAN FILM AND CULTURE
Short Title: SURVEY OF AMER FILM & CULTURE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course that explores the history of cinema in the U.S. from its origins to the present day. This course will examine the development of narrative, sound, the classical Hollywood form and style; film genres; the emergence of television; the influence of postwar “art cinemas”; the origins of the blockbuster; and the status of Hollywood as “global cinema.” Cross-list: ENGL 373, HART 380.
Course URL: www.english.rice.edu (http://www.english.rice.edu)
FILM 378 - PLACE AND MEMORY IN MIDDLE EASTERN AND EUROPEAN CINEMA
Short Title: MEMORY AND PLACE IN CINEMA
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Focuses on cinematic explorations of and preoccupations with the notion of place. Screenings include iconic and lesser - known films from Europe and the Middle East that offer diverse lenses and contexts (love, family, landscapes, borders, trauma, exile) through which we will examine questions of real and imagined place and the politics of memory. Cross-list: ANTH 378, HART 391.

FILM 380 - RIPPED, RECYCLED AND REMADE CINEMA
Short Title: RECYCLED CINEMA
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This hybrid seminar/production class investigates the practice cinematic quoting in media works. We will look at how the appropriation process critiques political and cultural concerns between the source and reworked material, new conversations it introduces, and these works in relation to fair-using, hijacking, open sourcing, and stealing.

FILM 381 - MEDICAL MEDIA ARTS LAB
Short Title: MEDICAL MEDIA ARTS LAB
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Students will collaborate with health professionals to create solutions to real-world medical communication, visualization and design problems. Working individually and in teams, students will apply critical thinking and theory to hands-on design. Projects may include production of short videos, infographics, app development, 3-D virtual models, creative writing, and other media arts. Cross-list: ENGL 386.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

FILM 382 - MODALITIES OF CINEMA
Short Title: MODALITIES OF CINEMA
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: In this course we will survey the range of organizing principles of cinema- the differing and combative ways cinema arranges its images and sounds. We will look at classicism, modernism, postmodernism and many other modes. The films will range from early silent pictures, to experimental shorts, to commercial blockbusters. Cross-list: HART 382.

FILM 383 - GLOBAL CINEMA
Short Title: GLOBAL CINEMA
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course introduces students to cinema as a global enterprise. It explores the relationship between nations, identities, races, concepts, and genres. It inquires into the question of globalization as it relates to the motion picture audience, corporations, and the commerce of ideas. Cross-list: HART 383.

FILM 384 - AMERICAN INDEPENDENT CINEMA
Short Title: AMERICAN INDEPENDENT CINEMA
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course that explores the history of filmmaking outside of Hollywood in the United States throughout the 20th century, emphasizing the period from 1959 to the present. Special attention to the contributions of marginalized communities and the art work, innovative film styles, and the interdependence of alternative and mainstream media cultures. Cross-list: ENGL 384.

FILM 385 - FILM STUDIES
Short Title: FILM STUDIES
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A variable topics course that may focus on such areas as film genres, national cinemas, world cinema, directors or other thematically organized topics. Cross-list: ENGL 385. Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)
FILM 386 - MEDICAL MEDIA ARTS LAB
Short Title: MEDIA STUDIES
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A variable topics course that addresses interdisciplinary approaches to studying the relationships between film, photography, television, and digital technologies such as the internet and computer-generated imaging. Cross-list: ENGL 388. Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

FILM 388 - POST WAR EUROPEAN CINEMA
Short Title: POST WAR EUROPEAN CINEMA
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group 1
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This class surveys major developments in European cinema from the late 1940s to the late 1960s. Our study will include such movements as Italian Neorealism, German Rubble Films, French New Wave, and Soviet cinema in the Thaw. Particular attention will be paid to such issues as cinema and post-war reconstruction, memory and nation, and body and space. Cross-list: HART 388.

FILM 395 - FILM INTERNSHIP
Short Title: FILM INTERNSHIP
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course is a field-based, supervised, professional, internship experience designed to enhance classroom learning. Students will be responsible for identifying and securing internship positions and must obtain permission from the department chairman and have a department faculty sponsor. All interns are required to keep an internship journal recording duties and activities; the journal will be used as the basis of a five-page paper summarizing the internship experience. Documentation of the work produced during the internship is required portfolio, CD, DVD, etc. Instructor Permission Required. Repeatable for Credit.

FILM 396 - SPECIAL PROBLEMS IN FILM & VIDEOTAPE MAKING
Short Title: SPEC. PROB: FILM & VIDEO
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of problems in film and film production. Topics may vary. Please consult with the department for additional information. May be used in awarding transfer credit. Prerequisite: permission of instructor. Instructor Permission Required. Repeatable for Credit.

FILM 420 - FILM STUDIO
Short Title: FILM STUDIO
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): FILM 327 and FILM 328
Description: A class for advanced filmmaking students working independently, but meeting as a group to participate in discussions about a variety of filmmaking topics. Instructor Permission Required. Repeatable for Credit.

FILM 428 - FILMMAKING II
Short Title: FILMMAKING II
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This class will prepare students for more rigorous work in professional media. Building on the basic understanding of sound, image, and editing, students will focus on the controlled and strategic use of techniques and equipment. We will explore visual representation theory, psychoacoustics and narrative sound design, and the use of editing as a storytelling mechanism. Students will gain valuable and realistic crew experience and learn to anticipate and understand many aspects of film production.
FILM 432 - FILM GENRE: THE WESTERN
Short Title: FILM GENRE: THE WESTERN
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of the essential American film experience spanning all the years of U.S. cinema, with emphasis on the western and its mythic function in society. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Cross-list: ARTS 432.

FILM 433 - FILM GENRE: SCIENCE FICTION CINEMA
Short Title: FILM GENRE: SCIENCE FICTION
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: In this course we will trace the history and elements of the popular film genre of science fiction, from early silents to recent configurations. We will look at the links between the genre cinema itself. Topics for the Film Genre courses will vary and will include the uncanny, transhumanism, utopia and dystopia, and technology.

FILM 435 - SEMINAR ON FILM AUTHORSHIP: THE NEW HOLLYWOOD
Short Title: SEMINAR ON FILM AUTHORSHIP
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar explores the emergence of video and 'expanded cinema' as a primary field of artistic practice over the course of the 1960s and 1970s. We will examine seminal works by artists including Andy Warhol, Dan Graham, and Robert Whitman as well as the shifting aesthetic, political, and media landscapes in which this work emerged. Cross-list: HART 457.

FILM 436 - SEMINAR ON FILM AUTHORSHIP: THE WESTERN
Short Title: SEMINAR ON FILM AUTHORSHIP
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will explore the tradition of auteur filmmaking, with an emphasis on how this particular artistic mode situates itself within the evolving system of Hollywood institutional film. The auteur, in contrast to other filmmakers, exhibits unparalleled control over the production and post-production processes and is uniquely identifiable through the notable conventions of aesthetics, style, theme, content, atmosphere, etc. FILM 485/HART 481 ( 4 Credit Hours ) will require completion of additional coursework for the additional credit than the FILM 285/HART 283 ( 3 Credit Hours ). Credit may not be received for more than one of FILM 285 or FILM 485 or Hart 283 or HART 481. Cross-list: HART 481. Equivalency: FILM 285. Mutually Exclusive: Cannot register for FILM 485 if student has credit for FILM 285.

FILM 437 - SEMINAR ON FILM AUTHORSHIP: THE WESTERN
Short Title: SEMINAR ON FILM AUTHORSHIP
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will explore the tradition of auteur filmmaking, with an emphasis on how this particular artistic mode situates itself within the evolving system of Hollywood institutional film. The auteur, in contrast to other filmmakers, exhibits unparalleled control over the production and post-production processes and is uniquely identifiable through the notable conventions of aesthetics, style, theme, content, atmosphere, etc. FILM 485/HART 481 ( 4 Credit Hours ) will require completion of additional coursework for the additional credit than the FILM 285/HART 283 ( 3 Credit Hours ). Credit may not be received for more than one of FILM 285 or FILM 485 or Hart 283 or HART 481. Cross-list: HART 481. Equivalency: FILM 285. Mutually Exclusive: Cannot register for FILM 485 if student has credit for FILM 285.
FILM 499 - SENIOR FILM AND PHOTOGRAPHY STUDIO
Short Title: FILM AND PHOTO STUDIO
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Required course for all film and photography concentration majors. This course involves focused preparation of their work for the annual senior exhibition. This course consists of lectures, visits, and critiques by artists, filmmakers and photographers, and intensive work. Students must receive permission from their faculty advisor or department chair to register for this class; only department majors who have senior academic standing will be allowed to register for this course. Instructor Permission Required.

First-Yr Writing Intensive Sem (FWIS)

FWIS 100 - FUNDAMENTALS OF ACADEMIC COMMUNICATION
Short Title: FUNDAMENTALS OF ACADEMIC COMM
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Designed to prepare students who need more time and practice in reading and writing to meet the more advanced communication demands of an FWIS, this course will provide an introduction to the expectations of academic readers as well as practice with the rhetorical and linguistic structures common to academic writing. Students will also review grammatical points relevant to the course material and assignments and learn to self-edit their own work. This course does not fulfill the Composition Requirement.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 101 - THE BIBLE IN POPULAR CULTURE
Short Title: THE BIBLE IN POPULAR CULTURE
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: We will introduce various ways in which the Bible plays a significant role in contemporary popular culture. By analyzing biblical references found in music, film, art, and the medial, students will discover that even in today's seemingly secular culture, the Bible continues to influence our artistic, social, and political landscapes.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 102 - THE INTERSECTION OF CULTURE AND HEALTHCARE
Short Title: CULTURE AND HEALTHCARE
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Research has demonstrated that minority patients experience lower standards of healthcare. This course is designed to explore this phenomenon by examining the role of culture in healthcare. This FWIS will introduce students to interdisciplinary ways of reading and writing, drawing from fields including medicine, policy, public health, sociology, and psychology.

FWIS 103 - RUNNING EFFECTIVE POLITICAL CAMPAIGNS
Short Title: POLITICAL CAMPAIGNS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Each year, thousands of would-be office holders hit the campaign trail in order to whip up support and increase their chances of victory. How can political candidates ensure their success? In this course, students will identify and analyze the characteristics of successful campaigns and victorious candidates.

FWIS 104 - SCIENCE, TECHNOLOGY, & SOCIETY
Short Title: SCIENCE, TECHNOLOGY, & SOCIETY
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This FWIS course will explore the complex relationship between science, technology, and society. Students will become familiar with the core questions and debates within science and technology studies (STS), investigate the production of historical and modern scientific knowledge and technological entities, and acquire competency in broader forms of critical analysis.
FWIS 105 - GREEK MYTH IN WORDS: HESIOD AND THE HOMERIC HYMNS
Short Title: GREEK MYTH IN WORDS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Presents texts fundamental to understanding Greek myth through the regular practice of reading, writing, and oral communication. Emphasizing textual interpretation and writing as process and practice, this course clarifies the purpose and conventions of the academic argumentative essay. Frequent brief writing assignments. Peer review plays an integral role. No exams.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 106 - MARRIAGE, INC.
Short Title: MARRIAGE, INC.
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course looks at literary and cultural representations of marriage in the Anglo-American tradition: from Renaissance marriage bed poetry, to marriage plot novels and films, to present-day debates about the status of marriage as an institution. We will also explore cross-cultural and historical conceptions of marriage. This course is eligible for credit toward the major in English.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 107 - IN THE MATRIX: ON HUMAN BONDAGE AND LIBERATION
Short Title: IN THE MATRIX
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Using the film 'The Matrix' as the point of reference, this course presents celebrated explorations of servitude and emancipation - from religious mysticism to Marxism and artistic modernism. Texts by Lao Tzu, Farid ud-Din Attar, Plato, Freud, Marx, Baudelaire, J.S. Mill, Proust, de Beauvior, Malcolm X, Marcuse, Baudrillard.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 108 - GRAPHIC NOVELS AND THE ART OF COMMUNICATION
Short Title: GRAPHIC NOVELS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: From their inception, graphic novels have always showed a deep connection to the historical events, anxieties, and struggles that surrounded their creation. In this course, we will examine graphic novels from a variety of perspectives, including the historical, the political, the social, and the literary.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 109 - CONTEMPORARY ART AND ENVIRONMENT
Short Title: ART AND ENVIRONMENT
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course delves into questions of environment, ecology and sustainability through the lens of contemporary art. From earthworks, to performance, to land art, activist art, and community-based practices, participants engage critically and creatively with contemporary practices. This course is eligible for credit toward the Environmental Studies minor.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 110 - READING INNUENDO: REPRESENTING SEXUALITY IN GOLDEN AGE HOLLYWOOD
Short Title: READING INNUENDO
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course focuses on depictions of sexuality in Hollywood films produced under the Hays Code, from its origins to its eventual demise. We will explore not only the place of sexuality in the American cultural imagination, but also what it can teach us about communication and interpretation in general.
FWIS 111 - WRITING THE UNIVERSITY
Short Title: WRITING THE UNIVERSITY
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Still loosely modeled on a monastic institution, the American university is a funny place where modern ideas of professional accomplishment collide with medieval philosophies of higher learning. Historically, the American university has also been a Petri dish for radical activism and social change in the U.S., even as the institution itself continues to operate according to traditions passed from generation to generation. It is an intense four years, but most U.S. college graduates still remember their undergraduate years as a uniquely transformative period in their lives, and continue to identify with their alma mater decades after their last day of attendance. Together, we will read texts that explore the wonderfully strange experience of university life in America, use our writing to tease out the significance of the university to us, and ultimately, take stock of how our time at the university has transformed us, on and off the page.

Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 112 - FICTION, HISTORY, TEJAS: TEXIANS AND TEJANO IN LITERATURE AND FILM
Short Title: FICTION, HISTORY, TEJAS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Examines the battle for authority over foundational stories about Texas independence, as it plays out in fiction on the page and on the screen. Introduces key concepts related to Chicano studies, the genre of historical fiction, and the relationship of marginalized groups to national and regional histories.

Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 113 - RACE, PUBLIC POLICY, AND RACIAL CHANGE IN AMERICA
Short Title: RACE, POLICY, & RACIAL CHANGE
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course examines conceptual and historical features of race and representation in the U.S., how race has shaped public policy development in the 20th century, and how American political institutions have affected outcomes for different racial groups. It also examines the causes and consequences of political mobilization for racial minorities.

Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 114 - INTRODUCTION TO LITERATURE: DRAMA, POETRY, AND FICTION
Short Title: INTRODUCTION TO LITERATURE
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: In section 001 of this course, we will examine representative works of drama, poetry and fiction, ranging from ancient Greece to modern times. Students will write four essays - about some of these important works. They will also keep journals in which they will write for ten minutes about every reading assignment. Section 002 of this course is designed to introduce first-year students from a wide variety of academic backgrounds to the major literary genres of fiction, poetry, and drama. Students will learn and practice the skills of close reading, interpretation, and literary analysis through discussion and critical writing about literature and language. This course is eligible for credit toward the major in English.

Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 115 - WELLBEING
Short Title: WELLBEING
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: How to live a good life? This course critically evaluates different conceptions of wellbeing proposed by philosophers and encourages students to form their own conception of wellbeing with persuasive arguments.

Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 116 - AMERICAN JOURNEYS
Short Title: AMERICAN JOURNEYS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The narratives of travelers in the US are a window into history. Drawing on authors like Crevecoeur, Tocqueville, Trollope, and Kerouac, the class will discuss and write about themes such as Indian life and territorial expansion, democracy, slavery, civil war, western settlement, and 20th-cent. social movements. This course is eligible for credit toward the major in History.

Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)
FWIS 117 - ART IN PLACE AND PLACES FOR ART
Short Title: ART IN PLACE & PLACES FOR ART
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Students will look closely at a curated selection of influential, Houston-based works of art, installations, and architecture from the past century to understand the context and ideas behind the emergence of modern and contemporary art and design. They will observe, analyze, and describe these primary sources using both words and images.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 118 - MUSIC, MYTH AND MADNESS: STUDIES IN MUSICAL BIOGRAPHY
Short Title: MUSIC, MYTH AND MADNESS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A study of biographical narratives about musicians, including Bach, Bob Dylan, Thelonius Monk, Mozart, and Schumann. Considers the nature of creativity and inspiration. Examines the extent to which biography borrows from mythology and literary fiction. Material includes memoirs, letters, novels and films.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 119 - BEYOND THE BURQINI: MUSLIM WOMEN, FEMINISM, AND GLOBAL POLITICS
Short Title: MUSLIM WOMEN & GLOBAL POLITICS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Traces history of Western interest in Muslim women, paying particular attention to how the figure of the Muslim women has been used by western feminist to make their own case for gender equality. Readings include writings by different English and American feminists and by Muslim authors from around the world.
Course URL: pwc.rice.edu (http://pwc.rice.edu)

FWIS 120 - FICTION AND EMPATHY
Short Title: FICTION AND EMPATHY
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This writing-intensive course explores the possible link between reading literary fiction and empathizing with others. We'll read short stories, novel excerpts, and literary criticism in an effort to scrutinize and more deeply understand the specific elements of fiction that might provoke empathy.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 121 - TIME TRAVEL NARRATIVES: FICTION, FILM, SCIENCE
Short Title: TIME TRAVEL NARRATIVES
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: From an aesthetic perspective, time travel has existed as long as there have been stories. Narrative introduces alien temporalities, transporting listeners and readers into different temporal landscapes. This writing-intensive course investigates the historical, aesthetic, and scientific connections between the authorial and scientific co-creation of time travel.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 122 - LEADERS AND LEADERSHIP: WHAT WE KNOW, WHAT WE BELIEVE
Short Title: LEADERS AND LEADERSHIP
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: For over a hundred years social scientists have studied leaders and leadership. The popular press and media pundits continue to expound on the topic with conflicting views. Students will explore what they believe and what science informs us about leaders and leadership and share their analyses through discussions, writing, and oral presentations.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)
FWIS 123 - STAR WARS AND THE WRITING OF POPULAR CULTURE
Short Title: STAR WARS & WRITING CULTURE
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will unpack the cultural legacy of the Star Wars films through traditional literary analysis and close reading, by situating the films historically, and by considering the ways that the films reflect attitudes towards a variety of social issues, such as spirituality/religion, philosophy, race, gender, class, nationality, and imperialism.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 124 - WITNESSING THE HOLOCAUST
Short Title: WITNESSING THE HOLOCAUST
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will examine selected testimony given by Holocaust survivors. Their testimony varies according to time and the circumstance in which it was given and also according to the genre (film, memoir, drama) in which it is presented.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 125 - YOUR ARABIAN NIGHTS
Short Title: YOUR ARABIAN NIGHTS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The Arabian Nights is one of the best known yet poorly understood literary masterpieces. It has been passed down orally in wiring, in performance and film; in multiple languages, and with different collections of stories. What is your Arabian Nights? We will consider stories of the Nights through both a literary and historical lens, and we will consider stories, films, and works of art that were inspired by the Nights in different cultures.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 126 - THE NOBEL PRIZE IN LITERATURE
Short Title: THE NOBEL PRIZE IN LITERATURE
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will interrogate the five most recent winners of the Nobel Prize in Literature. We will see what patterns we notice in the Swedish Academy's selections while paying attention to both aesthetic merit and the roles that social justice and cultural diversity might play in the awards process.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 127 - FEMINIST FABULATIONS: SF BY WOMEN
Short Title: FEMINIST FABULATIONS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course offers an introduction to speculative fiction by women. Through our readings, we will examine how women writers have employed SF to think imaginatively about the feminist concerns of issues ranging from gender roles, sexual identity, and reproductive rights to technological development, climate change, economic exploitation, and racial justice.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 128 - PERSONALITY TRAITS AND TYPES OF INTELLIGENCE THROUGH THEIR LINGUISTIC MANIFESTATION
Short Title: INNER DIMENSIONS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Exploring theories on personality traits and types of intelligence, students will learn more about themselves and others. We will discuss how our verbal behavior reflects our personality.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 129 - CHINGIS KHAN AND THE EMPIRE OF THE MONGOLS
Short Title: THE EMPIRE OF THE MONGOLS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: In the thirteenth century, the Mongols conquered China, Eastern Europe and Middle East. This class explores empire building, warfare, government and steppe culture, through reading the letters and memoirs of Mongols, merchants, travelers and adventurers. The students will work closely with primary sources to develop analytical writing skills.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)
FWIS 130 - WRITING EVERYDAY LIFE  
**Short Title:** WRITING EVERYDAY LIFE  
**Department:** First-Year Writing Intensive  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** This course is dedicated to the poetics of everyday life. It draws from the forms and colors of what surrounds us day-to-day, from landscapes, to bodies and objects. Students develop research and writing skills through creative fieldwork assignments and workshops. This course is eligible for credit toward the major in Anthropology.  
**Course URL:** pwc.rice.edu/ (http://pwc.rice.edu/)  

FWIS 131 - THE WAR ON DRUGS  
**Short Title:** THE WAR ON DRUGS  
**Department:** First-Year Writing Intensive  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** This course will examine the Third Reich and the Holocaust from the perspective of women as perpetrators and as victims.  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** This course will examine the Third Reich and the Holocaust from the perspective of women as perpetrators and as victims.  
**Course URL:** pwc.rice.edu/ (http://pwc.rice.edu/)  

FWIS 132 - SLAVERY ON FILM  
**Short Title:** SLAVERY ON FILM  
**Department:** First-Year Writing Intensive  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** This course will examine the Third Reich and the Holocaust from the perspective of women as perpetrators and as victims.  
**Course URL:** pwc.rice.edu/ (http://pwc.rice.edu/)  

FWIS 133 - WOMEN AND THE HOLOCAUST: VICTIMS AND PERPETRATORS  
**Short Title:** WOMEN AND THE HOLOCAUST  
**Department:** First-Year Writing Intensive  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** This course will examine the Third Reich and the Holocaust from the perspective of women as perpetrators and as victims.  
**Course URL:** pwc.rice.edu/ (http://pwc.rice.edu/)  

FWIS 134 - EXPLORING THE BUSINESS ENVIRONMENT  
**Short Title:** BUSINESS ENVIRONMENT  
**Department:** First-Year Writing Intensive  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** This course will examine the Third Reich and the Holocaust from the perspective of women as perpetrators and as victims.  
**Course URL:** pwc.rice.edu/ (http://pwc.rice.edu/)  

FWIS 135 - CHILDHOOD ON FILM  
**Short Title:** CHILDHOOD ON FILM  
**Department:** First-Year Writing Intensive  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** This course will examine the Third Reich and the Holocaust from the perspective of women as perpetrators and as victims.  
**Course URL:** pwc.rice.edu/ (http://pwc.rice.edu/)  

FWIS 136 - TECHNOLOGY AND CULTURE IN AMERICAN HISTORY  
**Short Title:** TECH AND CULTURE IN US HISTORY  
**Department:** First-Year Writing Intensive  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** This course will examine the Third Reich and the Holocaust from the perspective of women as perpetrators and as victims.  
**Course URL:** pwc.rice.edu/ (http://pwc.rice.edu/)  

FWIS 137 - POP MUSIC AND AMERICAN CULTURE  
**Short Title:** POP MUSIC & AMERICAN CULTURE  
**Department:** First-Year Writing Intensive  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** This course will examine the Third Reich and the Holocaust from the perspective of women as perpetrators and as victims.  
**Course URL:** pwc.rice.edu/ (http://pwc.rice.edu/)
FWIS 138 - MINDFULNESS, MEANING, AND THE MEDICAL HUMANITIES  
**Short Title:** MINDFULNESS AND MEDICINE  
**Department:** First-Year Writing Intensive  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** What is mindfulness and how can it make you a better writer? What are the health benefits of mindfulness? This course explores various ways of answering these questions through an introduction to the study and practice of mindfulness and the medical humanities, combined with writing and communication instruction.

FWIS 139 - BEYOND POCAHONTAS: NATIVES IN 19TH CENTURY AMERICA  
**Short Title:** NATIVES IN 19TH C. AMERICA  
**Department:** First-Year Writing Intensive  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** This course examines the dramatic change and upheaval experienced by American Indian nations during the nineteenth century: the removal of Southeastern tribes to Indian Territory; the American Civil War, in which several Indian nations experienced their own civil wars as a result of their divided loyalties; and American expansion.

FWIS 140 - IMAGINING THE PAST: FILM, FICTION, AND HISTORY  
**Short Title:** FILM, FICTION, AND HISTORY  
**Department:** First-Year Writing Intensive  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** In the twentieth century and beyond, movies and television serve as an important source of mythologized national narratives (or somewhat “faked news”) from war movies, to westerns, to “biopics” of figures such as Kenneth Turing. Are their patterns of distortion at work, we can identify? How do we correct them?

FWIS 141 - LITERATURE AND ENVIRONMENT  
**Short Title:** LITERATURE AND ENVIRONMENT  
**Department:** First-Year Writing Intensive  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** This course provides an introduction to the increasingly relevant field of environmental literature and ecocriticism. We will examine literature, criticism, and film from the late eighteenth century to the present with an eye to determining how these texts represent the relationship between humans and their physical environments.

FWIS 142 - WATER AND CITIES  
**Short Title:** WATER AND CITIES  
**Department:** First-Year Writing Intensive  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** Investigates ancient, historical, and modern cities and how their residents received water. Questions include: how cities developed water resources, how water shaped city life, and how the environment was engineered to produce water. Students will be able to choose a city and a water topic for their final seminar project.

FWIS 143 - BRAZIL MODERN: ART AND ARCHITECTURE BETWEEN THE NATION AND THE METROPOLE  
**Short Title:** BRAZIL MODERN  
**Department:** First-Year Writing Intensive  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** This FWIS course introduces students to the artistic and architectural theories and practices of modernism in Brazil. This interdisciplinary course offers an exploration of the complex political, social and cultural histories that shaped the built environment of modern Brazil. This is a seminar on Brazilian modernism and its discontents.
FWIS 145 - POVERTY IN THE UNITED STATES: DEFINITIONS, DETERMINANTS, AND DEBATES
Short Title: POVERTY IN THE U.S.
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: In this reading and writing intensive course, we will examine contemporary trends in poverty, driving mechanisms of inequality and the unequal distribution of poverty across race, gender, family structure, and immigration status. The course will also explore the development and effectiveness of various anti-poverty programs.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 146 - OF GODS AND ALIENS, SAINTS AND CYBORGS: RELIGION AND SCIENCE FICTION
Short Title: RELIGION AND SCIENCE FICTION
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: In this FWIS course we study the numerous intersections between science fiction and religion. We explore the prevalence of religious themes in science fiction narratives — God, creation, messiah, apocalypse — and the ways in which science fiction has formed the basis for religious mythologies and movements such as Matrixism.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 147 - AMERICA THROUGH FRENCH EYES
Short Title: AMERICA THROUGH FRENCH EYES
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The United States has always been a source of fascination — both attraction and repulsion — for the French. This studies American culture and identity as revealed by transatlantic encounters with the French. We will study French intellectuals’ observations (de Tocqueville, de Beauvoir) as well as images of America in French popular culture (comic strips, films).
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 148 - THE DIRTY THIRTIES: LITERATURE, CULTURE, AND TOPOGRAPHY IN THE AMERICAN 1930S
Short Title: THE DIRTY THIRTIES
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Despite prevailing perceptions, the 1930s weren't all dust and depression. The decade saw the advent of big band swing, both in music and dancing styles, the proliferation of films with sound, and exciting new styles of visual art and writing. American culture flourished both because and in spite of the Great Depression. In this course, we’ll study the history, literature, music, art, and film of the vibrant but complex 1930s with an eye for how this decade helped define contemporary American culture.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 149 - MAGIC, MEDICINE, AND MIRACLE IN ANTIQUITY
Short Title: MAGIC, MEDICINE, AND MIRACLE
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Examines the topic of magic, medicine, and miracle in the ancient Mediterranean world. Students receive frequent regular practice at close-reading primary texts, assessing scholarly arguments, analytical writing, and oral communication. Through this practice, the course introduces students to the disciplines of religious studies, classics, history, and medical humanities. Includes an oral presentation component of the student’s choice. Mutually Exclusive: Cannot register for FWIS 149 if student has credit for CLAS 303.

FWIS 150 - THE WORLD OF MEDIEVAL MEDICINE
Short Title: THE WORLD OF MEDIEVAL MEDICINE
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: How did medieval Christians understand and treat mental and bodily illness? How did their experiences of pain, sex, childbirth, and death interact with larger concepts of God, nature, and the heavens? What role did angels and demons play? This seminar will explore these issues through close reading of medieval texts. Mutually Exclusive: Cannot register for FWIS 150 if student has credit for FSEM 171/MDEM 171/RELI 171.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)
FWIS 151 - MODERN CASTAWAYS: ISOLATION, ALIENATION, SURVIVAL
Short Title: MODERN CASTAWAYS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course challenges us to think about isolation, alienation, and survival in a global age. What happens to those left behind, those cast out, and those seemingly misplaced? Topics such as colonialism, immigration, feminist history, and the anthropocene guide our discussion of the moral and political dimensions of 'castaways.'
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)  

FWIS 152 - NUTRITIONAL SUPPLEMENTS: REAL REMEDIES OR SHADY SCIENCE?
Short Title: THE SCIENCE OF SUPPLEMENTS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This writing-intensive seminar examines evidence for the use of nutritional supplements in promoting health. Topics include the role of vitamins, herbs and food-based supplements in medicine; the biology of illnesses such as cancer and depression; and the molecular mechanisms of supplements in disease prevention and management.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)  

FWIS 153 - SWIPE: INVESTIGATING STOLEN BOOKS
Short Title: INVESTIGATING STOLEN BOOKS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: When booksellers report on the titles that tend to walk off their shelves, they mention the same names time and again. This course studies the most stolen books. It is designed to develop critical reading and writing abilities and to enhance knowledge of contemporary literature through an exploration of literary larceny.

FWIS 154 - THE GOOD, THE BAD AND THE BORDER
Short Title: THE GOOD, THE BAD & THE BORDER
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will explore portrayals of morality in film, literature and music produced in the US-Mexico borderlands. As we examine conflicting and converging moral codes in these cultural texts, students will use writing as a tool for exploring ideas and refining understanding.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)  

FWIS 155 - GROWING PAINS: COMING-OF-AGE IN LITERATURE AND FILM
Short Title: GROWING PAINS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This FWIS examines coming-of-age stories in literature and film from various time periods and countries in order to better understand the search for identity and the social forces that influence this search. Students will read and write in several genres to develop as academic readers, writers, and critical thinkers.

FWIS 156 - SPEECH AND COMMUNICATION IN HOMER
Short Title: SPEECH AND COMM IN HOMER
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduces students to oral tradition, oral performance, oral poetics, and the Homeric poems. We will read the Iliad and Odyssey closely, focusing on the speeches, songs, and stories performed by characters, and considering what those performances suggest about the constructive and destructive use of speech in human relationships and societies.

FWIS 157 - FOOD AND CULTURE
Short Title: FOOD AND CULTURE
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Food and Culture asks students to investigate the cultural meaning of food practices as an important part of the human experience. This involves questions primarily aimed at archaeological cultures, but we will also consider relevant issues in our society and others in our world today. Through this topic, our primary goal is to identify ways to become better communicators and improve writing skills by building compelling and well-supported arguments appropriate for the social sciences.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)
FWIS 158 - THE NEED TO HELP: HUMANITARIAN NARRATIVES ACROSS LITERARY GENRES
Short Title: HUMANITARIAN NARRATIVES
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Through exploring the writings of novelists, journalists, anthropologists, historians, philanthropists, humanitarian workers, and NGO workers, this course begins with the question: What does it mean to intervene in the life of another? It will critically examine historical and contemporary examples of humanitarian narratives and intervention across geographies and eras.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu)

FWIS 159 - KNOW THYSELF: VISUALIZING THE HUMAN BODY
Short Title: KNOW THYSELF
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course examines the history of medical illustrations across centuries and cultures, demonstrating how these images present cultural ideals and beliefs in addition to scientific information. Emphasis is placed on critically interpreting images and improving writing, offering an introduction to writing within the disciplines of art history and medical humanities.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu)

FWIS 160 - GLOBAL ENGLISH: DIVERSITY, DEMAND, AND DOMINANCE
Short Title: GLOBAL ENGLISH
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: In this course, students will consider how sociocultural, political, and economic factors have historically influenced decisions about language use in the context of English. In doing so, they will practice different forms of academic communication and refine skills fundamental to their success as critical thinkers, readers, and writers.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu)

FWIS 161 - DETECTIVES & DETECTIONS
Short Title: DETECTIVES & DETECTIONS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course reads representations of struggle between detectives and those evading detection. Throughout, we will continually ask: What can “detection” teach us about the boundaries of national belonging? And how can we appropriate the lens of detection to improve our skills as academic readers and writers?
Course URL: pwc.rice.edu/ (http://pwc.rice.edu)

FWIS 162 - CRITICAL THINKING IN DEMOCRACY
Short Title: CRITICAL THINKING IN DEMOCRACY
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Critical thinking runs counter to inherent tendencies toward confirmation bias in decision making. In the political realm, this conflict is often exploited by governmental leaders and media to control specific outcomes. Students in this class will learn to develop their critical thinking and analytical skills in the context of a democratic society.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu)

FWIS 163 - MEDICAL HUMANITIES: LITERATURE, MEDICINE, AND THE PRACTICE OF EMPATHY
Short Title: MEDICAL HUMANITIES
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course provides an introduction to the medical humanities, focusing particularly on narrative medicine and the role narrative can play in illness and the clinical encounter. Readings will include formative theoretical texts in the field, as well as medical-themed short stories by writers such as Chekhov, Hemingway, and Garcia Marquez.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu)
FWIS 164 - WAYS OF WALKING IN LITERATURE AND CULTURE
Short Title: WAYS OF WALKING
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course explores the act of walking, in theory and in practice. Through readings, discussions, writing assignments, and group and individual walks, it examines questions about the body and its movements; the construction and navigation of space; the tradition of travel writing; and the relationship between walking and thinking.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 165 - SCIENCE FICTION AND WILLIAM SHAKESPEARE
Short Title: SCIENCE FICTION & SHAKESPEARE
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will explore the intersection between William Shakespeare's works and science fiction. By reading graphic novels and short stories and watching film and television adaptations, this course will examine what this fascination reveals about Shakespeare's plays and the pursuits of science fiction.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 166 - ANOTHER TIME AND PLACE: WRITING ABOUT SPECULATIVE FICTION
Short Title: SPECULATIVE FICTION
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Speculative fiction are stories of possibility, of what our world might look like in another time and place. These authors use their literature to not only entertain—after all, androids and resurrected dinosaurs are fascinating—but also to speak to the developments and challenges of the present moment.

FWIS 167 - NETWORKS
Short Title: NETWORKS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course analyzes social, cultural, and literary networks, examining how they provide paradigms for life in a globalized world. Our readings cover topics in network theory, literary analysis, sociology, and political science. As we trace the complexities of connectivity, we will also hone our critical thinking, research, and writing skills.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 168 - CASE STUDIES OF BUILDING DESIGN PROBLEMS
Short Title: BUILDING DESIGN PROBLEMS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: We will analyze buildings that ended up in legal battles. Problems include structural failures, design blunders and near disasters. You will write about what went wrong and why, who saved that day and who should have acted differently. You will learn to write critically and present a convincing argument.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 169 - WHAT ARE HUMAN RIGHTS?
Short Title: WHAT ARE HUMAN RIGHTS?
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: We hear and talk about 'human rights' frequently, but few of us have an easy time defining ideas so inherently contested and pitted against one another. This class will read, discuss, and write about the history and future of human rights in the United States and elsewhere in the world.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 170 - GENETIC ENGINEERING AND THE FUTURE OF HUMAN EVOLUTION
Short Title: GENETIC ENG & HUMAN EVOLUTION
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The course examines the science and history of genetic editing, conflicting and converging perspectives surrounding this field, and implications for the future of human evolution. Emphasis is placed on critical reading of scholarly literature, analysis of popular media, cross-disciplinary discussion, and research-based writing.

FWIS 171 - WORD MAGIC
Short Title: WORD MAGIC
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: People use language to create inner models of the world to represent their experience and guide their behavior. Students will be introduced to a sensitive interdependence of language, thought, emotion, and behavior in personal and social contexts.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)
FWIS 172 - CRITICAL PERSPECTIVES ON DISABILITY
Short Title: DISABILITY MATTERS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: With the help of critical disability studies and anthropology of disability scholarship, this course unpacks dominant cultural assumptions about disability. We approach disability as an embodied experience, conditioned by political, sociocultural and economic forces. Finally, we examine the ways in which disability is experienced and viewed as valuable and desirable.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 173 - LEGENDARY AMERICANS
Short Title: LEGENDARY AMERICANS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Exploration of popular myths surrounding larger-than-life figures like Davy Crockett and Harriet Tubman. Specific figures vary. Though scholarly readings and analysis of cultural artifacts like songs and films, we will consider why and how such figures become iconic and explore the relations between history, biography, and memory. This course is eligible for credit toward the major in History. Mutually Exclusive: Cannot register for FWIS 173 if student has credit for FSEM 109.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 174 - WRITING AGAINST EMPIRE: POSTCOLONIAL VOICES
Short Title: POSTCOLONIAL VOICES
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will teach us to read “against the grain” of empire, to listen for the voices that challenge hegemonic, imperial histories. We will trace how postcolonial literature responds to and critiques Western culture and modernity. Along the way, we will learn skills for effective writing, research, and communication.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 176 - WRITING WITH AND ABOUT SOCIAL MEDIA
Short Title: WRITING SOCIAL MEDIA
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: In this course, we will explore social media from a number of perspectives: we will learn its history; explore its technicalities; think critically about its contact; and ultimately seek to understand why and how social media has quickly become a mainstream tool for written and audiovisual communication.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 177 - BIZARRE BIBLICAL STORIES
Short Title: BIZARRE BIBLICAL STORIES
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will examine some of the more bizarre stories of the Hebrew Bible, which deal with such ideas as fratricide, incest, seduction and magic. We will see how such stories have been interpreted, and been afforded meaning, throughout the ages. All texts will be read in English translation. Mutually Exclusive: Cannot register for FWIS 177 if student has credit for FSEM 109.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 178 - GLOBALIZING MUSEUM HISTORY
Short Title: GLOBALIZING MUSEUM HISTORY
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course traces a number of themes in world history through museums and collections from 1800s to the present. More specifically, the course examines how museums are shaped by local and global influences and participate in historical processes related to identity formation, colonialism, and resistance.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)
FWIS 179 - TRACKING DRAGONS THROUGH THE PAGES OF SHORT FICTION: THE ART OF READING CLOSELY
Short Title: SHORT FICTION
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This will be a course on expressive writing and the art of reading; on great short fiction from Kafka to O’Connor; and on those obstacles—dragons that breathe fire across our paths—that stand in the way of our content in just those ways they derail the characters we read.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 180 - MYTHS OF THE SPANISH CONQUEST
Short Title: MYTHS OF THE SPANISH CONQUEST
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Students will be introduced to historical debates surrounding the Spanish Conquest and will be provided with the tools to rethink traditional narratives. Each will have to decide which revised myths are convincing, or unconvincing, and decide how to best re-write the history of the Conquest.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 181 - DECONSTRUCTING THE HOUSTON LIVESTOCK SHOW AND RODEO
Short Title: DECONSTRUCTING HOUSTON RODEO
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Students will learn about social issues, volunteerism, and philanthropy through the lens of a critical case study of the Houston Livestock Show and Rodeo by utilizing experiential learning opportunities to investigate the success and criticism that have faced the organization.

FWIS 182 - INTERSECTIONS IN ART AND SCIENCE
Short Title: INTERSECTIONS IN ART & SCIENCE
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course explores frictions and affinities between Art and Science. It examines at how these different ways of engaging with the world have crossed paths - from World Fairs, to cinema, as well as current exhibits in Houston galleries. This course is eligible for credit toward the major in anthropology.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 183 - WRITING CULTURES
Short Title: WRITING CULTURES
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The class will introduce the concept of culture, the theoretical approaches anthropologist use to study and represent groups of people, the field of ethnographic research and the methods ethnographers use, and the ethical issues involved in studying and representing populations.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 184 - BASEBALL AND AMERICAN IDENTITY
Short Title: BASEBALL AND AMERICAN IDENTITY
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Like America itself, baseball has long been the subject of eulogies and postmortems. At a time of renewed policing regarding who or what "counts" as American, baseball provides an opportunity to reflect on not only the game of baseball, but also what baseball teaches us about the subject of writing.

FWIS 185 - CONTEMPORARY AMERICAN POETRY
Short Title: CONTEMPORARY AMERICAN POETRY
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This class will delve into contemporary American poetry by exploring outstanding poetry books of the previous year. Students will study American poetry in literary and historical contexts, develop ability to analyze how poems 'work,' develop ability to create clear, effective prose, and build framework for exploring other types of poetry.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 186 - CARIBBEAN ECOLOGIES
Short Title: CARIBBEAN ECOLOGIES
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Colonization, slavery, and climate change have violently disrupted the relationship between humans and nature in the Caribbean. We will examine colonial diaries, memoirs of the Haiti earthquake and Haitian 'salvage art', reef restoration art, and stories about food and history (and more!) to explore creative responses to this ecological vulnerability.
FWIS 187 - EXPLORING THE SCIENCE AND HISTORY OF HOUSTON'S BAYOUS
Short Title: SCIENCE/HIST HOUSTON'S BAYOUS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This discussion- and field-based class will explore Houston's watersheds from the perspective of biogeochemistry, working to understand the roles of our bayous in our 21st century community.
Course URL: [pwc.rice.edu/](http://pwc.rice.edu/)

FWIS 188 - INTRODUCTION TO ENGINEERING DESIGN AND COMMUNICATION
Short Title: ENG DESIGN & COMMUNICATION
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students. Enrollment limited to students in the School of Architecture or School of Engineering colleges.
Course Level: Undergraduate Lower-Level
Description: Students learn the engineering design process to solve real-world problems by evaluating design requirements and constructing innovative solutions in the OEDK. Several communication assignments will be completed by individuals rather than teams. Fall limited to ENGI and NSCI students; spring open for engineering and architecture students. Mutually Exclusive: Cannot register for FWIS 188 if student has credit for ENGI 120.
Course URL: [pwc.rice.edu/](http://pwc.rice.edu/)

FWIS 189 - POST-APOCALPYTIC LITERATURE AND FILM
Short Title: POST-APOCALPYTIC LIT AND FILM
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Our culture is fascinated with its own destruction. From zombies to nuclear war, ecological disasters, aliens, disease and killer machines, Armageddon takes many forms. Structured around ways in which we have imagined the world ending, this course charts the cultural consciousness of apocalypse.

FWIS 190 - YOUTH REBELLION: SIXTIES MUSIC AND THE MAKING OF A COUNTER-CULTURE
Short Title: YOUTH REBELLION
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: In fundamental ways the sixties were about youth culture. Popular music, probably more than any other cultural form, served as this culture's mode of self-expression. Sixties popular music, both US and British, will be at the center of a multi-media course that also makes use of materials in television, visual art, fiction, and film.

FWIS 191 - NARRATIVES OF DISPLACEMENT: MIGRANT EXPERIENCES IN THE AGE OF GLOBALIZATION
Short Title: MIGRANT EXPERIENCES
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course focuses on the human experience of global migration and its representation in literature. Students will examine recent short stories, novels, and films by and about migrants and refugees to consider the ethical and social justice implications of mass displacement in the age of globalization.

FWIS 192 - THE ROARING TWENTIES
Short Title: THE ROARING TWENTIES
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The 1920s were about new possibilities, aesthetic experimentation, and frenzied expression. We'll examine iconic '20s literature by Hemingway, Fitzgerald, Woolf, and others, as well as the linchpins of '20s culture: jazz, prohibition, the Harlem Renaissance, and modern art. Highlights include lessons on the Charleston and a Roaring Twenties soiree.

FWIS 193 - MATHEMATICAL WRITING
Short Title: MATHEMATICAL WRITING
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: In this course, we will discuss how to read, write and present clear, complete and cogent mathematical proofs and to appreciate how such proofs are used in contemporary scholarly discourse. With a focus on expression but not disciplinary content, no mathematical training beyond high school algebra and exposure to geometry is necessary.
FWIS 194 - EMPIRES
Short Title: EMPIRES
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Is the United States of America an empire? This course will examine civilizations from Ancient Rome and Han Dynasty China to the superpowers of the twentieth century in order to identify the nature and mechanisms of imperial power. It will investigate imperial literature, architecture art, dress, rituals and technology.
Course URL: pwc.rice.edu/ (http://pwc.rice.edu/)

FWIS 196 - CONSCIOUSNESS AND VALUE
Short Title: CONSCIOUSNESS AND VALUE
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will examine philosophical topics relating consciousness and value. Some of the questions we will examine include: Why is pain bad and pleasure good? Could there be value in a world without any conscious beings? Is consciousness itself valuable? Could non-conscious entities, such as plants or computer programs, have moral status? What makes death bad? Some of the philosophical concepts we will examine include concepts of phenomenal consciousness, intrinsic value vs. instrumental value, moral status, and well-being. The course will serve as an introduction to both the philosophy of mind and value theory. Readings will be centered on contemporary articles in analytic philosophy.

FWIS 197 - SCIENCE, PSEUDOSCIENCE AND SKEPTICISM: HOW TO TELL GOOD SCIENCE FROM JUNK SCIENCE
Short Title: SCIENCE OR PSEUDOSCIENCE?
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This class focuses on scientific skepticism and critical thinking, and how they can be utilized to distinguish science from pseudoscience. Core topics include the fallibility of perception; mechanisms of self-deception; as well as metacognition, cognitive biases and logical fallacies. These topics will be illustrated through examples of good and bad science.

FWIS 198 - ASTRONOMICAL AMBITION: EXPLORING SCIENCE, SPACE, AND THE STARS THROUGH LITERATURE
Short Title: ASTRONOMICAL AMBITION
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course asks students to consider how the humanities and scientific disciplines approach truth, knowledge, and new dimensions of space, time, and thought. Students can expect to read material spanning from the J. J. Abrams’ Star Trek, to Isaac Asimov’s short stories, to works of scientific fiction that span millennia.

FWIS 199 - JEWS ON FILM: CINEMATIC REPRESENTATIONS OF JEWISH LIFE
Short Title: JEWS ON FILM
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will consider modern Jewish identity through the lens of various themes including race, gender, religion, nationalism, assimilation and secularization.
French Studies (FREN)

FREN 106 - ACCELERATED FIRST-YEAR FRENCH
Short Title: ACCEL 1ST YR FRENCH
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Alternate first-year French for students with previous knowledge of another romance language, or limited previous French knowledge with a significant (1+ year) gap in study. Covers equivalent of FREN 141 and 142. Upon completion, students are prepared for FREN 263 or Rice-in-France. Mutually exclusive: cannot earn credit for FREN 141/142.

FREN 141 - FIRST YEAR FRENCH I
Short Title: FIRST YEAR FRENCH I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Development of interactional competence in French (sociolinguistic and sociocultural knowledge) to communicate and interact with speakers of French. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. No prior knowledge of this language is necessary. Placement Test is required. Effective May 15, 2019, this course does not carry D1 credit. Mutually Exclusive: Cannot register for FREN 141 if student has credit for FREN 201.

FREN 142 - FIRST YEAR FRENCH II
Short Title: FIRST YEAR FRENCH II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): FREN 141
Description: Continuation of FREN 141. Development of interactional competence in French (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of French. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Effective May 15, 2019, this course does not carry D1 credit. Mutually Exclusive: Cannot register for FREN 142 if student has credit for FREN 201.

FREN 222 - AP/OTH CREDIT FRENCH LANGUAGE
Short Title: AP/OTH CREDIT FRENCH LANGUAGE
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Transfer
Credit Hours: 3
Course Level: Undergraduate Lower-Level
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation. Mutually Exclusive: Cannot register for FREN 222 if student has credit for FREN 101/FREN 141.

FREN 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Laboratory, Lecture, Seminar, Lecture/Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

FREN 263 - SECOND YEAR FRENCH I
Short Title: SECOND YEAR FRENCH I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): FREN 106 or FREN 142
Description: Continuation of FREN 142. Development of interactional competence in French (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of French. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Cannot register for FREN 263 if student has credit for FREN 201.

FREN 264 - SECOND YEAR FRENCH II
Short Title: SECOND YEAR FRENCH II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): FREN 263
Description: Continuation of FREN 263. Development of interactional competence in French (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of French. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Cannot register for FREN 264 if student has credit for FREN 202.
FREN 301 - ADVANCED GRAMMAR AND ITS LITERARY AND CULTURAL APPLICATIONS
Short Title: ADV GRAM & LIT & CULTURAL APP
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Offered every semester, this course is an integrated study of literary and cultural texts as a springboard for advanced level refinements of grammar. Effective May 15, 2019, this course does not carry D1 credit. Recommended Prerequisite(s): FREN 202 or 264 or Placement Test.

FREN 302 - WRITING WORKSHOP
Short Title: WRITING WORKSHOP
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course, offered annually and required of all majors, builds naturally on FREN 301. It emphasizes composition and expositions through the practice of such genres as narration, description, portrait, essay, and commentaire compose. Formerly FREN 336. Recommended Prerequisite(s): FREN 202 or FREN 264 or Placement Test. Mutually Exclusive: Cannot register for FREN 302 if student has credit for FREN 336.

FREN 305 - LITERARY AND CULTURAL ANALYSIS: THE ART OF READING
Short Title: LITERARY AND CULTURAL ANALYSIS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Introduction to the unique critical skills necessary for reading and analysis across the arts and social sciences. Recommended Prerequisite(s): FREN 202 or FREN 264 or Placement Test.

FREN 307 - THE MANY FACETS OF FRENCH CULTURAL IDENTITY
Short Title: FRENCH CULTURAL IDENTITY I
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: With the help of nine French films and selected readings, we will discuss what it means to be French today. Recommended Prerequisite(s): FREN 202 or FREN 264 or Placement Test.

FREN 311 - MAJOR LITERARY WORKS AND ARTIFACTS OF PRE-REVOLUTIONARY FRANCE
Short Title: PRE-REV FRENCH LIT
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of French culture, literature, and artifacts from the Middle Ages until the Revolution. Recommended Prerequisite(s): FREN 202 or FREN 264 or Placement Test.

FREN 312 - MAJOR LITERARY WORKS AND ARTIFACTS OF POST-REVOLUTIONARY FRANCE
Short Title: MAJ LIT WORKS POST-REV FRANCE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of 19th and 20th century poetry, fiction, and cinema through the major literary and artistic movements: romanticism, realism, symbolism, Dada, surrealism, and existentialism. Recommended Prerequisite(s): FREN 202 or FREN 264 or Placement Test.

FREN 313 - MAJOR LITERARY WORKS AND ARTIFACTS OF THE FRANCOPHONE WORLD
Short Title: MAJ LITERARY WORKS & ARTIFACTS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will explore the artistic, historical, and philosophical textures of French cultures outside Europe, focusing especially on Africa North and South of the Sahara, the Caribbean, North America, and on the evolution of the concept of 'francophonie' since World War II. Recommended Prerequisite(s): FREN 202 or FREN 264 or Placement Test.
**FREN 321 - INTRODUCTION TO FRENCH SOCIETY AND CULTURE**  
**Short Title:** INTRO FRENCH SOCIETY & CULTURE  
**Department:** Classical and European Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course provides grounding in social, political, cultural, and economic aspects of contemporary France. The course will focus on themes such as youth culture, Europeanization, immigration, and gender debates. Recommended Prerequisite(s): FREN 202 or FREN 264 or Placement Test.  

**FREN 323 - FROM EXISTENTIALISM TO CYBERPUNK**  
**Short Title:** EXISTENTIALISM TO CYBERPUNK  
**Department:** Classical and European Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Films and novels. Investigations of human consciousness, subjectivity and identity -- from Sartre's existentialism of the 'absurd', through Robbe-Grillet's 'anti-humanism', to the cyberpunk science-fictional studies of 'post-humanity', genetic manipulation, environmental collapse and post-religious mysticism, by contemporary figures like Dantec and Houellebecq. Recommended Prerequisite(s): FREN 202 or FREN 264 or Placement Test.  

**FREN 324 - FROM DECOLONIZATION TO GLOBALIZATION**  
**Short Title:** FROM DECOLONI TO GLOBALIZATION  
**Department:** Classical and European Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Taught in English. Novels, and films, from North and West Africa, and the immigrant population in France, from 1960 to 2010. Emphasis on the tensions between narratives of political emancipation, modernity, secularism, and religious fundamentalism and mysticism. Extra reading for graduate students in theories of colonialism, postcolonialism, globalization. Cross-list: POLI 324, RELI 476. Recommended Prerequisite(s): Any 200 level course or above in English or French, or HUMA 101 or HUMA 102, or a FWIS course. Mutually Exclusive: Cannot register for FREN 324 if student has credit for FREN 524/RELI 604.  

**FREN 322 - FRENCH PHONETICS**  
**Short Title:** FRENCH PHONETICS  
**Department:** Classical and European Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Acquisition of French phonetic system through intensive class and laboratory practice. Contrast analysis of the French and English phonetic systems. Minimal use of technical terminology. Effective May 15, 2019, this course does not carry D1 credit. Recommended Prerequisite(s): FREN 202 or FREN 264 or Placement Test.  

**FREN 340 - GENDER AROUND THE WORLD**  
**Short Title:** GENDER AROUND THE WORLD  
**Department:** Classical and European Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course focuses on the challenges of defining gender, race, and identity in Africa, Asia, and the Caribbean, or the Global South as this area is also known. The nations of the Global South are newly industrialized or in the process of industrializing and have had to battle the widespread effects of colonialism and globalization. Students will investigate the pervasiveness of stereotypes in literature, film, popular culture and the media in western and non-western contexts. We will examine theories from the Global South to avoid the simplification of Eurocentric analysis. Recommended Prerequisite(s): FREN 202 or FREN 264 or Placement Test.  

**FREN 350 - PARIS**  
**Short Title:** PARIS  
**Department:** Classical and European Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3,4  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Overview of the history of Paris as a cultural, intellectual, and economic center through texts, music and films. Students earn 3 credits for the course, or 4 credits if participating in a supplementary 10-day study trip to France at the end of the semester in May. Recommended Prerequisite(s): FREN 202 or FREN 264 or Placement Test.
FREN 351 - PROVINCES OF FRANCE
Short Title: PROVINCES OF FRANCE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3,4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Overview of the amazing diversity in the history, languages, economic bases, traditions, and cultures of the original provinces in order to arrive at a better understanding of France as it exists today. For an additional credit hour, students may participate in a two week on site visit to a location in France. The location will vary; contact the instructor or the department for details. Recommended Prerequisite(s): FREN 202 or FREN 264 or Placement Test.

FREN 355 - MODERN SHORT STORY: TOWARDS AN ETHICS OF FICTION
Short Title: MODERN SHORT STORY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of great modern short fiction with emphasis on reading as an ethical enterprise. Selected critical essays complement works from Melville to Maupassant, Flaubert to Kafka to O’Connor as we talk about alienation and solitude, death and violence and the vicissitudes of family. Does not count toward French major. Cross-list: ENGL 355. Recommended Prerequisite(s): Any 200-level course or above in English or French Studies, or HUMA 101 or 102.

FREN 356 - TRANSLATION AS INTERPRETATION: CLOSE ENCOUNTERS WITH POETS OF THE MODERN AGE
Short Title: TRANSLATION AS INTERPRETATION
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course dedicated, to reading closely some of the great poets of the modern period - from Hugo to Baudelaire to Prevert - and, to the art of translation as a tool for reflecting on the subtleties of the French language and the special shape of the poetic. Recommended Prerequisite(s): FREN 202 or FREN 264 or Placement Test.

FREN 370 - WOMEN IN TALES OF THE FANTASTIC
Short Title: WOMEN IN TALES OF FANTASTIC
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will explore those stories “behind the story” of the 19th century—that strange and often misunderstood genre, the “fantastic tale.” Reading such writers as Gautier, Balzac, and Maupassant, we will discuss this genre’s anxieties about madness and machines, misbehaving objects, and especially about women and their bodies. Recommended Prerequisite(s): FREN 202 or FREN 264 or Placement Test.

FREN 380 - FLAUBERT AND THE ART OF TRANSLATION: EXPERIMENTS IN WRITING
Short Title: WRITING FLAUBERT
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Flaubert was both a romantic and a realist who achieved the acutely modern through legend and myth in prose that was poetic. This will be a course in which he anchors our study of short, innovative prose works of the 19th century, encountered, each one, through the imaginative art of translation.

FREN 401 - TRANSLATION
Short Title: TRANSLATION
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Exploration of the theory and practice of translation. Includes translation of modern texts from and into English. Effective May 15, 2019, this course does not carry D1 credit. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor.
**FREN 402 - GLOBAL FRENCH CINEMA (IN ENGLISH)**

Short Title: GLOBAL FRENCH CINEMA  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Taught in English. Cinema from France and the French-speaking world (especially Africa) - both the canon of ‘art’ cinema and smash successes of commercial ‘entertainment.’ Discussion of this distinction. Critical and theoretical discourse in film studies with special attention to French contributions. Globalization in cinema. Recommended Prerequisite(s): Completion of one 300-level course.

**FREN 403 - SPECIAL TOPICS**

Short Title: SPECIAL TOPICS  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Independent Study  
Credit Hours: 1-5  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Topics may vary. Please consult with the department for additional information. Taught in French. Instructor Permission Required. Repeatable for Credit.

**FREN 404 - BEGINNINGS OF THE LANGUAGE AND LITERATURE OF FRANCE**

Short Title: THE LANG AND LIT OF FRANCE  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This course includes and external history of the French language, an examination of hagiographic literature and the chanson de geste in their cultural and artistic contexts, as well as bibliographic component to acquaint the students with library tools available for research emphasizing medieval resources but not excluding those for later periods. Student will acquire a reading knowledge of Old French. Course taught in French. Effective May 15, 2019, this course does not carry D1 credit. Cross-list: MDAM 404. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor.

**FREN 407 - CINEMA IN FRENCH**

Short Title: CINEMA IN FRENCH  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Cinema In French – In France and the French-speaking world (especially Africa): both the canon of ‘auteurs’ of ‘high culture’ and commercial ‘mere entertainment.’ Discussion of this distinction, and introduction to critical and theoretical discourse in film studies. Effective May 15, 2019, this course does not carry D1 credit. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor.

**FREN 409 - NOVELS AND FILMS**

Short Title: NOVELS AND FILMS  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Comparison between French novels from the 16th to the 20th centuries and movies that have been based on them, in some cases more than one movie based on a given novel. The class will read each novel in question and then examine how the director perceived it when making the film. For example, La Reine Margot, Tous les Matins du Monde, Liaisons Dangereuses, Madame Bovary, Cyrano de Bergerac, Hiroshima mon amour. Effective May 15, 2019, this course does not carry D1 credit. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor.

**FREN 411 - THE LEGACY OF COURTLY LITERATURE**

Short Title: LEGACY OF COURTLY LITERATURE  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This course will address the various ways that courtly literature has evolved into modern times and stages through which the themes have passed. We will study courtly themes in literature (French, English, Spanish, German, Italian), film, art, and music from the Middle Ages to modern times. Effective May 15, 2019, this course does not carry D1 credit. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor.
FREN 412 - SAINTS AND SINNERS
Short Title: SAINTS AND SINNERS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of sanctity and sin in medieval culture through literary and some historical texts. Effective May 15, 2019, this course does not carry D1 credit.

FREN 413 - BLACK VENUS/VÉNUS NOIRE: REPRESENTATIONS OF BLACK WOMEN IN THE LONG 19TH CENTURY
Short Title: BLACK VENUS/VÉNUS NOIRE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores the mythology of the black woman's body in the French/ Francophone imaginary, namely in the literary rewriting of the 'primitive' in the long 19th-century. Students will examine how this eroticized body bears traces of its social, political and cultural codification and symbolizes anxieties born out of the colonial encounter. Effective May 15, 2019, this course does not carry D1 credit. Recommended Prerequisite(s): Completion of one 300-level course.

FREN 414 - SEX AND RACE - FRENCH ATLANTIC
Short Title: SEX AND RACE - FRENCH ATLANTIC
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines the carnal violence and brutality associated with sex, gender, and race in folktales and fairy tales in French from the Americas. In so doing, this course will also put European and African folklore in conversation with the New World's oral traditions. Recommended Prerequisite(s): Completion of one 300-level course.

FREN 415 - COURTLY LOVE IN MEDIEVAL FRANCE
Short Title: COURTLY LOVE MEDIEVAL FRANCE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of the Occitan and Old French poetry that served as the source of the kind of love that came to be called 'Amour courtois' in the nineteenth century. Effective May 15, 2019, this course does not carry D1 credit. Cross-list: MDEM 425. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor. Mutually Exclusive: Cannot register for FREN 415 if student has credit for FREN 515.

FREN 416 - LITERATURE AND CULTURE OF THE MIDDLE AGES: KING ARTHUR
Short Title: LIT & CULTURE OF MIDDLE AGES
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Examination of the origins of the legend of King Arthur and reasons for its popularity, particularly in literature of the French Middle Ages but also in other medieval literatures of Western Europe. Includes discussion of the legend's influence in diverse areas even in modern times. Effective May 15, 2019, this course does not carry D1 credit. Cross-list: MDEM 436. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor.

FREN 424 - WOMEN IN FRANCE
Short Title: WOMEN IN FRANCE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course studies women in education, the workplace, politics, and in social and cultural institutions in French society. The class explores the history of the French women's movement and analyzes French concepts of gender and feminism in comparison to American models. Effective May 15, 2019, this course does not carry D1 credit. Cross-list: SWGS 424.

FREN 430 - 17TH CENTURY LIT & CULTURE OF MIDDLE AGES
Short Title: 17TH CENTURY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Thematic approach to examining the main political, religious, philosophical, and literary discourses of the golden age of absolutism. Effective May 15, 2019, this course does not carry D1 credit. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor.
FREN 450 - READING CLOSELY THE GREAT POETS OF THE 19TH CENTURY
Short Title: READING GREAT POETS 19TH CENT
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of the poetry and prose poetry of the 19th century from the Romantic period to the Symbolist era, through such writers as Desbordes-Valmore, Lamartine, Musset, Vigny, Hugo, Nerval, Baudelaire, Verlaine, Rimbaud, and Mallarme. Effective May 15, 2019, this course does not carry D1 credit. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor.

FREN 451 - FRANCE - AMERICA: IMAGE AND EXCHANGE
Short Title: FRANCE-AMER: IMAGE & EXCHANGE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This undergraduate course analyzes French and American culture and identity through transatlantic encounters. We study French intellectuals (Tocqueville, Beauvoir, Baudrillard) who traveled to the US, and images of America in French novels, comic strips, films. We also examine American gazes toward the French. Effective May 15, 2019, this course does not carry D1 credit. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor.

FREN 452 - WORLD WAR TWO IN FRENCH HISTORY, LITERATURE, AND FILM
Short Title: WORLD WAR TWO IN FRENCH HIST
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course studies the history and memory of World War Two in France. Students will learn how literature and film contributed to the making and undoing of national myths about collaboration and resistance and participation in the Holocaust. How has contemporary French society reconciled with this dark period of history? Effective May 15, 2019, this course does not carry D1 credit.

FREN 453 - IMMIGRATION AND CITIZENSHIP IN CONTEMPORARY FRANCE
Short Title: IMMIGRATION AND CITIZENSHIP
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines the impact of immigration on contemporary French society and analyzes debates over citizenship, integration, and multiculturalism. Taught in French. Effective May 15, 2019, this course does not carry D1 credit. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor.

FREN 459 - THE BATTLES OF ALGIERS: FROM CHARLES X TO CHARLIE-HEBDO
Short Title: THE BATTLES OF ALGIERS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Historical, literary, and visual materials form the 19th century to the present will illustrate the global perception of a war that left an indelible inscription in contemporary debates on democracy and reform. Effective May 15, 2019, this course does not carry D1 credit. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor.

FREN 460 - WOMEN IN FICTION AND HISTORY: NOTIONS OF THE FEMININE SINCE THE FRENCH REVOLUTION
Short Title: WOMEN, FRENCH FICTION, HISTORY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Reading closely lyric, fictional, historical, and critical texts from Olympe de Gouges and Baudelaire to Rachilde and Irigaray, we will explore how women have been represented (and misrepresented) since the French Revolution, and how notions of the feminine since the 18th century still plague women's place and power in the 21st. Recommended Prerequisite(s): Completion of one 300-level course.

FREN 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.
FREN 478 - THE CARIBBEAN IN FRENCH
Short Title: THE CARIBBEAN IN FRENCH
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This is the undergraduate senior version of the graduate level seminar FREN/ARCR 578. Both the course's reading list and the length of the research are adjusted to accommodate undergraduate needs. The seminar examines the history, political writings, literature and the arts of the French Caribbean from the beginning of colonization to the present. It will include figures such as Saint-John Perse, Roumain, Cesaire, Fanon, Depestre, Schwarz-Bart, Warner-Vieyra, Glissant, Conde, Chamoiseau, Laferriere, as well as the Caribbean arts and film. Taught in English. Cross-list: ARCR 478. Mutually Exclusive: Cannot register for FREN 478 if student has credit for FREN 578.

FREN 495 - THE FRENCH AVANT-GARDE: SYMBOLISM, DADAISM, SURREALISM, CONTEMPORARY CINEMA
Short Title: THE FRENCH AVANT-GARDE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Short texts and films by Baudelaire, Verlaine, Rimbaud, Mallarme, Jarry, Apollinaire, Breton, Artaud, Bataille, Robbe-Grillet, Cherieper, Catherine Breillat, Virginie Despentes. Effective May 15, 2019, this course does not carry D1 credit. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor.

German (GERM)

GERM 106 - ACCELERATED FIRST YEAR GERMAN
Short Title: ACCEL 1ST YEAR GERMAN
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Alternate first-year German course for students with some background in German or related language. This is an intensive course covering the equivalents of GERM 141 and GERM 142. Students will be prepared for GERM 263 upon completion of the course. Effective May 15, 2019, this course does not carry D1 credit. Recommended Prerequisite(s): Placement Test is required. Effective May 15, 2019, this course does not carry D1 credit. Mutually Exclusive: Cannot register for GERM 141 if student has credit for GERM 101/GERM 106/GERM 222.

GERM 141 - FIRST YEAR GERMAN I
Short Title: FIRST YEAR GERMAN I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Development of interactional competence in German (sociolinguistic and sociocultural knowledge) to communicate and interact with speakers of German. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. No prior knowledge of this language is necessary. Placement Test is required. Effective May 15, 2019, this course does not carry D1 credit. Mutually Exclusive: Cannot register for GERM 141 if student has credit for GERM 101/GERM 106/GERM 222.

GERM 142 - FIRST YEAR GERMAN II
Short Title: FIRST YEAR GERMAN II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): GERM 141
Description: Continuation of GERM 141. Development of interactional competence in German (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of German. The course is based on a student-centered, critical-thinking approach to language analysis/ acquisition. Effective May 15, 2019, this course does not carry D1 credit. Mutually Exclusive: Cannot register for GERM 142 if student has credit for GERM 106/GERM 262.

GERM 222 - AP/OTH CREDIT IN GERMAN LANGUAGE
Short Title: AP/OTH CREDIT GERMAN LANGUAGE
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Transfer
Credit Hours: 3
Course Level: Undergraduate Lower-Level
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation. Mutually Exclusive: Cannot register for GERM 222 if student has credit for GERM 141.

GERM 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.
GERM 263 - SECOND YEAR GERMAN I
Short Title: SECOND YEAR GERMAN I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): GERM 142
Description: Continuation of GERM 262. Development of interactional competence in German (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of German. The course is based on a student-centered, critical-thinking approach to language analysis/ acquisition. Mutually Exclusive: Cannot register for GERM 263 if student has credit for GERM 201.

GERM 264 - SECOND YEAR GERMAN II
Short Title: SECOND YEAR GERMAN II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): GERM 263
Description: Continuation of GERM 263. Development of interactional competence in German (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of German. The course is based on a student-centered, critical-thinking approach to language analysis/ acquisition. Mutually Exclusive: Cannot register for GERM 264 if student has credit for GERM 202.

Course URL: clicgerman.blogs.rice.edu

GERM 280 - HISTORY OF CINEMA AND MEDIA I: INVENTION TO 1945
Short Title: HISTORY OF CINEMA AND MEDIA I
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This seminar will introduce students to the history of cinema from its inception to 1945 by considering individual cinemactic artifacts in their technological, economic, aesthetic, political, and social contexts. Cross-list: CMST 201.

GERM 301 - THIRD YEAR GERMAN I
Short Title: THIRD YEAR GERMAN I
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course introduces students to contemporary German speaking cultures through the use of authentic materials (film, media, literature). Recommended Prerequisite(s): GERM 264 or Instructor Permission.

GERM 302 - THIRD YEAR GERMAN II
Short Title: THIRD YEAR GERMAN II
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course focuses on complex topics in contemporary German speaking cultures through the use of authentic materials (film, media, literature). Recommended Prerequisite(s): GERM 301 or Permission of Instructor.

GERM 305 - ENLIGHTENMENT AND ROMANTICISM (1750-1850)
Short Title: ENLIGHTENMENT (1750-1850)
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An introduction to the major social, political and cultural developments in the period between 1700-1850, which contributed to the emergence of modern German cultural identity within the European context. Covers wide range of theoretical and literary works by Kant, Lessing, Schiller, Goethe, Eichendorff, Hoffmann, Heine, and others. Taught in German.
GERM 306 - REALISM TO MODERNITY (1850-PRESENT)
Short Title: REALISM TO MODERNITY-1850-PRES
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: German history and culture during the late 19th and the 29th century have been rather turbulent: From Wilhelminian empire to Weimar democracy to Hitler fascism to socialist division to German reunification to entry into the European Union. All these political changes will be commented on by cultural reflections in textual and filmic forms. Literary texts will include Fontane, Mann, Kafka, Boll, Grass, Wolf and Maron. Taught in German.

GERM 309 - GERMAN POETRY
Short Title: GERMAN POETRY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The folk tales collected by the Brothers Grimm still exhibit all the principle characteristics and functions of oral literature, i.e. the reproduction of an audience’s cultural identity and the securing of that identity. Nevertheless, these characteristics are still preserved in fairy tales written by specific authors for a reading audience. Examples of the latter are mainly from authors of Romanticism and Realism. Taught in German.

GERM 311 - BERLIN: PAST AND PRESENT
Short Title: BERLIN: PAST AND PRESENT
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The course introduces students to German history and culture as mirrored in the history of the city that is ‘always in progress and never accomplished.’ With an emphasis on the period from the 1920’s to the present, class discussions encompass literature and theory, politics and social life, as well as architecture, fine arts and film. Taught in German.

GERM 311 - BERLIN: PAST AND PRESENT
Short Title: BERLIN: PAST AND PRESENT
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The course introduces students to German history and culture as mirrored in the history of the city that is ‘always in progress and never accomplished.’ With an emphasis on the period from the 1920’s to the present, class discussions encompass literature and theory, politics and social life, as well as architecture, fine arts and film. Taught in German.

GERM 320 - TWENTIETH CENTURY GERMAN THOUGHT AND LITERATURE IN GERMAN
Short Title: 20TH CENTURY GERMAN THOUGHT
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will focus on the way in which major events of twentieth century German history and culture – especially World War I, the founding of the Weimar Republic, and National Socialism and the Holocaust – have been dealt with in literature, philosophy, and the social sciences.

GERM 322 - MARX, FREUD, EINSTEIN: FOREBEARS OF MODERNITY
Short Title: MARX, FREUD, EINSTEIN
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Like no others, these three thinkers of the 19th and 20th centuries have influenced the intellectual, historical, social and cultural development not only of Germany, but of the entire world. The course examines the works of these authors in the context of their own time as well as their continued importance in the present. Works by Brecht, Christa Wolf, Schnitzler, Kafka will also be considered. Taught in English. Cross-list: HUMA 322.
GERM 324 - BERLIN: RESIDENCE, METROPOLIS, CAPITAL
Short Title: BERLIN: RESIDENCE, METRO, CAPITAL
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The course offers an introduction to German history, politics, and culture as mirrored in the history of the old and new German capital. Berlin has always been a city of contradictions: from imperial glamour to proletarian slums, from the Roaring Twenties to Hitler's seizure of power. Emerging from the ruins of WWII Berlin became both the capital of Socialism and the display window of the Free World. After the fall of the wall, Berlin is still looking for its role in the center of a reshaped Europe. Readings and discussions encompass fine arts and literature from the 18th century to the present, including film. Taught in English. Cross-list: HUMA 324.

GERM 325 - MODERN GERMAN WRITERS: KAFKA
Short Title: MODERN GERMAN WRITERS: KAFKA
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Goethe's vision of 'world-literature' came true in the twentieth century. German authors, among them Kafka, transcended the confines of national traditions and redefined the concepts of literature and authorship in view of a modern globally dispersed audience. Topics may vary. Taught in English. Cross-list: HUMA 325. Repeatable for Credit.

GERM 326 - THE GERMAN FAIRY TALE: OLD AND NEW
Short Title: GERMAN FAIRY TALE: OLD & NEW
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Discussion of several prototypes from the fairy-tale collection of the Brothers Grimm and the subsequent development of the 'literary' fairy tale from Goethe and the Romantics to the 20th century. Taught in English. Cross-list: HUMA 372.

GERM 327 - GERMAN EXPRESSIONISM IN EUROPEAN CONTEXT: HISTORY, LITERATURE AND FINE ARTS
Short Title: GERMAN EXPRESSIONISM
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Prominent novels of the 20th century will be studied for their possibilities or impossibilities of rendition from print medium to cinematic medium. From the myriad of adaptations we will concentrate on Thomas Mann: Tod in Venedig; Franz Kafka: Das Schloss; Klaus Mann: Mephisto; Gunter Grass: Die Blechtrommel; H. Boll: Katharina Blum; Jurek Becker: Jacob der Lugner. All films are subtitled in English. Taught in English. Cross-list: HUMA 328.

GERM 328 - GERMAN ADAPTATIONS: TEXT TO FILM
Short Title: GERMAN ADAPTATIONS: TEXT-FILM
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Most of the authors from Germany and Austria, who were persecuted and fled into exile, used literature to search for meaning in life that apparently had been stripped of all meaning. Among these authors are the most distinguished writers of the time, i.e., Th. and H. Mann, Brecht, Benjamin, Werfel, Doblin, J. Roth, S. Zweig, N. Sachs, Celan, Auslander. Taught in English. Cross-list: HUMA 329.
GERM 330 - LITERATURE AND FILM IN EAST GERMANY: BEHIND THE IRON CURTAIN

Short Title: LIT AND FILM: EAST GERMANY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar will introduce students to the literature and filmic culture of East Germany, as well as to its social, political, and cultural context. It will also ask how literature and film not only reflect history but also respond to history by mobilizing their own political force.

GERM 333 - NIETZSCHE: PHILOSOPHY, POLITICS, HISTORY

Short Title: NIETZSCHE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Situates Nietzsche’s thought on language, history, and the body within its historical context, and examines the validity of his arguments in a world increasingly challenged by scientific knowledge. Focuses on Nietzsche’s views on truth, genealogy, nihilism, morality, and science, which continue to be relevant for current debates within the humanities. Taught in English.

GERM 334 - NATIONALISM AND CITIZENSHIP

Short Title: NATIONALISM AND CITIZENSHIP
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Critical review of modern concepts of nationalism and citizenship. Topics include: theories of nationalism and citizenship, space and territory, identity, monuments, the emergence of nation states, multicultural democracy, transnationalism, and political belonging. Course provides links between political theory, public policy, literature, visual culture, architecture, and historical anthropology.

GERM 335 - GERMAN FILM (IN ENGLISH)

Short Title: GERMAN FILM (IN ENGLISH)
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The course explores filmic representations of communities, their complex mechanisms of inclusion and exclusion, their inevitable dynamics of otherness, as well as practices of modern states toward communal regulation and control. While communities biologically denote the interaction of organisms sharing an environment, we will examine the practices of power that states wield toward the maximization of “life.” Hence the questions of biopower, health politics, eugenics, sexism, racism, and genocide. How do films negotiate the precarious politics of communal life, what are their strategies for resistance, and what their moments of complicity? We will explore how film reflects communal life in twentieth-century German history, but also, and perhaps primarily, how film responds to that history by generating its own speaking power and mobilizing its own political force. Mutually Exclusive: Cannot register for GERM 335 if student has credit for FSEM 136/GERM 136.

GERM 336 - NATIONAL SOCIALISM AND FILM

Short Title: NATIONAL SOCIALISM AND FILM
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores films made in Nazi Germany as well as films about Nazi Germany and the corresponding crisis of justice in the mid-twentieth century. We will analyze cinematic responses to the rise of the fascist movement, World War II, the Holocaust, and the post-war years. Particular attention will be paid to the value of film as a propagandistic tool, ways in which it can configure and contest our image of national identity, and the relation between mass manipulation and mass murder. Taught in English. Mutually Exclusive: Cannot register for GERM 336 if student has credit for FSEM 132/GERM 132.

GERM 337 - VIENNA 1800 TO THE PRESENT - LASTING CENTER OF GERMAN CULTURE

Short Title: VIENNA 1800 TO THE PRESENT
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Despite Vienna's drastic political changes from 1800 to 2000, it is still synonymous with German culture in its fusion of literature, music and the fine arts.
GERM 338 - NEW GERMAN FILM: HITLER'S CINEMATIC CHILDREN  
Short Title: NEW GERM FILM: HITLER'S CINEMA  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: From the 1960 to 2000, Germany has developed a very distinct auteur cinema with independent filmmakers such as Fassbinder, Herzog, Wenders, Adlon, Trotta, Sander, Brueckner, Doerrie, Garnier, Tykwer, and others. The first 20 years of German film were oriented on coming to terms with the fascist past; the second 20 years focused on more contemporary issues. Film, critical reading and class discussion in English. All films are subtitled in English and will be assessed with podium technology. Taught in English. Cross-list: HUMA 373, SWGS 361.

GERM 339 - FROM EXPRESSIONISM TO FASCISM: ART AND FILM IN GERMANY  
Short Title: FROM EXPRESSIONISM TO FASCISM  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Focusing on the tumultuous years of the Weimar Republic, this class will examine art and film in Germany from the birth of Expressionism through the end of the Nazi dictatorship. Topics covered will include Expressionism, Dada, the Bauhaus, and Fascist aesthetics. Particular attention will be paid to the relations between aesthetics and politics and art and everyday life, all central concerns of the art and criticism of the period. Cross-list: HART 398.

GERM 340 - WALTER BENJAMIN: AESTHETICS, HISTORY AND POLITICS  
Short Title: WALTER BENJAMIN  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Benjamin has been celebrated as a revolutionary Marxist, a theologian of Jewish Messianism, and as an essayist and literary critic. The course offers an introduction to his writings by way situating them in the historical background of the Weimar Republic and the crises of European society on the eve of WWII. Taught in English. Cross-list: HUMA 340.

GERM 341 - A SHORT HISTORY OF GERMAN THOUGHT ON HISTORY  
Short Title: GERMAN THOUGHT ON HISTORY  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: From early modern times onward history has played and still plays a crucial role in German thought. Why? An answer to this question is to be sought in history; in authors such as Lessing, Kant, Hegel, Marx, and Nietzsche who contributed to what in German is called 'Philosophy of History.'

GERM 345 - FROM DEMOCRACY TO DICTATORSHIP: GERMAN HISTORY, 1890-1945  
Short Title: GERMAN HISTORY, 1890-1945  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: From 1890-1945, Germans experienced dramatic changes in their political environment. This lecture class will examine these changes, taking into account not only political history, but also attempts to come to terms with the challenges posed by organized capitalism, the rise and fall of socialism, the development of an interventionist state, cultural critique, and political culture, the Nazi social revolution, and the Holocaust. Taught in English. Cross-list: HIST 355.

GERM 349 - GERMAN POLITICAL THOUGHT  
Short Title: GERMAN POLITICAL THOUGHT  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Advanced seminar in political thought. Traces the development and influence of one of the most important traditions of modern political thought from the Enlightenment to the present. Topics include: natural law, public sphere, intellectuals and the modern state, civil society, mass democracy. Reading intensive and research oriented. Taught in English.
GERM 351 - HOLOCAUST MEMORY IN MODERN GERMANY
Short Title: HOLOCAUST MEMORY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course traces and examines forms of Holocaust memory and memorialization in film, literature, art, architecture, city planning, museums, and memorials in Germany. For an additional credit hour, students will participate in a week-long trip to Berlin. Instructor Permission Required. Cross-list: HART 387.

GERM 352 - POLITICS OF THE FLESH IN GERMAN LITERATURE, THOUGHT AND FILM
Short Title: THE POLITICS OF THE FLESH
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will introduce students to the complex relation between the sphere of politics and the human body as negotiated in German literature, thought and film. We will examine the practices of power that states wield toward the maximization of "life" and discuss such pressing issues as biopower, eugenics, racism, sexism and genocide. Taught in English.

GERM 351 - THE AGE OF GOETHE: POETRY AND TRUTH
Short Title: THE AGE OF GOETHE: POETRY & TRUTH
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The 'Age of Goethe' is generally referred to as the 'classical' decade of German literature and culture. It was, however, by no means exclusively the age of Goethe and Schiller, but also of Kant and Herder, Holderlin and Kleist, and the beginning of the Romantic movement. While German intellectuals debated revolution in the lofty realm of letters, their French contemporaries took to the streets and staged a political revolution that culminated in the execution of their king. Germany as the 'land of the poets and philosophers' is a myth indeed, and a rather ambivalent one, too. The course explores the age of Goethe, its 'poetry' and its 'truth', by way of reading key texts of that period in their intellectual, historical, and political contexts. Taught in German.

GERM 352 - NEW REALITIES: LITERATURE AND POLITICS IN THE 19TH CENTURY
Short Title: 19TH C. LITERATURE & POLITICS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: In German arts and letters, the nineteenth century is usually referred to as the age of Realism. As a reaction to Neo-Classicicism, Romanticism, and Idealism, intellectual life turned towards the new realities in the sciences as well as society and politics. Industrialization, urbanization, the social question, women's liberation and the founding of the 'Reich' created a new sense of reality and gave way to new forms of expression in literature and the arts. While optimism regarding the process of mankind prevailed, pessimism spread amongst the more thoughtful. Readings include texts by Heine, Fontaine, Keller, Hauptmann, Marx, Schopenhauer and Nietzsche. Taught in German.

GERM 363 - THE WEIMAR REPUBLIC, 1919-1933
Short Title: THE WEIMAR REPUBLIC, 1919-1933
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Seminar in Germany's first democracy and one of the most formative moments of modernity. Covers political culture, constitutional conflict, literary and intellectual movements and urban visual culture from the end of the First World War and the spectacular modernity of 1920s Berlin to the rise of the Nazis. Taught in German.

GERM 364 - THE EXPRESSIONIST VISION OF 'NEW MAN'
Short Title: EXPRESSIONIST VISION
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Inspired by Nietzsche's concept of the 'Superman,' the Expressionist writers and artists (roughly between 1910 and 1920) strived towards a total renewal of society. They attached its patriarchal foundation, blamed the anonymity of the metropolitan mass society with the newly formed proletariat on hand and the materialistic life-style on the other for the general dissociation of individuals. The major literary forms were poetry and drama, which were either activist or experimenting with newly created metaphors. The prose employs the genre of the grotesque. The visual artists are influenced by van Gogh. As a totally new medium, the film incorporates all these aspects and elements. Taught in German.
GERM 399 - THE GERMAN STUDIES INTERNSHIP
Short Title: THE GERMAN STUDIES INTERNSHIP
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The Office of the Dean of humanities and relevant faculty from German Studies match students individually with one of a variety of projects in the areas of diplomacy, engineering, pedagogy, public culture. Students conduct research or related activities under the guidance of on-site supervisor and the section instructor on record. Instructor Permission Required.

GERM 401 - TOPICS IN GERMAN LITERATURE AND CULTURE
Short Title: TOPICS IN GERMAN
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will work with sophisticated texts to enable students to bring their proficiency in the various modalities of German to the advanced level. Taught in German. Repeatable for Credit.

GERM 410 - GERMAN TRANSLATION
Short Title: GERMAN TRANSLATION
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Advanced seminar on German-English translations. With stylistic exercises covering a broad range of genres: poetry, novels, essays, historical documents, legal documents, journalism, etc. Taught in German. Effective May 15, 2019, this course does not carry D1 credit.

GERM 420 - GERMAN POLITICS/CULTURE AFTER 1945
Short Title: VIENNA AND ITS PEOPLE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Advanced seminar on German culture and politics after the Second World War -- from the foundation of the Federal Republic, the separation of the two Germanys, and the student revolts of 1968 to 1970s terrorism, the fall of the Berlin Wall, and Germany's present role in the international community. Taught in German.

GERM 425 - VIENNA AND ITS PEOPLE
Short Title: VIENNA AND ITS PEOPLE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: In this course we will look at the people of Vienna from the turn of the century to the present. Our readings, film viewings and discussions will introduce us to the Viennese as people of all classes and ethnic and national groups. Taught in German. Recommended Prerequisite(s): Intermediate high proficiency (speaking & writing).

GERM 430 - GERMAN INTELLECTUAL HISTORY
Short Title: GERMAN INTELLECTUAL HISTORY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores film in the context of German politics and history. It examines why film has been such a contested subject in German philosophy and the social sciences. Assignments will include films from the Weimar Republic and Nazi Germany to postwar New German Cinema and today's filmic presentation of German history and politics. Selected directors include: Maren Ade, Rainer Werner Fassbinder, Florian Henckel von Donnersmarck, Werner Herzog, Fritz Lang, Margarete von Trotta, and Tom Tykwer. The course also provides an introduction to German film theory examining selected works by Theodor W. Adorno, Walter Benjamin, Siegfried Kracauer, and Georg Lukács. Taught in German.
GERM 435 - CONCEPTS OF HISTORY FROM G.E. LESSING TO W. BENJAMIN
Short Title: CONCEPTS OF HISTORY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The twentieth-century Italian philosopher Benedetto Croce called philosophy of history (Geschichtsphilosophie) a 'German discipline.' There is indeed a long and rich tradition of texts in German thought that focus on making sense of the seemingly senseless, on speculating about the origin, the course, the aim, or, quite generally, the 'meaning' of history. Based on selected texts by Lessing, Kant, Heine, Hegel, Nietzsche, Ranke, Burckhardt, Benjamin, and others, the course discusses different concepts of history from the early eighteenth to the twentieth century. Taught in German.

GERM 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

GERM 491 - FALL - INDEPENDENT WORK IN GERMAN LITERATURE
Short Title: FALL-IND WRK GERM LITERATURE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Qualified students work on projects of their choice under the supervision of individual instructors with approval of the undergraduate advisor. Department Permission Required. Repeatable for Credit.

GERM 492 - SPRING - INDEPENDENT WORK IN GERMAN LITERATURE
Short Title: SPRING-IND WRK GERM LITERATURE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Qualified students work on projects of their choice under the supervision of individual instructors with approval of the undergraduate advisor. Department Permission Required. Repeatable for Credit.

GERM 493 - FALL HONOR THESIS
Short Title: FALL HONOR THESIS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Independent research projects by outstanding German majors leading to a substantial honors thesis, undertaken in close cooperation with a departmental faculty member. Department Permission Required.

GERM 494 - SPRING HONORS THESIS
Short Title: SPRING HONOR THESIS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Independent research projects by outstanding German majors leading to a substantial honors thesis, undertaken in close cooperation with a departmental faculty member. Department Permission Required.

GERM 541 - FIRST-YEAR GERMAN I FOR GRADUATE STUDENTS
Short Title: 1ST YR GERMAN I FOR GRAD STUD
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is targeted at graduate students of different disciplines as an introduction to the fundamentals of listening, reading, writing, spoken production and interaction in German. This course is student-centered, uses a critical-thinking approach and intends to make students aware of contextualized language use and socioculturally significant interactions.

GERM 542 - FIRST-YEAR GERMAN II FOR GRADUATE STUDENTS
Short Title: 1ST YR GERMAN II FOR GRAD STUD
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): GERM 541
Description: This course builds on GERM 541. Based on an active student-centered critical-thinking approach, this course wants to make students aware of language use in context and socioculturally significant interactions. The emphasis is on interactional communication, reading, writing, translations, and intercultural awareness and understanding.

Course URL: clicgerman.blogs.rice.edu (http://clicgerman.blogs.rice.edu)
GERM 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Laboratory, Seminar
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

Global Affairs (GLBL)

GLBL 501 - GLOBAL SYSTEMS I
Short Title: GLOBAL SYSTEMS I
Department: Global Affairs
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Designed to help students think theoretically and analytically about leading issues in international affairs by introducing them to social science methods and scholarship, and exposes them to the uses of such concepts in practice, through examination of contemporary problems and relations between nation states. Introduces central concepts and approaches from a variety of social science perspectives, particularly comparative politics and international relations used to explain, analyze and evaluate international politics and economics. Master of Global Affairs students only.

GLBL 502 - INSTITUTIONS & DEVELOPMENT
Short Title: INSTITUTIONS & DEVELOPMENT
Department: Global Affairs
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will explore a broad, multidisciplinary range methodologies and requisite analytical tools needed to identify, measure, and assess the determinants and effects of international development, the nature of change in the development process, and of the associated role of policy and institutional design. This will include the normative analysis of change (applying various concepts of well-being, efficiency, social justice and poverty), the application of economic concepts (to the interpretation of household and firm behavior, strategic interactions and economy-wide patterns), and the role of political, governmental and social behavior in shaping the possibilities for, drivers of and resistance to change. This will be undertaken through a mixture of discussion of overall patterns backed by a strong focus on case studies in particular country settings. Master of Global Affairs students only.

GLBL 503 - INTRODUCTION TO STATISTICS FOR MASTERS STUDENTS
Short Title: INTRODUCTION TO STATISTICS
Department: Global Affairs
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course familiarizes students with basic concepts of research design and statistical methodology that used in policy analysis. It covers (1) fundamental concepts of scientific inference and barriers to inference in observational data, (2) the implementation and evaluation of experimental and observational research designs in policy analysis, (3) descriptive and graphical statistics, (4) statistical hypothesis testing, (5) elementary use and interpretation of the generalized linear model, and (6) using the R statistical software environment for data organization and analysis. It is strongly recommended that students complete this course in the fall semester of their first year; in all cases, it must be completed before the end of the first year. Master of Global Affairs students only.

GLBL 504 - QUANTITATIVE APPLICATIONS IN GLOBAL POLITICS AND POLICY
Short Title: GLOBAL POLITICS AND POLICY
Department: Global Affairs
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course takes a problem-driven approach to practical applications of quantitative research methods in political and policy studies. Using a series of international and domestic policy topics, students will learn to apply and extend their knowledge of research design and statistics as part of developing a systematic approach to the study of global affairs. Student assignments will involve research related to the practice of global affairs, including comparative policy-making, political economy and security. Master of Global Affairs students only.

GLBL 505 - MACROECONOMICS AND THE GLOBAL ECONOMY
Short Title: MACROECONOMICS&GLOBAL ECONOMY
Department: Global Affairs
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This part develops our foundations on topics such as national product and income concepts, measurements, and relationships; interrelationships of the major segments of the national economy; forces affecting the general level of economic activity. Here we study how the major markets (those for labor, capital, and goods) operate. These markets are first studied in isolation. Why some countries have rapid economic development, and others low growth and pervasive poverty? We will explore the ways in which growing economic interdependence shifts global wealth. We will discuss the role of global energy supply and of ongoing technological progress as a force of change in the global economy. Masters of Global Affairs students only. Equivalency: GLBL 506, GLBL 524. Mutually Exclusive: Cannot register for GLBL 505 if student has credit for GLBL 524.
GLBL 506 - MACROECONOMICS FOR THE GLOBAL ECONOMY
Short Title: MACROECONOMICS FOR GLOBAL ECON
Department: Global Affairs
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The second part of the course puts the markets studied in the first part together and studies their interactions. The key issues here are: (a) how macroeconomic variables behave and (b) how can policy affect these outcomes both domestically and internationally. Students will engage in a short team project to explore the role of economic development in international settings, including topics such as energy supply, labor and employment, population, education, health and nutrition. International economics: balance of payments, foreign exchange markets, international trade theory, tariffs, quotas, and exchange controls. The course will focus on the relationship between international policy and economics. North-South relations, including the US-Mexico economic relation will be discussed. Master of Global Affairs students only. Equivalency: GLBL 505, GLBL 524. Mutually Exclusive: Cannot register for GLBL 506 if student has credit for GLBL 524.

GLBL 507 - DECISION MAKING UNDER UNCERTAINTY
Short Title: DECISION MAKING UNCERTAINTY
Department: Global Affairs
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course examines how leaders on the world stage-those in governments, international organizations, and non-state actors-make decisions that alter the course of international affairs. These decisions are made under conditions of uncertainty with limited information, elements of surprise about what will happen next, and often carry high degrees of risk. The course considers key theoretical models of uncertainty in decision making and examines specific foreign policy decisions that managed the uncertainty toward a successful outcome and those that ended in failure or expensive mistakes. Master of Global Affairs students only.

GLBL 510 - CULTURAL DIRECTIONS IN INTERNATIONAL AFFAIRS
Short Title: CULTURAL DIRECTIONS
Department: Global Affairs
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Investigates the cultural and social dimensions of the development and implementation of international policy; emphasizes historical and ethnographic case studies to understand the variable impacts of policy implementation in different contexts. Master of Global Affairs students only.

GLBL 512 - INTERNATIONAL CONFLICT
Short Title: INTERNATIONAL CONFLICT
Department: Global Affairs
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to a broad range of areas related to the analysis and resolution of conflict, focusing on the interdisciplinary study of defining, understanding, and addressing conflict. International and community conflict, characteristics, negotiation, collaborative problem solving, process-advice. Students will research international conflict escalation, stalemate, de-escalation, settlement, resolution, or management; mediation skills to facilitate the resolution of disputes and differences, techniques of third party intervention with individuals and groups. Learning approach includes lectures, simulations, modeling and practice mediations. Master of Global Affairs students only.

GLBL 513 - INTERNATIONAL COOPERATION
Short Title: INTERNATIONAL COOPERATION
Department: Global Affairs
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of theories and best practices from academia and governments/NGO's related to international cooperation, including international law and treaties, international coalitions and sanctions, international and transnational organizations, translocal city and NGO partnerships, government and business partnerships, transnational governance and publicly diplomacy, including soft power and collective action for global public goods. Master of Global Affairs students only.

GLBL 514 - THE MIDDLE EAST CAULDRON AND UNITED STATES POLICY
Short Title: M. EAST CAULDRON & U.S. POLICY
Department: Global Affairs
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines the expanding public dimension of diplomacy by investigating the growing global interests and trends in the 21st century’s diplomatic environment. This course also examines the underlying political, socio-economic, and cultural trends and surveys US national security interests, foreign policy, and public diplomacy around the world. For Master of Global Affairs Students Only.
GLBL 515 - ISSUES IN CONTEMPORARY U.S. FOREIGN POLICY
Short Title: CONTEMP. US FOREIGN POLICY
Department: Global Affairs
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MAGA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: U.S. foreign policy is in transition. This process began long before President Donald J. Trump assumed office. We have moved decisively into what could be called “the post-post-Cold War” era. The global struggle between the Soviet Union and the United States ended 25 years go. But so has the “unipolar moment” that followed the Cold War, when the United States possessed unrivalled power in world affairs. The rise of China, the resurgence of Russia, and continuing turmoil in the Middle East confront U.S. policy-makers with an array of complex challenges. This course focuses on these and other issues that are shaping U.S. foreign policy today. It will include discussions of topics "ripped from the news" whether we are talking about the Syrian Civil War, the ongoing low-intensity conflict in the Ukraine, or Chinese military actions in the South China Sea. Master of Global Affairs students only.

GLBL 519 - MASTER OF GLOBAL AFFAIRS INTERNSHIP
Short Title: MASTER GLOBAL AFFAIRS INTRNSHP
Department: Global Affairs
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1-6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The Master of Global Affairs internship is a graduate-level supervised field experience for students in the MGA program. All internships must be preapproved and must be conducted after the student has completed a minimum of 18 credit hours in the program. Master of Global Affairs students only. Instructor Permission Required. Repeatable for Credit.

GLBL 520 - MASTER OF GLOBAL AFFAIRS CAPSTONE
Short Title: MASTER GLOBAL AFFAIRS CAPSTONE
Department: Global Affairs
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The Master of Global Affairs capstone course is the culmination of all graduate coursework and internship experience in the program; it is a significant piece of work that is normally expected of a term paper. The capstone project must reflect a scholarly and professional analysis informed by the application of analytical strategies that address a real-world problem or public policy issue. All MGA students must complete the capstone in their final semester. Instructor Permission Required.

GLBL 521 - DIRECTED READING IN GLOBAL AFFAIRS
Short Title: DIR READING IN GLOBAL AFFAIRS
Department: Global Affairs
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students in the MAGA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate level independent reading course. Topics vary. Master of Global Affairs students only. Instructor Permission Required. Repeatable for Credit.

GLBL 523 - QUANTITATIVE APPLICATIONS IN GLOBAL AFFAIRS
Short Title: QUANTITATIVE APPLICATIONS
Department: Global Affairs
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MAGA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course takes a problem-driven approach to practical applications of quantitative research methods in political and policy studies. Using a series of international domestic policy topics, students will learn to apply and extend their knowledge of research design and statistics as part of developing a systematic approach to the study of global affairs. Student assignments will involve research related to the practice of global affairs, including comparative policy-making, political economy and security.

GLBL 524 - MACROECONOMICS IN A GLOBAL ECONOMY
Short Title: MACROECONOMICS GLOBAL ECONOMY
Department: Global Affairs
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MAGA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course develops our foundations of aggregate economic analysis; use of the aggregate demand/aggregate supply model for the determination of output, employment, and prices. The focus will be on topics such as national product and income concepts, measurements, and relationships; interrelationships of the major segments of the national economy; forces affecting the general level of economic activity. Here we study how the major markets (those for labor, capital, and goods) operate. These fundamental concepts will be used to analyze international economic policy. Equivalency: GLBL 505, GLBL 506. Mutually Exclusive: Cannot register for GLBL 524 if student has credit for GLBL 505/GLBL 506.
GLBL 525 - INTERNATIONAL SECURITY
Short Title: INTERNATIONAL SECURITY
Department: Global Affairs
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MAGA program. Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: This course covers two general areas in International Security: (1) traditional (i.e., 'state-centered') and (2) non-traditional security issues. The first half of the course is devoted to recent developments in the study of interstate security. We will contemplate unipolarity, American security policy, the rise of some peer competitors, and the changing nature of interstate relations in the 21st century. The second half of the course will explore the growing significance of a number of emerging non-traditional security concerns. In this portion, we will discuss counterinsurgency, civil war, terrorism, humanitarian intervention, among other developing issues.

GLBL 531 - WORLD POLITICS AND GLOBAL GOVERNANCE
Short Title: CHANGE IN WORLD POLITICS
Department: Global Affairs
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: This course has three parts: First, it will engage cutting edge research on the causes and dynamics of interstate conflict and civil war. Second, it will discuss theories and practices of international organizations such as the UN, IMF, and WID. Finally, with the background knowledge from the first parts, the course will discuss how China's rise may bring changes to both dimensions.

GLBL 532 - INTERNATIONAL BUSINESS ENVIRONMENT AND GLOBAL ECONOMIC GOVERNANCE
Short Title: INT'L BUSINESS DEVELOPMENT
Department: Global Affairs
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MAGA program. Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: This is a comprehensive course in how governance of the global economy affects business and investment decisions. It is designed to provide students with an understanding of the main international economic institutions that have been developed to oversee the global economy, and how these institutions affect the international business and investment climate. Lectures and class discussions will focus on real world examples of the impact of the international trade and financial institutions (the G-8, G-20, WTO, IMF, and World Bank) on global and individual country economic environments, with particular emphasis on non-OECD countries.

GLBL 542 - INTERNATIONAL MACROECONOMIC POLICY FOR MASTER'S STUDENTS
Short Title: INTL MACROECONOMIC POLICY
Department: Global Affairs
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: How does exchange rate policy fit into a country's macroeconomic environment? How do international capital markets constrain policy space? Students will model the linkages between exchange rates, interest rates, capital flows, and prices. The course will emphasize emerging economies.

GLBL 543 - ENERGY POLICY
Short Title: ENERGY POLICY
Department: Global Affairs
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to students in the MAGA program. Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: Energy is credited with many contradictory properties. It is a curse that enables dictatorship and war, undermines the work ethic, and taints our environment. It is also the world's largest business and a chief ingredient of state power, stitching together disparate countries in webs of mutual dependence. Energy shapes our physical landscapes and personal habits, providing services that make us comfortable and secure, while producing waste that threatens this way of life. These are the areas where energy and politics intersect, the topics of concern to this course. Mutually Exclusive: Cannot register for GLBL 543 if student has credit for GLBL 541/POST 401/POST 501.

GLBL 551 - CYBERPOLITIK: INTERNATIONAL AFFAIRS IN TECHNOLOGY AND INFORMATION
Short Title: CYBERPOLITIK
Department: Global Affairs
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: How are the evolving cases of cyber-attack and breach as well as the actions of government and corporations shaping how cyberspace is governed? What object lessons are there in security cases such as those involving WikiLeaks and the Snowden affair? This course examines the widely pervasive and enormously effective nature of cyber threats today, explaining why cyber-attacks happen, how they matter, and how they may be managed.
GLBL 552 - INTERNATIONAL SECURITY: DE-RISKING NATIONAL THREATS AND BUSINESS THREATS
Short Title: INTERNATIONAL SECURITY
Department: Global Affairs
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course seeks to define the risks and risk-mitigation strategies employed by both nation-states and multinational businesses. We will examine how businesses control their risks by following compliance laws around the world. We will also examine what a superpower is within the context of the geopolitical challenges America is facing (fracturing of national institutions/will consensus, our potential relative decline, shifting alliances, China’s rise, the European Union stagnation and diminution, and Russian aggression) as we look to answer the following question: who would even want to be a superpower.

GLBL 553 - INTERNATIONAL CRISIS MANAGEMENT IN A MULTI-RISK, INTER-CONNECTED WORLD
Short Title: INTERNATIONAL CRISIS MGMT
Department: Global Affairs
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Approximately 85% of the nation’s critical infrastructure (water, electricity, food/agriculture, energy, finance, IT, communication, medical, transportation, chemical, etc.), and nearly all of the global banking system is owned and operated by private corporations. How do these corporations prepare for a crisis even that impacts national security, national economic issues, or public order/safety/health, and therefore requires an integrated joint partnership with the government or other organization(s) to plan for and manage the crisis incident?

GLBL 554 - UNDERSTANDING TERRORISM AND COUNTERTERRORISM
Short Title: COUNTERTERRORISM SEMINAR
Department: Global Affairs
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students in the MAGA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course reviews the history of terrorism and counterterrorism and focuses on the experience of the United States, the United Kingdom, and Israel. The course will include topics such as the evolution of terrorism, intelligence collection and analysis, the use of technology, and policing.

GLBL 573 - NON-THESIS GRADUATE RESEARCH
Short Title: NON-THESIS GRADUATE RESEARCH
Department: Global Affairs
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment limited to students in the MAGA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Individual research for graduate students in the Master of Global Affairs.

GLBL 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Global Affairs
Grade Mode: Standard Letter
Course Type: Laboratory, Lecture, Seminar, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

Global Health Technologies (GLHT)

GLHT 201 - INTRODUCTION TO GLOBAL HEALTH
Short Title: INTRO TO GLOBAL HEALTH
Department: Global Health Technologies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course provides an overview of contemporary challenges and advances to improve human health. The course opens with an introduction to the epidemiology and physiology of the major human health problems throughout the world. With this introduction, we examine medical technologies to prevent infection, detect cancer and treat heart disease. The course is designed for non-engineering / non-science majors.

GLHT 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Global Health Technologies
Grade Mode: Standard Letter
Course Type: Laboratory, Lecture, Seminar, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

GLHT 314 - SUSTAINABLE WATER PURIFICATION FOR THE DEVELOPING WORLD
Short Title: SUST WTR PURIF FOR DEV WORLD
Department: Global Health Technologies
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course is an overview of sustainable strategies for safe water supply in off-the-grid, low-income regions. Topics covered include water quality and treatment, sustainability and WASH (water, sanitation and hygiene). A major element of the course is a project to solve a water-related issue in a real-world context. Cross-list: BIOE 365, CEVE 314. Repeatable for Credit.
GLHT 360 - APPROPRIATE DESIGN FOR GLOBAL HEALTH
Short Title: APPRO DESIGN FOR GLOBAL HEALTH
Department: Global Health Technologies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): GLHT 201
Description: Seminar-style introductory design course covering epidemiology, pathophysiology, health systems, health economics, medical ethics, humanitarian emergencies, scientific and engineering design methods, and appropriate health technology case studies. To register, you must be enrolled in the GLHT minor and submit a 250 statement to beyondtraditionalborders@rice.edu by Monday of preregistration. The minor and course prerequisite is waived for students majoring in Bioengineering. Instructor Permission Required. Cross-list: BIOE 360.

GLHT 361 - METABOLIC ENGINEERING FOR GLOBAL HEALTH ENVIRONMENTS
Short Title: METAB ENG GLOBAL HEALTH ENVMT
Department: Global Health Technologies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (BIOE 362 or GLHT 362) and (PHYS 126 or PHYS 102 or PHYS 112 or PHYS 142) and (MATH 102 or MATH 106)
Description: Importance of nutritional and pharmaceutical compounds, impact of cost of compounds on global health; Overview of biochemical pathways; metabolite analysis; Genetic engineering and molecular biology tools for ME; Pharmaceuticals and drug discovery approaches (antibiotics, antivirals; anti-parasite compounds); anti-diarrhea treatments; vaccines. Cross-list: BIOC 361, BIOE 361.
Course URL: www.btb.rice.edu

GLHT 392 - NEEDS FINDING AND DEVELOPMENT IN BIOENGINEERING
Short Title: NEEDS FINDING & DEV IN BIOE
Department: Global Health Technologies
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Students in this course will learn and develop the engineering skill of needs finding in the field of bioengineering focused on designing for disabilities. Students will work in groups with patients with disabilities to identify daily needs and develop design criteria to meet those needs including preliminary prototype development. Instructor Permission Required. Cross-list: BIOE 392.

GLHT 400 - GLOBAL HEALTH TECHNOLOGIES INDEPENDENT RESEARCH PROJECTS
Short Title: GLHT INDEPENDENT RESEARCH
Department: Global Health Technologies
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course enables undergraduates pursuing the Global Health Technologies Minor to perform independent research on a specific design challenge in global health technology and innovation. Students are advised by the faculty and often mentored by a graduate student/post-doc. Instructor Permission Required. Repeatable for Credit.
Course URL: www.btb.rice.edu

GLHT 401 - GLHT RESEARCH PAPER WRITING AND SUBMISSION
Short Title: GLHT RESEARCH REPORTING
Department: Global Health Technologies
Grade Mode: Standard Letter
Course Type: Research
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Students in this course will work in the preparation of a paper reporting a previously completed design project. Instructor Permission Required. Repeatable for Credit.

GLHT 411 - INTEGRATED APPROACHES TO SUSTAINABLE DEVELOPMENT
Short Title: SUSTAINABLE DEVELOPMENT
Department: Global Health Technologies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This is a multidisciplinary course in which students explore the origins, connections and consequence of social and political tensions arising from the expansion of commercial energy resources in unique and rapidly changing Arctic and sub-Arctic environments. The challenge for the class will be to understand that in matters of sustainable development systemic complexities often give rise to a disconnect between analysis and decision-making. Topics will include the impacts of commercial energy development and drilling in rapidly changing Arctic environments, as well as strategies that can promote sustainable development and improved conditions for indigenous populations in the context of environmental challenges associated with the Arctic meltdown and drilling activities for oil and gas. Methodologies for structuring the analysis to be applied to enhance systemic resilience of the Alaska environment will be presented. Students will learn explore the barriers to sustainable development and discuss cost-effective, culturally appropriate solutions to energy related issues by integrating technical, organizational, and personal perspectives. Each class will have formal lectures(s) by Rice faculty or guest lecturer. Registered students are eligible to apply for a summer internship in Alaska. Recommended Prerequisite(s): POST 401 Mutually Exclusive: Cannot register for GLHT 411 if student has credit for POST 411. Repeatable for Credit.
GLHT 448 - TECHNOLOGY COMMERCIALIZATION IN DEVELOPING COUNTRIES FOR ENGINEERING  
Short Title: TECH COMM IN DEV CTY FOR ENGS  
Department: Global Health Technologies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This is a unique opportunity for engineering students to 1) collaborate with graduate business students to design and disseminate global health technologies; 2) learn about the sustainable distribution of health products in developing countries; 3) have a once-in-a-lifetime trip to Africa that tourism can never duplicate; and 4) help the poor. Working alongside advanced MBA students, engineering students will apply their skills to developing business plans for student-designed global health technologies that may influence dissemination and business plans. Interested students should email beyondtraditionalborders@rice.edu for an application. Instructor Permission Required.

GLHT 449 - TROUBLESHOOTING WORKSHOP FOR CLINICALLY-RELEVANT BIOMEDICAL EQUIPMENT  
Short Title: MED BIOENGINEERING WORKSHOP  
Department: Global Health Technologies  
Grade Mode: Standard Letter  
Course Type: Laboratory  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): ELEC 243  
Description: Bioengineering course in the troubleshooting, repair, and maintenance of standard biomedical equipment used in hospitals in the developed and developing worlds. Cross-list: BIOE 449. Repeatable for Credit.

GLHT 451 - GLOBAL HEALTH DESIGN CHALLENGES I  
Short Title: GLOBAL HEALTH DESIGN I  
Department: Global Health Technologies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): GLHT 201 and (BIOE 360 or GLHT 360) and (GLHT 363 or BIOS 363 or PSYC 480 or SOCI 345)  
Description: Students in this course will work on design projects to address global health disparities. Students will work in teams and partner with bioengineering students to develop solutions to particular problems in delivering healthcare in the developing world. Students must take GLHT 452 in the spring semester to complete their projects. Instructor Permission Required.  
Course URL: www.btb.rice.edu (http://www.btb.rice.edu)

GLHT 452 - GLOBAL HEALTH DESIGN CHALLENGES II  
Short Title: GLOBAL HEALTH DESIGN II  
Department: Global Health Technologies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): GLHT 451  
Description: Students in this course will work on design projects to address global health disparities. Students will work in teams and partner with bioengineering students to develop solutions to particular problems in delivering healthcare in the developing world. Students must have taken GLHT 451 in the fall semester to initiate their projects.  
Course URL: www.btb.rice.edu (http://www.btb.rice.edu)

GLHT 454 - SOCIAL ENTREPRENEURSHIP  
Short Title: SOCIAL ENTREPRENEURSHIP  
Department: Global Health Technologies  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This course introduces students to contemporary concepts, debates, and contexts necessary for analyzing and engaging in the sphere of social entrepreneurship. The course has four distinct parts: social context; organizational forms and collaborations; private sector roles; and measurement and impacts. Various aspects of social entrepreneurship, such as base of the pyramid/microenterprises, private-public partnerships, private-governmental partnerships, voluntary social codes, corporate social responsibility, and ethical consumerism will be covered. From this foundation, students will undertake a social entrepreneurship project about a contemporary social problem in Houston: food insecurity and food deserts. Cross-list: BUSI 464, SOSC 464.

GLHT 510 - SEMINAR IN TROPICAL MEDICINE  
Short Title: SEMINAR IN TROPICAL MEDICINE  
Department: Global Health Technologies  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Seminar  
Credit Hour: 1  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: 8 week lecture series on topics in global health. The theme for this offering is one health; integrating efforts to obtain optimal health for humans, animals, and the environment. Offered in conjunction with the new National School of Tropical Medicine, the course will feature lectures by various experts on the public health issues most pressing in poor populations in the world today. Course open to all undergraduates and graduate students. Cross-list: BIOE 510. Repeatable for Credit.
GREE 101 - ELEMENTARY GREEK I  
Short Title: ELEMENTARY GREEK I  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: Reading-based introduction to ancient Greek. Readings include passages from classical and New Testament authors. Explanation and analysis of basic grammar, including comparison with English grammar. Besides translating Greek to English (and vice versa), we will consider the language and literature in their historical context, and practice reading ancient Greek aloud. Effective May 15, 2019, this course does not carry D1 credit.

GREE 102 - ELEMENTARY GREEK II  
Short Title: ELEMENTARY GREEK II  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: Continuation of GREE 101. Effective May 15, 2019, this course does not carry D1 credit.

GREE 201 - INTERMEDIATE GREEK I: PROSE  
Short Title: INTERMEDIATE GREEK I: PROSE  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: Review of forms and syntax. Readings from Plato.

GREE 202 - INTERMEDIATE GREEK: EURIPIDES MEDEA/BIBLICAL KOINE  
Short Title: INTERMEDIATE GREEK  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

GREE 203 - INTERMEDIATE GREEK: HOMER  
Short Title: INTERMEDIATE GREEK  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: Continuation of GREE 201. May be repeated for credit. Graduate/Undergraduate Equivalency: GREE 502. Mutually Exclusive: Cannot register for GREE 202 if student has credit for GREE 502. Repeatable for Credit.

GREE 302 - HOMER  
Short Title: HOMER  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Open to third and fourth year undergraduates. An opportunity to read the Iliad/Odyssey in the original Greek. Includes review of forms and syntax as well as discussion of Homeric dialect, meter, poetics, and oral tradition. May be repeated (once) for credit. Graduate/Undergraduate Equivalency: GREE 502. Mutually Exclusive: Cannot register for GREE 302 if student has credit for GREE 502. Repeatable for Credit.

GREE 305 - PLATO, ARISTOTLE, OR NEW TESTAMENT GREEK  
Short Title: PLATO,ARISTOTLE,NEW TSTMNT GRK  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Greek prose for third or fourth year undergraduates. Choice of texts flexible depending on the needs and interests of those enrolled. Includes review of forms and syntax. Continuation of GREE 301, with additional texts. May be repeated for credit. Graduate/Undergraduate Equivalency: GREE 505. Mutually Exclusive: Cannot register for GREE 305 if student has credit for GREE 505. Repeatable for Credit.
GREE 306 - ADVANCED GREEK: POETRY
Short Title: ADVANCED GREEK: POETRY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course is intended for students with at least two prior years of Greek. The course will focus on Greek poetic texts, with an emphasis on Attic tragedy. The course will emphasize poetic vocabulary and grammar, meter, and performance contexts. Texts change each semester. Repeatable for Credit.

GREE 307 - ADVANCED GREEK: PROSE
Short Title: ADVANCED GREEK: PROSE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course is intended for students with at least two prior years of Greek. The course will focus on prose texts, with an emphasis on fifth- and fourth- century authors. The course will emphasize vocabulary, grammar, and historical contexts. Texts change each semester, repeatable for credit. Repeatable for Credit.

GREE 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

GREE 492 - DIRECTED READING
Short Title: DIRECTED READING
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Independent work for qualified juniors and seniors in genres or authors not presented in other courses. Effective May 15, 2019, this course does not carry D1 credit. Instructor Permission Required. Repeatable for Credit.

GREE 502 - HOMER
Short Title: HOMER
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Open to graduate students. Read the Iliad/Odyssey in the original Greek. Review of forms and syntax. Discussion of Homeric dialect, meter, poetics, and oral tradition. Requirement beyond GREE 302: oral presentation analyzing diction and poetic formulas in a specific passage. Repeatable (once) for credit. Graduate/Undergraduate Equivalency: GREE 302. Mutually Exclusive: Cannot register for GREE 502 if student has credit for GREE 302. Repeatable for Credit.

GREE 503 - DIRECTED READING FOR GRADUATE STUDENTS
Short Title: DIRECTED READING GRAD STUDENTS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate level, independent reading course. Topics vary. Repeatable for Credit.

GREE 504 - DIRECTED READING FOR GRADUATE STUDENTS
Short Title: GR STUDENTS DIRECTED READING
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate level, independent reading course. Topics vary. Offered in the spring semester. Repeatable for Credit.

GREE 505 - PLATO, ARISTOTLE, OR NEW TESTAMENT GREEK
Short Title: PLATO,ARISTOTLE,NEW TSTMNT GRK
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Greek prose for graduate students in related disciplines. Choice of texts flexible depending on the needs and interests of those enrolled. Includes review of forms and syntax. Continuation of GREE 501, with additional texts. Additional work required beyond GREE 305, in the form of an oral presentation analyzing the language and style of one or more text in terms of its historical, social, and generic context. May be repeated for credit. Graduate/Undergraduate Equivalency: GREE 305. Mutually Exclusive: Cannot register for GREE 505 if student has credit for GREE 305. Repeatable for Credit.
Health Sciences (HEAL)

HEAL 103 - NUTRITION
Short Title: NUTRITION
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Designed to help students develop a greater understanding and appreciation of health and well being, as it relates to themselves and others around them, and for students to apply health and wellness knowledge in their personal life to improve their health.

HEAL 119 - INTRODUCTION TO HEALTH AND WELLNESS
Short Title: INTRO TO HEALTH & WELLNESS
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Freshman. Enrollment is limited to Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Designed to help students develop a greater understanding and appreciation of health and well being, as it relates to themselves and others around them, and for students to apply health and wellness knowledge in their personal life to improve their health.

HEAL 122 - PRINCIPLES OF PUBLIC AND COMMUNITY HEALTH
Short Title: PRIN PUBLIC&COMMHEALTH
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Principles of Public & Community Health examines aspects of the community that relate to health including health issues within community subgroups; identification and analysis of community health programs; organizational patterns and functions of voluntary and governmental health agencies and coordination of community health programs.

HEAL 132 - MEDICAL TERMINOLOGY
Short Title: MEDICAL TERMINOLOGY
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course introduces the student interested in medical and health professions to a large vocabulary of medical language which develops skills in understanding and remembering new words. It describes word origins, basic terms in anatomy and terms pertaining to each body system as well as pharmacology and medical equipment, and many frequently used medical terms, abbreviations and symbols.

HEAL 208 - CHEMICAL ALTERATIONS OF BEHAVIOR
Short Title: CHEM ALTERATIONS OF BEHAVIOR
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Examination of social, cultural psychological, physiological causes and effects of drug use and abuse. Individual, family, and community factors related to prevention and treatment will be addressed.

HEAL 212 - CONSUMER HEALTH AND THE MEDIA
Short Title: CONSUMER HEALTH AND THE MEDIA
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Study of factual information and guidelines that enable consumers to act intelligently in selecting health products and services, with emphasis on the economic aspects of health.

HEAL 222 - PRINCIPLES OF PUBLIC AND COMMUNITY HEALTH
Short Title: PRIN PUBLIC&COMMHEALTH
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Principles of Public & Community Health examines aspects of the community that relate to health including health issues within community subgroups; identification and analysis of community health programs; organizational patterns and functions of voluntary and governmental health agencies and coordination of community health programs.

HEAL 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.
HEAL 306 - HUMAN SEXUALITY
Short Title: HUMAN SEXUALITY
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Designed to explore the physiological, psychological, and sociological parameters of human sexuality, while providing accurate information and helping students develop healthy attitudes toward sexuality. Cross-list: SWGS 306.

HEAL 313 - FOUNDATIONS OF HEALTH PROMOTION AND EDUCATION
Short Title: FOUNDATIONS HEALTH PROMO&EDUC
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Kinesiology. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): HEAL 222
Description: Foundations of Health Promotion/Health Education is designed to introduce students to the discipline of health education and the practice of health promotion. The course explores critical issues in the field of health promotion, accountability and professional preparation, professional ethics, credentialing and the changing technology in the field. Intended for Health Science majors only.

HEAL 350 - UNDERSTANDING CANCER
Short Title: UNDERSTANDING CANCER
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Examination of cancer from a biological, psychological and sociological perspective with emphasis on cancer epidemiology, prevention, and early detection.

HEAL 360 - VIOLENCE IN AMERICA: A PUBLIC HEALTH PERSPECTIVE
Short Title: VIOLENCE IN AMERICA
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course presents an overview of issues concerning violence using a public health perspective. Information will be presented and discussed concerning several domains pertinent to violence, including family violence, intimate partner violence, community violence, and workplace harassment.

HEAL 375 - THE BUILT ENVIRONMENT AND PUBLIC HEALTH
Short Title: ENVIRONMENT AND PUBLIC HEALTH
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This interdisciplinary course reviews topics involved in characterizing the built environment. It encompasses economic, environmental, & social factor such as (a) community design, space governance, planning & management (c) broader functions such as accessibility.

HEAL 379 - INTERNSHIP IN HEALTH SCIENCES
Short Title: INTERNSHIP IN HEALTH SCIENCES
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Internship experience for upper-level health sciences majors only. Department Permission Required. Repeatable for Credit.

HEAL 380 - DISPARITIES IN HEALTH IN AMERICA
Short Title: DISPARITIES IN HEALTH IN AMER
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores social, behavioral, and medical determinants (e.g., race and ethnicity, socioeconomic status, and sexual orientation) that influence health and health disparities within populations, as well as strategies to reduce and eliminate those disparities. The course incorporates perspectives from various disciplines, including public health, psychology, and medicine. Graduate/Undergraduate Equivalency: HEAL 580. Mutually Exclusive: Cannot register for HEAL 380 if student has credit for HEAL 580.

HEAL 407 - EPIDEMIOLOGY
Short Title: EPIDEMIOLOGY
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of communicable, noncommunicable, and behavioral diseases with emphasis on the disease process and basic epidemiologic methods. Graduate/Undergraduate Equivalency: HEAL 507. Mutually Exclusive: Cannot register for HEAL 407 if student has credit for HEAL 507.
HEAL 422 - THEORIES AND MODELS OF HEALTH BEHAVIOR  
Short Title: THEOR&MODELS HLTH BEHAVIOR  
Department: Kinesiology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): HEAL 222  
Description: Theories & Models of Health Behavior is designed for the student interested in public and community health or health psychology. This course examines the current theories and models of health behavior and their application to the field of health promotion/health education. Graduate/Undergraduate Equivalency: HEAL 522. Mutually Exclusive: Cannot register for HEAL 422 if student has credit for HEAL 522.

HEAL 460 - PLANNING AND EVALUATION OF HEALTH PROMOTION AND EDUCATION  
Short Title: PLAN/EVAL: HEALTH PROGRAMS  
Department: Kinesiology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment limited to students with a class of Junior or Senior. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): HEAL 222  
Description: Planning & Evaluation of Health Promotion provides the student with the technical skills for planning and evaluation of health promotion, health education, and disease prevention programs including collection and analysis of both qualitative and quantitative data. Graduate/Undergraduate Equivalency: HEAL 560. Mutually Exclusive: Cannot register for HEAL 460 if student has credit for HEAL 560.

HEAL 477 - SPECIAL TOPICS  
Short Title: SPECIAL TOPICS  
Department: Kinesiology  
Grade Mode: Standard Letter  
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory  
Credit Hours: 1-4  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

HEAL 495 - INDEPENDENT RESEARCH IN HEALTH SCIENCES  
Short Title: INDEPENDENT RESEARCH  
Department: Kinesiology  
Grade Mode: Standard Letter  
Course Type: Research  
Credit Hours: 1-3  
Restrictions: Enrollment limited to students with a class of Junior or Senior. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): KINE 319 and KINE 440  
Description: To provide the student with an opportunity to participate in a research project under the supervision of a Rice Kinesiology faculty member and/or an external researcher. Department Permission Required. Repeatable for Credit.  
Course URL: kinesiology.rice.edu (http://kinesiology.rice.edu)

HEAL 498 - SPECIAL TOPICS IN HEALTH SCIENCES  
Short Title: SPECIAL TOPICS  
Department: Kinesiology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 1-3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Spring 2018: Built Environment and Public Health. This course examines factors that characterize the built environment (BE) and how design of BE impact physical and social determinants of health. Issues of accessibility, public space planning and management are examined in the connection to community health outcomes. Repeatable for Credit.

HEAL 499 - TEACHING PRACTICUM IN HEALTH SCIENCES  
Short Title: TEACH PRACTICUM HEALTH SCIENCE  
Department: Kinesiology  
Grade Mode: Standard Letter  
Course Type: Internship/Practicum  
Credit Hours: 1-3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Advanced teaching experience for upper level students who have demonstrated particular aptitude and interest in one area of kinesiology. Students will assist in conducting a course in which they have previously excelled. The student will learn techniques in course management, instruction, and evaluation. Department Permission Required. Recommended prerequisite(s): Junior or Senior standing, declared major in Health Sciences, and at least an 'A-' in the course serving as the practicum. Repeatable for Credit.
HEAL 507 - EPIDEMIOLOGY
Short Title: EPIDEMIOLOGY
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of communicable, noncommunicable, and behavioral diseases with emphasis on the disease process and basic epidemiologic methods. Graduate level students only. Instructor Permission Required. Graduate/Undergraduate Equivalency: HEAL 407. Mutually Exclusive: Cannot register for HEAL 507 if student has credit for HEAL 407.

HEAL 522 - THEORIES AND MODELS OF HEALTH BEHAVIOR
Short Title: THEORY&MODELS HLTH BEHAVIOR
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Theories & Models of Health Behavior is designed for the student interested in public and community health or health psychology. This course examines the current theories and models of health behavior and their application to the field of health promotion/health education. Graduate level students only. Instructor Permission Required. Graduate/Undergraduate Equivalency: HEAL 422. Mutually Exclusive: Cannot register for HEAL 522 if student has credit for HEAL 422.

HEAL 560 - PLANNING AND EVALUATION OF HEALTH PROMOTION AND EDUCATION
Short Title: PLAN/EVAL: HEALTH PROGRAMS
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Planning & Evaluation of Health Promotion provides the student with the technical skills for planning and evaluation of health promotion, health education, and disease prevention programs including collection and analysis of both qualitative and quantitative data. Graduate level students only. Instructor Permission Required. Graduate/Undergraduate Equivalency: HEAL 460. Mutually Exclusive: Cannot register for HEAL 560 if student has credit for HEAL 460.

HEAL 580 - DISPARITIES IN HEALTH IN AMERICA
Short Title: DISPARITIES IN HEALTH IN AMER
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course explores social, behavioral, and medical determinants (e.g., race and ethnicity, socioeconomic status, and sexual orientation) that influence health and health disparities within populations, as well as strategies to reduce and eliminate those disparities. The course incorporates perspectives from various disciplines, including public health, psychology, and medicine. Graduate level students only. Instructor Permission Required. Graduate/Undergraduate Equivalency: HEAL 380. Mutually Exclusive: Cannot register for HEAL 580 if student has credit for HEAL 380.

HEAL 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Laboratory, Lecture, Seminar, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

HEBR 125 - INTRODUCTION TO BIBLICAL HEBREW I
Short Title: INTRO TO BIBLICAL HEBREW I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An introduction to Biblical Hebrew with emphasis on grammar and vocabulary. Cross-list: RELI 125.

HEBR 126 - INTRODUCTION TO BIBLICAL HEBREW II
Short Title: INTRO TO BIBLICAL HEBREW II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Continuation of RELI 125. We will finish the grammar in the second half of this semester and then read selections from the Hebrew Bible. Cross-list: RELI 126.
HEBR 141 - FIRST YEAR HEBREW I
Short Title: FIRST YEAR HEBREW I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Development of interactional competence in Hebrew (sociolinguistic and sociocultural knowledge) to communicate and interact with speakers of Hebrew. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. No prior knowledge of this language is necessary. Effective May 15, 2019, this course does not carry D1 credit. Recommended Prerequisite(s): Placement Test. Mutually Exclusive: Cannot register for HEBR 141 if student has credit for HEBR 161.

HEBR 142 - FIRST YEAR HEBREW II
Short Title: FIRST YEAR HEBREW II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Continuation of HEBR 141. Development of interactional competence in Hebrew (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Hebrew. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Effective May 15, 2019, this course does not carry D1 credit. Recommended Prerequisite(s): HEBR 101 or HEBR 141 or Placement Test. Mutually Exclusive: Cannot register for HEBR 142 if student has credit for HEBR 262.

HEBR 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Laboratory, Lecture, Seminar
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

HEBR 263 - SECOND YEAR HEBREW I
Short Title: SECOND YEAR HEBREW I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Continuation of HEBR 142. Development of interactional competence in Hebrew (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Hebrew. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Recommended Prerequisite(s): HEBR 201 or HEBR 142 or Placement Test. Mutually Exclusive: Cannot register for HEBR 263 if student has credit for HEBR 201.

HEBR 264 - SECOND YEAR HEBREW II
Short Title: SECOND YEAR HEBREW II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Continuation of HEBR 263. Development of interactional competence in Hebrew (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Hebrew. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Recommended Prerequisite(s): HEBR 202 or HEBR 263 or Placement Test. Mutually Exclusive: Cannot register for HEBR 264 if student has credit for HEBR 202.

HEBR 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.
Hindi (HIND)

HIND 106 - ACCELERATED FIRST YEAR HINDI
Short Title: ACCEL FIRST YEAR HINDI
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Alternate first year Hindi for students who have some knowledge of spoken Hindi. This is an intensive course covering the equivalents of HIND 141 and 142. Students will be prepared for HIND 263 upon completion of the course. Placement Test is required. Effective May 15, 2019, this course does not carry D1 credit. Mutually Exclusive: Cannot register for HIND 106 if student has credit for HIND 141/HIND 142.

HIND 141 - FIRST YEAR HINDI I
Short Title: FIRST YEAR HINDI I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Development of interactional competence in Hindi (sociolinguistic and sociocultural knowledge) to communicate and interact with speakers of Hindi. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. No prior knowledge of this language is necessary. Placement Test is required. Effective May 15, 2019, this course does not carry D1 credit. Mutually Exclusive: Cannot register for HIND 141 if student has credit for HIND 106/HIND 161.

HIND 142 - FIRST YEAR HINDI II
Short Title: FIRST YEAR HINDI II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): HIND 141
Description: Continuation of HIND 141. Development of interactional competence in Hindi (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Hindi. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Effective May 15, 2019, this course does not carry D1 credit. Mutually Exclusive: Cannot register for HIND 142 if student has credit for HIND 106/HIND 262.

HIND 206 - ACCELERATED SECOND YEAR HINDI
Short Title: ACCEL 2ND YEAR HINDI
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): HIND 106
Description: Alternate second year Hindi course for students who have completed first year Hindi or have a comparable level in Hindi. This is an intensive course covering the equivalents of HIND 263 & 264. Upon completion, students will be prepared for the third year Hindi course. Mutually Exclusive: Cannot register for HIND 206 if student has credit for HIND 263/HIND 264.

HIND 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Seminar, Laboratory, Lecture, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

HIND 263 - SECOND YEAR HINDI I
Short Title: SECOND YEAR HINDI I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): HIND 142
Description: Continuation of HIND 142. Development of interactional competence in Hindi (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Hindi. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Cannot register for HIND 263 if student has credit for HIND 206.
HIND 264 - SECOND YEAR HINDI II
Short Title: SECOND YEAR HINDI II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): HIND 263
Description: Continuation of HIND 263. Development of interactional competence in Hindi (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Hindi. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Cannot register for HIND 264 if student has credit for HIND 206.

HIND 301 - THIRD YEAR HINDI I
Short Title: THIRD YEAR HINDI I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): HIND 301
Description: Continuation of HIND 264. Emphasis on developing reading and writing ability as more authentic materials and soci-cultural topics are introduced.

HIND 302 - THIRD YEAR HINDI II
Short Title: THIRD YEAR HINDI II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): HIND 301
Description: Continuation of HIND 301. Emphasis on developing reading and writing ability as more authentic materials and soci-cultural topics are introduced.

HIST 101 - MODERN EUROPE, 1500-1789
Short Title: MODERN EUROPE, 1500-1789
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Course provides an introduction to European history from 1500 to the French Revolution, tracing Europe’s rise to world dominance via capitalism, the nation-state, science and technology, and a secular world view. It asks how conditions in the rest of the world allowed European imperialism and colonialism to triumph. Mutually Exclusive: Cannot register for HIST 101 if student has credit for HIST 325.

HIST 102 - MODERN EUROPE, 1789-PRESENT
Short Title: MODERN EUROPE 1789-PRESENT
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Course provides an introduction to European history between the French Revolution and the collapse of the Soviet system in 1989-1990. The course examines industrialization, the development of the nation-state, World War One, fascism and communism, World War Two, European integration, decolonization and the Velvet Revolutions of 1989. Mutually Exclusive: Cannot register for HIST 102 if student has credit for HIST 326.

HIST 103 - AP/OTH CREDIT IN EUROPEAN HISTORY I
Short Title: AP/OTH CREDIT- EUROPEAN HISTORY
Department: History
Grade Mode: Transfer Courses
Course Type: Transfer
Credit Hours: 3
Course Level: Undergraduate Lower-Level
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation.

HIST 105 - AP/OTH CREDIT IN UNITED STATES HISTORY I
Short Title: AP/OTH CREDIT U.S. HISTORY
Department: History
Grade Mode: Transfer Courses
Course Type: Transfer
Credit Hours: 3
Course Level: Undergraduate Lower-Level
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation.
HIST 107 - AP/OTH CREDIT IN WORLD HISTORY
Short Title: AP/OTH CREDIT IN WORLD HISTORY
Department: History
Grade Mode: Transfer Courses
Course Type: Transfer
Credit Hours: 3
Course Level: Undergraduate Lower-Level
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation.

HIST 108 - WORLD HISTORY SINCE 1492
Short Title: WORLD HISTORY SINCE 1492
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation.

HIST 109 - THE HERO AND HIS COMPANION FROM GILGAMESH TO SHERLOCK HOLMES (AND BEYOND)
Short Title: THE HERO AND HIS COMPANION
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: How does presentation of heroic action illustrate the basic values of society? Historical sources including ancient texts, modern mystery stories, and two ‘western’ movies, show the development of a style of community service linking heroism with alienation. The extent to which women participate will be traced.

HIST 110 - MEDIEVAL CIVILIZATIONS
Short Title: MEDIEVAL CIVILIZATIONS
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Surveying the social, political, cultural, and economic history of the United States from the end of the Mexican War to the present.

HIST 111 - RED, WHITE AND BLACK IN EARLY AMERICA CREATING RACIAL IDENTITIES IN THE ERA OF THE AMERICAN REVOLUTION
Short Title: RED, WHITE, & BLACK EARLY AMER
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This class analyzes the way peoples of African, American, and European descent in North America came to think of themselves as members of different racial groups from about 1750 to 1820. The class will include a mixture of lectures and discussion.

HIST 117 - EARLY AMERICA
Short Title: EARLY AMERICA
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Survey of North America from 1500 to the conclusion of the Mexican War.

HIST 118 - THE UNITED STATES, 1848 TO THE PRESENT
Short Title: UNITED STATES 1848-PRESENT
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A continuation of HIST 117 (though 117 is not a prerequisite) surveying the social, political, cultural, and economic history of the United States from the end of the Mexican War to the present.

HIST 120 - MEDIEVAL CIVILIZATIONS
Short Title: MEDIEVAL CIVILIZATIONS
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Focusing on the period between 300-1500 CE, the course will survey political institutions, society, and culture in medieval European, Byzantine, and Islamic civilizations. Topics include Christianization of Europe, the rise of Islam, the Crusades, scholastic theology, persecution of heretics, bubonic plague, and the rise of centralized monarchies. Cross-list: MDEM 120.

HIST 176 - MEXICO: AN INTRODUCTION
Short Title: MEXICO: AN INTRODUCTION
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This class analyzes the way peoples of African, American, and European descent in North America came to think of themselves as members of different racial groups from about 1750 to 1820. The class will include a mixture of lectures and discussion.
HIST 186 - HISTORICAL SURVEY OF JEWISH CIVILIZATION FROM ITS ORIGINS TO THE PRESENT
Short Title: HISTORICAL SURVEY JEWISH CIV. 
Department: History 
Grade Mode: Standard Letter 
Course Type: Lecture 
Credit Hours: 3 
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students. 
Course Level: Undergraduate Lower-Level 
Description: Jewish civilization spans over 3,000 years and virtually the entire planet. Throughout their history as a minority amid majority cultures, Jews have adapted enough to preserve their heritage but not so much that they disappear. This course studies Jewish religion, ethnicity, politics and culture and impact on world history. Counts towards Jewish Studies Minor core requirement. 

HIST 188 - THE ATLANTIC WORLD: ORIGINS TO THE AGE OF REVOLUTION 
Short Title: THE ATLANTIC WORLD  
Department: History 
Grade Mode: Standard Letter 
Course Type: Lecture 
Distribution Group: Distribution Group I 
Credit Hours: 3 
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students. 
Course Level: Undergraduate Lower-Level 
Description: Survey of social, political, economic, and intellectual ligatures that bound the particular histories of Africa, Europe, and the Americas one to the other, until by the late 18th century the Atlantic basin constituted a world unto itself. Mutually Exclusive: Cannot register for HIST 188 if student has credit for HIST 388. 

HIST 190 - OCEANS IN WORLD HISTORY 
Short Title: OCEANS IN WORLD HISTORY 
Department: History 
Grade Mode: Standard Letter 
Course Type: Lecture 
Distribution Group: Distribution Group I 
Credit Hours: 3 
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students. 
Course Level: Undergraduate Lower-Level 
Description: Course presents maritime history through the social construction of the sea. It analyses the historical significance of islands and archipelagos. Also explores themes including technology, mapping, disease, communication and law. Maritime law includes an interrogation of piracy, not only historically, but in the present (and future). 

HIST 200 - ANCIENT EMPIRES: ORIGINS OF WESTERN CIVILIZATIONS 
Short Title: ANCIENT EMPIRES 
Department: History 
Grade Mode: Standard Letter 
Course Type: Lecture 
Distribution Group: Distribution Group I 
Credit Hours: 3 
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students. 
Course Level: Undergraduate Lower-Level 
Description: Course explores development of imperial systems from the Bronze Age to Roman Empire with attention to subject peoples’ participation in multi-ethnic states. Aspects of art, law, economics, religion, and literature of the Hittites, Assyrians, Hebrews, Persians, Greeks, and Romans examined with consideration given to strengths and weaknesses of contributions to the modern world. 

HIST 201 - JUDAISM OF JESUS AND HILLEL 
Short Title: JUDAISM OF JESUS AND HILLEL  
Department: History 
Grade Mode: Standard Letter 
Course Type: Lecture 
Distribution Group: Distribution Group I 
Credit Hours: 3 
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students. 
Course Level: Undergraduate Lower-Level 
Description: This course examines the history and culture of Judaism during the Second Temple period, which produced such great religious leaders as Jesus and Hillel. Topics include: canonization, colonization, diaspora, economic and political instability, eschatology, Hellenization, imperialism, messianism, Pharisees, priesthood, Sadducees, Scribes, scriptures, sectarianism, synagogue and temple worship. Cross-list: RELI 203. 

HIST 202 - IMMIGRATION IN 20TH AND 21ST CENTURY UNITED STATES SOCIETY 
Short Title: IMMIGRATION IN THE USA  
Department: History 
Grade Mode: Standard Letter 
Course Type: Lecture 
Distribution Group: Distribution Group I 
Credit Hours: 3 
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students. 
Course Level: Undergraduate Lower-Level 
Description: This course examines how immigration policies and attitudes have developed during the 20th and 21st centuries. It provides a historical context that allows one to better understand the root of contemporary immigration discourse. Additionally, it considers how immigrants shape and have been shaped by American society.
HIST 203 - DEEP HISTORY FROM THE ORIGINS OF HUMANITY TO TODAY
Short Title: DEEP HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Key developments from the origins of humanity 6 million years ago to the modern world, explored through discussions and lectures. Open to all undergraduates.

HIST 204 - THE IDEA OF AFRICA
Short Title: THE IDEA OF AFRICA
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Traces Western perceptions of Africa as a geographic, political and racial entity, from ancient times to the present day through a variety of media, including ancient texts, travelogues, maps, slave narratives, novels, films, museum exhibits in Houston, and journalists' reports. Mutually Exclusive: Cannot register for HIST 204 if student has credit for FSEM 155/HIST 155.

HIST 205 - MEDIEVAL MEDITERRANEAN WORLD
Short Title: MEDIEVAL MEDITERRANEAN WORLD
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Course examines the political, institutional, military, and cultural development of the societies that successively dominated the 'Middle Sea' from AD 500-1500 in Europe and the Islamic World. It highlights the Mediterranean legacy of commercial, cultural, and religious exchange and coexistence, as well as its history of confrontation and warfare. Cross-list: MDEM 205.

HIST 207 - SPATIAL HISTORY AND HISTORICAL GIS
Short Title: SPATIAL HISTORY HISTORICAL GIS
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course introduces students to the emerging methodologies that combine geographic information systems (GIS) with historical thinking. Students will study and evaluate the benefits and limitations of key works in historical GIS, become familiar with basic principles of cartographic design, and learn technical skills to create their own HGIS project.

HIST 208 - RACE AND MEDICINE IN AMERICAN HISTORY
Short Title: RACE AND MEDICINE IN AMERICA
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course explores how medical theories have supported racial inequalities in American history from the beginning of European settlement until today. It traces the emergence of the concept of race, its effect on the development of modern medicine, and medicine's continuing reliance on race as a category of analysis.

HIST 209 - AMERICAN URBAN HISTORY, 1609 TO TODAY
Short Title: AMERICAN URBAN HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course surveys American urban history from colonial times to the present day. Students will study how American cities formed and altered the shape of the nation. Topic areas include urban politics, city planning the built environment, and racial and ethnic diversity.
HIST 211 - MEDIEVAL VIOLENCE
Short Title: MEDIEVAL VIOLENCE
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Discussion course looks at private and large-scale warfare during the European Middle Ages. It considers how violence was legitimized and carried out, and examines attitudes towards violence and its effects on society. Topics include theoretical approaches to violence, crusading, chivalry, Truce of God, rituals of violence, military technologies, and cinematic portrayals of medieval warfare. Cross-list: MDEM 210.

HIST 212 - CONTEMPORARY CHINA
Short Title: CONTEMPORARY CHINA
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Survey of 40 year period (post socialism) 1976-2016 known as “China's Rise.” Focus on social, political, intellectual, economic change and China's globalization.

HIST 213 - THE MIDDLE EAST FROM THE AGE OF MUHAMMAD TO THE ARAB SPRING
Short Title: AGE OF MUHAMMAD TO ARAB SPRING
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Lecture-discussion. Course surveys history of the Middle East from the Age of Muhammad to the Arab spring. No background needed. Includes political institutions; impact of migrations; development of cultural traditions; communal structures; economics, society, and environment; colonialisms; emergence of nation-states; revolutions; changing religious discourses; contemporary debates.

HIST 215 - BLACKS IN THE AMERICAS
Short Title: BLACKS IN THE AMERICAS
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Comparative survey of black people in the Americas from the late 15th century to the present examines the Atlantic slave trade, the movement toward slave emancipation in various countries, and 19th century black self-help efforts. Course also concentrates on economic and social conditions for blacks in the 20th and 21st centuries. Equivalency: HIST 315. Mutually Exclusive: Cannot register for HIST 215 if student has credit for HIST 315.

HIST 216 - BLACK LIFE IN THE NINETEENTH-CENTURY UNITED STATES
Short Title: BLACK LIFE IN THE 19TH C. U.S.
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course traces the lives of people of African descent in America before and after the Civil War, an event which transformed enslaved people from property to citizens and forced the country to determine the place of these new citizens in American society.

HIST 217 - HISTORY: THE WORKSHOP
Short Title: HISTORY: THE WORKSHOP
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course introduces students to the craft of history; formulating a question for inquiry, finding and analyzing primary sources, critiquing secondary source, and constructing an argument in support of a thesis. Recommended for History Majors and open to all majors.

HIST 218 - HISTORY THROUGH FILM IN EAST AND NORTHEAST ASIA
Short Title: EAST/NORTHEAST ASIA FILM HIST
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
HIST 219 - GENGHIS KHAN AND THE EMPIRE OF THE MONGOLS
Short Title: MONGOL EMPIRE
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Course Level: Undergraduate Lower-Level
Description: The 13th century semi-nomadic tribes of Central Asia, led by Genghis (Chingis) Khan, created the largest contiguous land empire in World history, reaching from Korea to Hungary. This class examines the conditions of their rise and military success, the global impact of their conquests, and their political and cultural legacy.

HIST 220 - MEXICO: 1910 TO PRESENT
Short Title: MEXICO: 1910 TO PRESENT
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Survey course from the outbreak of the 1910 Revolution to the Present>. The class will focus on the impact of the Revolution in the Building of Mexican Society, culture, politics, economic and relationship to the world, with a specific focus on Latin America and the U.S.

HIST 221 - UNITED STATES AND LATIN AMERICAN RELATIONS
Short Title: US - LATIN AMERICAN RELATIONS
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Course Level: Undergraduate Lower-Level
Description: This course examines the history of U.S.-Latin American relations since the early 1800s. It is organized chronologically but addresses political, economic, social, and cultural themes. The class considers both reasons for specific outcomes of U.S. - Latin American relations and their implications for the peoples most affected by them.

HIST 222 - HISTORY OF EARLY AFRICA
Short Title: HISTORY OF EARLY AFRICA
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduces students to the history of Africa from the rise of humankind to the period of the transatlantic slave trade.

HIST 223 - HISTORY OF MODERN AFRICA
Short Title: HISTORY OF MODERN AFRICA
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduces students to the history of Africa from the abolition of the transatlantic slave trade to the Arab Spring.

HIST 225 - EUROPE SINCE 1945
Short Title: EUROPE SINCE 1945
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Survey of the history of Europe from the end of World War II to 1989. The course focuses on the impact of the war on European societies as well as on decolonization, European unification, economic reconstruction, immigration, and the rise and fall of communism in Eastern Europe.

HIST 226 - COLONIAL SPANISH AMERICA
Short Title: COLONIAL SPANISH AMERICA
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Survey of Latin American History, from 1492 to the 1820's, including the European background and the major New World indigenous civilizations. The course will examine the pre-Columbian societies, the impact of conquest and colonization, colonial political economy, slave systems and indigenous peasantry and the collapse of Iberian colonialism.

HIST 227 - LATIN AMERICAN CULTURAL TRADITIONS
Short Title: LATIN AM CULTURAL TRADITIONS
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A synthetic overview of the emergence of Latin American culture and society beginning with the 16th century encounters and continuing through independence in the 19th century. Discovery, conquest, slavery, family life, religious beliefs, and urban and rural communities are explored through chronicles, visual images, music, and maps.
HIST 228 - MODERN LATIN AMERICA  
Short Title: MODERN LATIN AMERICA  
Department: History  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: Course introduces the student to the history of contemporary Latin America. For the most part political events will provide the periodic framework of the course, but we shall also consider major economic, social and cultural developments to understand the complex social formations that comprise contemporary Latin American societies. Graduate/Undergraduate Equivalency: HIST 508.

HIST 229 - HISTORY OF SOUTH AFRICA  
Short Title: HISTORY OF SOUTH AFRICA  
Department: History  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  

HIST 233 - HISTORY OF MODERN SCIENCE  
Short Title: HISTORY OF MODERN SCIENCE  
Department: History  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: Main issues in the history of modern science from the Ancient Greeks to the present. Topics include the Scientific Revolution, Newtonianism in the 18th century, Darwinism and evolution, the relativity and quantum revolutions in physics in the early 20th century, and recent developments in the life sciences like molecular biology.

HIST 236 - STATE, SOCIETY, AND THE ECONOMY IN THE MODERN MIDDLE EAST  
Short Title: MIDDLE EAST: SOCIETY/STATE/ECON  
Department: History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: Arab societies are often studied through the lens of cultural, religious, tribal, or kinship relations, with little attention to the role of the state and the economy. This course will examine the intersection of politics, social movements, and economics in the building of nation-states from the collapse of the Ottoman Empire and up to the Arab uprisings.

HIST 238 - SPECIAL TOPICS  
Short Title: SPECIAL TOPICS  
Department: History  
Grade Mode: Standard Letter  
Course Type: Internship/Practicum, Laboratory, Lecture, Seminar, Lecture/Laboratory  
Credit Hours: 1-4  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

HIST 239 - NATIVE AMERICAN HISTORY: FROM EUROPEAN CONTACT TO THE ERA OF REMOVAL  
Short Title: NATIVE AMERICAN HISTORY  
Department: History  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: This course will cover the history of Native Americans from the time of European arrival in the Americas until the era of removal.
HIST 241 - U.S. WOMEN'S HISTORY I: COLONIAL BEGINNINGS TO THE CIVIL WAR
Short Title: U.S. WOMEN'S HISTORY, I
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Survey of American women's history examines the lives of elite, working, black, Indian, and white women, and traces changes in women's legal, political, and economic status from the mid-17th century through the Civil War. Topics include slavery, suffrage, sexuality, and feminism. Cross-list: SWGS 235.

HIST 242 - U.S. WOMEN'S HISTORY II: CIVIL WAR TO THE PRESENT
Short Title: U.S. WOMEN'S HISTORY, II
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Survey of American women's history examines the lives of elite, working, black, Indian, and white women, and traces changes in women's legal, political, and economic status from the mid-17th century through the Civil War. Topics include slavery, suffrage, sexuality, and feminism. Cross-list: SWGS 235.

HIST 244 - MUSEUMS IN WORLD HISTORY
Short Title: MUSEUMS IN WORLD HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Examining museums in global history gives critical insight into their present role in society. Museums were sites of identity at local, regional, national, imperial and global levels. The collection and display of objects allowed communities, states, and empires to use cultural heritage, history, and science to interpret the past.

HIST 246 - AMERICAN CIVIL WAR ERA
Short Title: AMERICAN CIVIL WAR ERA
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Survey of the Civil War era from 1848 to 1876. Topics include the causes of the war; the mobilization of Northern and Southern armies; race, slavery and emancipation; Reconstruction; the Civil War in contemporary popular culture and memory; and the global dimensions of the war and its aftermath.

HIST 251 - CONTINUITIES AND CHANGES IN BRAZILIAN HISTORY
Short Title: BRAZIL: CONTINUITY & CHANGE
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An exploration of themes essential to understanding modern Brazil, such as the origins of a multi-racial society, the transition from monoculture to industry, authoritarian and democratic trends, the emergence of a uniquely Brazilian culture, and the conflicts - environmental, political, and economic - over the development of the Amazon. Cross-list: LASR 251.

HIST 256 - EUROPEAN POLITICS AND SOCIETY, 1890-1945
Short Title: EUR POLITICS & SOCIETY, 1890-1945
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Examination of European history in the age of total war. Includes imperialism and the development of the welfare state, institutional responses to the demands of total warfare, the crisis of liberal constitutionalism, the Russian Revolution, and the rise of fascism.

HIST 259 - US IN THE 1960s AND 70s
Short Title: US IN THE 1960s AND 70s
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A political, cultural and economic history of the 1960s and 70s, with special attention to American culture and public policy.
HIST 266 - SLAVERY AND THE FOUNDING FATHERS  
**Short Title:** SLAVERY & THE FOUNDING FATHERS  
**Department:** History  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** Course will explore the Founding Fathers' attitudes towards slaves, towards slavery, and towards racial difference, beginning with interpretations of the Founders as a group, and moving to case studies of individual founders. Students will write a paper about the engagement with slavery of one person from the founding generation.

HIST 268 - MODERN SLAVERY AND HUMAN TRAFFICKING  
**Short Title:** MODERN SLAVERY AND TRAFFICKING  
**Department:** History  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** Slavery has re-emerged as a global issue in the 21st century. This course explores various forms of slavery and slave trades globally from the 19th century to the present, examining the emergence of contemporary human trafficking.

HIST 271 - HISTORY OF SOUTH ASIA  
**Short Title:** HISTORY OF SOUTH ASIA  
**Department:** History  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** Introduction to the history of the cultural, religious, economic and political systems of South Asia, beginning with the development of world religious systems such as Hinduism and Buddhism, indigenous state-building, the rise of Islamic power, emergent European colonialism, and subsequent resistance movements which resulted in South Asian independence in mid-20th century.

HIST 275 - MODERN MIDDLE EAST  
**Short Title:** MODERN MIDDLE EAST  
**Department:** History  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** This course is an introduction to the history of the Modern Middle East: the Arab countries of the Levant and North Africa, as well as Turkey, Iran, and Israel. It covers the main events that shaped the region from the final years of the Ottoman empire, to the creation of the nation-states by Western colonialism, to the struggles for independence and decolonization. The course tackles some of the following themes: reform and modernization in the Ottoman Empire; World War One and its impact on the Middle East; the emergence of a new world order, and modern states and their political systems since World War I; and the transformation of Middle Eastern societies during this same period under the impact of colonialism, independence, regional wars, and oil. It also sheds light on particular social and cultural phenomena: the role of women in society; changing notions of gender roles; class formation and relations; and cultural expressions through art, literature and new modes and spaces of sociability. Graduate/Undergraduate Equivalency: HIST 542.

HIST 278 - MODERN ARAB HISTORY  
**Short Title:** MODERN ARAB HISTORY  
**Department:** History  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** Survey of the history and culture of the Arab world from World War I to the present. Topics include nationalism, colonialism, modern secular and Islamist politics and the 'Arab Spring.' Equivalency: HIST 378. Mutually Exclusive: Cannot register for HIST 278 if student has credit for HIST 378.

HIST 281 - GOLDEN AGE OF ISLAM  
**Short Title:** GOLDEN AGE OF ISLAM  
**Department:** History  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** Introduction to the Islamic World from the 8th century to the 13th century. Topics include conquests and classical Islamic states, Arabization, Jewish and Christian communities, impact of Turkic peoples, and the Ottoman Empire, with emphasis on social, cultural, artistic, and scientific trends that shaped the region's history. Cross-list: MDEM 281.
HIST 291 - 20TH CENTURY AMERICAN PRESIDENTS  
**Short Title:** 20TH C. AMERICAN PRESIDENTS  
**Department:** History  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** Course will study the American presidency and the evolving use of executive power from Theodore Roosevelt to Bill Clinton. It will analyze how presidents develop foreign and domestic policy, relate to congress and their cabinets, and lead the nation in wartime.

HIST 295 - THE AMERICAN SOUTH  
**Short Title:** THE AMERICAN SOUTH  
**Department:** History  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** Survey of the American South from development of Native American cultures to present. Topics include slavery and plantation economy; emergence of southern distinctiveness; Civil War and Reconstruction; political reform and the civil rights movement; rise of the Sunbelt, southern religion, music, and literature; and the future of southern regionalism. Equivalency: HIST 395. Mutually Exclusive: Cannot register for HIST 295 if student has credit for HIST 395.

HIST 300 - INDEPENDENT STUDY  
**Short Title:** INDEPENDENT STUDY  
**Department:** History  
**Grade Mode:** Standard Letter  
**Course Type:** Independent Study  
**Credit Hours:** 1-4  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Independent study under the supervision of a history faculty member. Hours are variable. Instructor Permission Required. Repeatable for Credit.

HIST 301 - FIGHTING THE ATLANTIC SLAVE TRADE  
**Short Title:** FIGHTING THE SLAVE TRADE  
**Department:** History  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Provides students with a deeper understanding of the history of African slavery in the Americas by allowing them to step in the shoes of late-eighteenth century abolitionists and fight the Atlantic slave trade.

HIST 303 - OTTOMANS, SAFAVIDS, AND MUGHALS: ISLAMIC EMPIRES OF THE EARLY MODERN WORLD  
**Short Title:** ISLAMIC EMPIRES  
**Department:** History  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Course Level:** Undergraduate Upper-Level  
**Description:** This class explores the cultural, religious, economic and political values and institutions of the premodern empires of the Ottomans, Safavids, and Mughals. Sharing a common Central Asian Turco-Mongol Muslim inheritance, each developed distinctive methods for rule over diverse subject populations, while retaining their common aesthetic, political and social values.

HIST 305 - READING HISTORIES OF WORK  
**Short Title:** READING HISTORIES OF WORK  
**Department:** History  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Work in the modern world is about earning a living, identity, creativity, morality, and much more. This course emphasizes discussion and writing about a common set of assigned readings. We read Adam Smith, Karl Marx, and other classic texts on work as well as important recent monographs on the experiences and meanings of work. The authors and settings of our readings are mostly European, but also extend to the Americas and other colonial and postcolonial societies since 1492. This class is useful for students who are pre-law, pre-HUM grad, or interested in economics or social theory. HIST 445 Writing Histories of Work is complementary to this course, but one does not require the other. While this course emphasizes longer, complex assigned texts and analysis, HIST 445 has fewer common readings and emphasizes individual research projects on student-chosen topics. The assignments for these two courses do not overlap.

HIST 307 - IMPERIAL ROME FROM CAESAR TO DIOCLETIAN  
**Short Title:** IMPERIAL ROME  
**Department:** History  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Examination of how Rome acquired, maintained, and understood her empire. Includes the development of a political, social, and ideological system reaching from Scotland to Mesopotamia during the three centuries of Rome’s greatest power.
HIST 308 - THE WORLD OF LATE ANTIQUITY
Short Title: THE WORLD OF LATE ANTIQUITY
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of the social, religious, and political history of the Roman world from Diocletian to the rise of Islam, with emphasis on the breaking of the unity of the Mediterranean world and the emergence of early medieval societies in the east and west. Cross-list: MDEM 308.

HIST 309 - CHINESE INTELLECTUAL HISTORY
Short Title: CHINESE INTELLECTUAL HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Framework and categories of modern Chinese intellectual history and its major traditions of thought in early modern and modern period.

HIST 311 - SEX, GENDER, AND FAMILY IN EUROPE, 1300-1700
Short Title: SEX & GEN IN EUROPE, 1300-1700
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: What did it mean to be child, woman, or man in Europe between 1300 and 1700? This course explores the experiences of nuns, soldiers, courtesans, sodomites, apprentices, witches, and slaves. It examines the construction of sexual identity in a period of dramatic change and increasing entanglement with non-Christian cultures.

HIST 312 - BIOMEDICAL APPROACH TO HISTORY
Short Title: BIOMEDICAL APPROACH TO HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This is a course in history of medicine, diseases and public health, demography, and nutrition. It delves on classic works on the history of human societies. It will also use historical studies from particular disciplines such as biology, demography, medicine, nutrition, anthropology, and economic concentrating around disease, medicine and public health.

HIST 315 - BLACKS IN THE AMERICAS
Short Title: BLACKS IN THE AMERICAS
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Enriched version of HIST 215. Students may not receive credit for both HIST 215 and 315. Equivalency: HIST 215. Mutually Exclusive: Cannot register for HIST 315 if student has credit for HIST 215.

HIST 316 - JEWS AND CHRISTIANS IN THE MEDIEVAL ISLAMIC WORLD
Short Title: JEWS CHRISTIANS MEDIEVAL ISLAM
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Lecture discussion. Course focuses on Jewish and Christian communities in the medieval Islamic world. Topics include legal status of non-Muslims, social life, economic life, distinctive developments in religious thought in Islamic context, dynamics among communities, shared culture through the medium of Arabic, distinctive features in comparison with medieval Europe.

HIST 318 - DIGITAL HISTORY METHODS
Short Title: DIGITAL HISTORY METHODS
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Explores the use of computers and new media to conduct historical research and communicate its results. While working on their own digital projects, students will consider questions like: How should history be written in the age of Google? How will historians deal with primary sources like tweets and blogs?

HIST 320 - IMPERIAL GARDENS: A CULTURAL COMPARISON
Short Title: IMPERIAL GARDENS
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Course will examine the design and development of gardens (primarily those of the Islamic world - Al Andalus, the Middle East, Persia, Central and South Asia) and their use as political and religious metaphors, havens for meditation, stages of imperial performance and ritual, sites of social interaction, and affirmations of power and legitimacy.
HIST 321 - US ENVIRONMENTAL HISTORY
Short Title: US ENVIRONMENTAL HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Description: An introduction to the interaction between humans and the natural environment in the present United States from the colonial era to recent environmentalism. The course will center on discussion and writing; readings will include primary sources as well as secondary analysis.

HIST 323 - HISTORY OF ATLANTIC AFRICA
Short Title: ATLANTIC AFRICA
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Provides students with a deeper understanding of the history of Atlantic Africa by researching key topics based on primary and secondary sources.

HIST 324 - COEXISTENCE IN MEDIEVAL SPAIN
Short Title: COEXISTENCE IN MEDIEVAL SPAIN
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Course explores the history of the Iberian Peninsula from the late 15th century through the late 18th century (focusing on coexistence and conflict between medieval Spain’s three religious communities - Christians, Jews, and Muslims. Cross-list: MDEM 324.

HIST 327 - MEDIEVAL BORDERLANDS
Short Title: MEDIEVAL BORDERLANDS
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Courses examines the military, political, social and cultural developments on the European frontiers between 500-1500 AD. Topics include colonization and conquest, crusades and Spanish Reconquista, piracy, slavery, encounters with native peoples, spread of Christianity, medieval colonial regimes, map-making and cultural exchanges. Cross-list: MDEM 327.

HIST 328 - POVERTY AND SOCIAL JUSTICE IN LATIN AMERICA
Short Title: POVERTY & SOCIAL JUSTICE
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Course surveys the economic, political, social, environmental and geographic origins of poverty and inequality in Latin American countries since independence. It compares welfare policies to promote social justices across these nations and examines their different outcomes in historical perspective.

HIST 329 - STREETS AND URBAN LIFE: PARIS TO ISTANBUL
Short Title: STREETS AND URBAN LIFE
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Exploration of the street as a focus of urban life in 18th and 19th century. We will look at ways streets functioned as spaces of livelihood, sociability, and transgression in cities such as London, Paris, Istanbul, Amsterdam and Cairo. Cross-list: ARCH 329, HART 329.

HIST 330 - ATLANTIC SLAVE TRADE AND THE ORIGINS OF AFRO AMERICA
Short Title: SLAVE TRADE & AFRO-AMERICA
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An examination of black society, culture, and politics from the late 15th century through the late 18th century (focusing geographically on the Caribbean, and on black life within what is now Mexico and the United States).

HIST 332 - AMERICAN LEGAL HISTORY, 1863 TO THE PRESENT
Short Title: AMERICAN LEGAL HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This survey of American legal history begins with the Emancipation Proclamation and ends near the present. Legal themes covered are related to major political, economic, and social developments that have shaped the U.S. since 1863: the civil war’s outcome and abolition of slavery; the organization of an industrial economy; U.S. ascendency in the world; and the social movements of the late nineteenth and twentieth centuries.
HIST 337 - LATIN AMERICAN PERSPECTIVES
Short Title: LATIN AMERICAN PERSPECTIVES
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Through an analysis of sea charts, maps, paintings, and city and town plans this course traces the changes in Latin American peoples, landscapes, and settlements from the time of contact (1492) to independence in the early 19th century. Attention will be given to European, Indigenous, and emerging 'Latin American' perspectives.

HIST 338 - 19TH CENTURY WOMEN'S NARRATIVES
Short Title: 19TH C. WOMEN'S NARRATIVES
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines the experiences of women in the United States during the nineteenth century through first-hand accounts and scholarly readings. Students will read a variety of materials to explore the social and legal status of women and consider the impact of race on women's lives. Cross-list: SWGS 338.

HIST 339 - HISTORY OF THE SLAVE EXPERIENCE
Short Title: HISTORY OF SLAVE EXPERIENCE
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Description: Students will read, write and think about the history of people who left few written records by focusing on the history of enslaved people in the 18th and 19th century Americas. They will read primary sources, examine different historians' competing interpretations of specific topics, and write a paper using primary sources to understand the lives of enslaved people.

HIST 340 - HISTORY OF FEMINISM
Short Title: HISTORY OF FEMINISM
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Explores feminism as political thought and social movement in various times and places. Readings will include classic as well as non-canonical texts. We will consider the historical contexts of feminist action, and examine controversies over and within feminisms. Cross-list: SWGS 345.

HIST 342 - MODERN CHINA
Short Title: MODERN CHINA
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A survey of Chinese history from c. 1800 to the present, focusing on the related themes of imperialism, nationalism, modernization and revolution.

HIST 343 - HISTORY OF AFRICA IN THE MUSEUM
Short Title: AFRICA IN THE MUSEUM
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Provides students with an opportunity to examine the history of Africa in modern museums through readings, discussions, and analyses of exhibits.

HIST 344 - EUROPEAN REFORMATIONS
Short Title: EUROPEAN REFORMATIONS
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Provides students with an opportunity to examine the history of Europe's house divided. This juncture in the history of Christianity had extraordinary consequences for the modern world. The course traces the impact of Protestant and Catholic reform movements on politics, society and culture and on Europe's engagements with the rest of the world.

HIST 346 - COMPUTER TECHNOLOGY AND SOCIETY
Short Title: COMPUTERS AND SOCIETY
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course traces the development of computer technology from its theoretical origins in the nineteenth century; to the growth of digital technology; the emergence of personal computing; up to computers of today, in order to understand the place of computer technology in people's lives and how they shape each other.
HIST 347 - BLACK AMERICA: FROM NADIR THROUGH THE GREAT DEPRESSION
Short Title: BLACK AMERICA: THE NADIR
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines the changing nature of black society, culture, and politics in the United States from the census of 1890 through the attack on Pearl Harbor.

HIST 350 - AMERICA, 1900-1940
Short Title: AMERICA, 1900-1940
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Survey of major economic, social, and political developments in the United States from 1900 to 1940.

HIST 351 - AMERICA SINCE 1945
Short Title: AMERICA SINCE 1945
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Survey of major economic, social and political developments in the United States since 1945.

HIST 352 - HISTORY OF THE COLD WAR
Short Title: HISTORY OF THE COLD WAR
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Course will cover Russo-American relations from the end of World War II to the collapse of the Soviet Union in 1989, profiling the major policymakers and world leaders and exploring not only the diplomatic and military operations but also the cultural landscape of the Cold War.

HIST 353 - HISTORY OF SENSATION
Short Title: HISTORY OF SENSATION
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This class offers a deep history of sensation. It opens a window into how scientists, philosophers, medical practitioners, and neurophysiologists developed theories of touching, tasting, smelling, hearing, and seeing. Students will learn about the history of using animal models to inform human sensation, as well as the medical consequences of sensations that failed to fit neat categories of sensing.

HIST 354 - FROM DEMOCRACY TO DICTATORSHIP: GERMAN HISTORY, 1890-1945
Short Title: GERMAN HISTORY, 1890-1945
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: From 1890-1945, Germans experienced dramatic changes in their political environment. This lecture class will examine these changes, taking into account not only political history, but also attempts to come to terms with the challenges posed by organized capitalism, the rise and fall of socialism, the development of an interventionist state, cultural critique, and political culture, the Nazi social revolution, and the Holocaust. Taught in English. Cross-list: GERM 345.

HIST 355 - AFTER NAZISM: GERMAN HISTORY, 1945 - PRESENT
Short Title: GERMAN HISTORY, 1945 - PRESENT
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Course examines German politics and societies under Allied administration, West and East Germany 1949-1989, and the Federal Republic since 1990. Topics include democracy; post-1945 responses to Nazism; political economies; challenges of the ‘new social movements,’ and national identity in context of European unification and global migration.
HIST 357 - JEWS AND CHRISTIANS IN MEDIEVAL EUROPE
Short Title: JEWS & CHRISTIANS-MEDIEVAL EUR
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Course will focus on Jewish-Christian coexistence in medieval Europe. Will examine the Jews’ legal status in Christendom, their communal life, economic activities, intellectual achievements, while also focusing on the complex dynamics of Jewish-Christian interaction, and the shifting patterns of persecution and acceptance. Cross-list: MDEM 357.

HIST 358 - HUMANITARIANISM FROM THE 19TH CENTURY TO THE PRESENT
Short Title: HUMANITARIANISM FROM 19TH C.
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course surveys the history of humanitarian sentiment and practices in the West from the 19th Century to the present. It is conceived as a critical investigation of the humanitarian movement and examines various patterns of Western interventions on behalf of ‘suffering humanity.’ Topics covered are evangelicism, abolitionism, colonialism and war humanitarianism, as well as United Nations humanitarianism since 1945.

HIST 359 - THE UNITED STATES IN THE TWENTIETH CENTURY WORLD
Short Title: U.S. IN THE 20TH CENTURY WORLD
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Overview of the United States interactions with the wider world in the 20th century. Impact of international affairs on the evolution of U.S. Domestic institutions, changing ideas about the United States’ role in the world as articulated and practiced by key public figures, private-sector activists, intellectuals, and citizens at large.

HIST 361 - HISTORY OF PREMODERN BRITAIN: TUDORS AND STUARDS, 1485 - 1707
Short Title: TUDORS AND STUARDS, 1485-1707
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Exploration of Britain’s take-off into the Industrial Revolution, the flourishing of the Empire, and the adjustment to the end of the Empire and the diminishment of world political and economic stature since the First World War. Includes the use of novels and films to examine these transformations.

HIST 362 - BRITAIN FROM THE INDUSTRIAL REVOLUTION TO THE PRESENT
Short Title: HISTORY OF MODERN BRITAIN
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Course will focus on Jewish-Christian coexistence in medieval Europe. Will examine the Jews’ legal status in Christendom, their communal life, economic activities, intellectual achievements, while also focusing on the complex dynamics of Jewish-Christian interaction, and the shifting patterns of persecution and acceptance. Cross-list: MDEM 357.

HIST 365 - WORLD ECONOMIC HISTORY
Short Title: WORLD ECONOMIC HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ECON 100 or ECON 201 or ECON 211) and (ECON 200 or ECON 301 or ECON 370) and (ECON 203 or ECON 303 or ECON 375)
Description: Study and analysis of world economy focusing on the economic expansion of Western countries between the 14th and 21st centuries. Emphasis on contextual changes in economy, geography, history, society, culture, religion and politics in determining economic leadership of certain economies, such as Italy, Portugal, Spain, the United Kingdom, Belgium, the Netherlands, France, Germany, Sweden, the United States and Japan. Cross-list: ECON 365. Mutually Exclusive: Cannot register for HIST 365 if student has credit for HIST 235/HUMA 235.
HIST 366 - RIO DE JANEIRO: A SOCIAL AND ARCHITECTURAL HISTORY
Short Title: RIO DE JANEIRO
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The development of Rio de Janeiro from a colonial capital to an Olympic host with emphasis on the peoples of the city and evolution of the urban panorama. Cross-list: ARCH 366.

HIST 367 - THE RISE AND FALL OF THE BRITISH EMPIRE
Short Title: RISE & FALL OF BRITISH EMPIRE
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The British Empire from the 1600s to the late 20th century. The class will examine the causes of its rise, world dominance and fall.

HIST 370 - EUROPEAN INTELLECTUAL HISTORY: BACON TO HEGEL
Short Title: EUROPEAN INTELLECTUAL HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Survey of major thinkers and intellectual movements from the scientific revolution to the French Revolution. Includes the use of primary and secondary sources to establish the main contours of philosophical, political, and cultural expression and to relate them to their historical context.

HIST 371 - HISTORY OF MODERN FRANCE
Short Title: HISTORY OF MODERN FRANCE
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of transformations in French society, culture, and politics from the French Revolution to the end of the 20th century. Taught in English.

HIST 372 - IMMIGRATION AND THE STATE: 19TH & 20TH CENTURY
Short Title: IMMIGRATION AND THE STATE
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: How did modern states organize and regulate immigration in the modern era? Lecture course explores the comparative history of labor migration and forced displacement from the point of view of state policies in the United States and Western Europe from 1800 to the present.

HIST 373 - SOCIAL AND POLITICAL THOUGHT IN 19TH CENTURY EUROPE
Short Title: 19TH C SOC/POLITICAL THOUGHT
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Social and political thinkers of the 19th century confronted revolutionary change in both politics and society: the demand for democracy as well as the challenges associated with industrial capitalism. Course combines lectures with discussion of original sources, including Smith, Mill, Marx, Proudhon, Wollstonecraft, and Weber.

HIST 374 - JEWISH HISTORY, 1500-1948
Short Title: JEWISH HISTORY, 1500-1948
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: History of the Jews' expulsion from Spain to the establishment of the state of Israel. Life in western and eastern Europe as well as in Islamic countries, seen from the perspective of settlement, assimilation, and the particularities of the Jewish historical experience.

HIST 375 - EUROPEAN ROMANTICISM, 1750-1850
Short Title: EUROPEAN ROMANTICISM 1750-1850
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Investigation of the emergence, triumph, and defeat of romanticism as a major cultural force in European history, with emphasis on national and epochal diversity within Romanticism in Britain, Germany, and France. Includes Rousseau, Goethe, Schiller, Schlegel, Schelling, Wordsworth, Coleridge, Byron, Stendhal, Hugo, and Baudelaire, as well as music and art.
HIST 378 - MODERN ARAB HISTORY
Short Title: MODERN ARAB HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Survey of the history and culture of the Arab world from World War I to the present. Topics include colonialism and nationalism, modern secular and Islamist politics and the 'Arab Spring.' Equivalency: HIST 278. Mutually Exclusive: Cannot register for HIST 378 if student has credit for HIST 278.

HIST 381 - GOD, TIME AND HISTORY
Short Title: GOD, TIME AND HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: How is the passage of time given meaning, and what role - if any- is assigned to divinity in shaping the direction of events? Course explores various forms of recording and interpreting events, drawing from ancient Mesopotamia, Israel, and the Greco-Roman world - the cultures in which modern ideas of history began. Cross-list: RELI 385.

HIST 384 - MODERN GIRL AND ASIA IN THE WORLD
Short Title: MOD GIRL & ASIA IN THE WORLD
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Introduces the region by examining societies and empires shaped by ancient Mesopotamia, Israel, and the Greco-Roman world - the cultures in which modern ideas of history began. Cross-list: RELI 385.

HIST 387 - THE UNITED STATES IN THE WORLD: AGE OF EMPIRE AND REVOLUTION
Short Title: U.S. IN THE WORLD: 1750-1900
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course provides an overview of the United States' interactions with the world from the revolutionary period to the Spanish-American war. Impact of international affairs on the evolution of U.S. domestic institutions, changing ideas about America's role in the world by key political figures, private-sector activists, intellectuals, and citizens at large.

HIST 389 - INDIAN OCEAN WORLD HISTORY
Short Title: INDIAN OCEAN WORLD HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The Indian Ocean World presents an enormously varied arena of cultural exchange and interaction spanning coastal regions of Africa, the Middle East, South and Southeast Asia and Australia. Course introduces the region by examining societies and empires shaped by voyages of exploration, religious pilgrimages, trading diasporas and forced migration. Cross-list: ASIA 389.

HIST 390 - JOURNAL PUBLISHING WORKSHOP
Short Title: JOURNAL PUBLISHING WORKSHOP
Department: History
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Participants will explore scholarly communication through hands-on-work running the university's new undergraduate history journal, talking with editors, and discussing readings. Tasks include preparing to publish the journal's annual issues, refining the workflow, issuing a call for papers, and promoting the journal. Repeatable for Credit.

HIST 386 - CARTER, REAGAN, AND THE END OF THE COLD WAR
Short Title: CARTER, REAGAN & END OF COLD WAR
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Course will examine American policy during the climactic years of the Cold War. Topics will include detente under Nixon and Carter, confrontation under Reagan, the 'new thinking' of Gorbachev, regional conflicts, and the fall of the Soviet Union.
HIST 392 - PRE-MODERN POLITICAL THOUGHT FROM CICERO TO LOCKE  
Short Title: PRE-MOD POLITICAL THOUGHT  
Department: History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Examining major texts from Cicero’s De Officiis (CCE 44) to Locke’s Two Treatises (1689 CE) shows how significant political questions emerged from specific historical contexts and developed over time. Writing intensive. Students will have weekly meetings in groups of three at an agreed-upon time (inclusive of the regular class meeting time).  

HIST 395 - THE AMERICAN SOUTH  
Short Title: THE AMERICAN SOUTH  
Department: History  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: An enriched version of HIST 295. Equivalency: HIST 295.  

HIST 398 - FREEDOM OF SPEECH  
Short Title: TOPICS IN LEGAL HISTORY  
Department: History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Course on selected topics in legal history. Cross-list: SWGS 398.  

HIST 401 - THE AGE OF ATTILA THE HUN  
Short Title: THE AGE OF ATTILA THE HUN  
Department: History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This course examines the fifth century A.D. in Western Europe, when the Roman Empire ended and new kingdoms were established from Britain to North Africa. The ‘barbarian invasions’ and Attila and the Huns will be considered. Research seminar format. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)  

HIST 402 - CHINESE WOMEN THROUGH TIME  
Short Title: CHINESE WOMEN THROUGH TIME  
Department: History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This discussion- and research- based course uses history, biography, law, fiction and film to examine the experiences and images of Chinese women from the late imperial time to the present. Topics include foot-binding, matriarchy, social constructs such as the Tiger Mom and the submissive Asian woman, crime, art etc. Students will write a final paper based on primary sources, and there will be one mid-term project involving a collaborative online experience. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)  

HIST 403 - ADVANCED RESEARCH SEMINAR  
Short Title: ADVANCED RESEARCH SEMINAR  
Department: History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Restricted to students admitted to History Honors Program. Seminar is designed to advance students from preliminary research to development of a formal prospectus for the honors thesis and a first draft of one section. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.) Instructor Permission Required.  

HIST 404 - HISTORY HONORS THESIS  
Short Title: HISTORY HONORS THESIS  
Department: History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): HIST 403  
Description: Restricted to students admitted to History Honors Program. Seminar is designed to advance students from prospectus to draft and final version of the honors thesis. Prerequisite: HIST 403 and approval of Director of Undergraduate Studies. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.) Instructor Permission Required.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Short Title</th>
<th>Department</th>
<th>Grade Level</th>
<th>Credit Hours</th>
<th>Restrictions</th>
<th>Course Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST 405</td>
<td>DEMOCRACY AND CAPITALISM: THE HISTORICAL DEBATE FROM MARX TO TRUMP</td>
<td>History</td>
<td>Undergraduate Upper-Level</td>
<td>3</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Upper-Level</td>
<td>Does mass democracy presume freedom of private property, free labor, and market relations as fundamental rights of the individual? Or does the market mean capital’s domination over individuals, negating democracy? Does democratic ‘freedom’ involve restraining capitalism? Or does capitalism involve limiting democracy through undemocratic institutions like rights and central banks?</td>
</tr>
<tr>
<td>HIST 406</td>
<td>WORKERS’ REVOLUTIONS, SUBALTERN SOLIDARITIES, AND THE MAKING OF EMANCIPATORY POLITICS</td>
<td>History</td>
<td>Undergraduate Upper-Level</td>
<td>3</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Upper-Level</td>
<td>Seminar examines the origins of the political left and its global manifestations in the 20th century world. Focusing especially on the global south, the seminar explores the ways marginalized groups interpreted and applied leftist politics to build international solidarities against capitalism but also imperialism, fascism, and patriarchy.</td>
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<td>HIST 407</td>
<td>THE RISE AND FALL OF SLAVERY IN THE ATLANTIC WORLD, 1791-1888</td>
<td>History</td>
<td>Undergraduate Upper-Level</td>
<td>3</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Upper-Level</td>
<td>Seminar examines the expansion and eradication of slavery in the Atlantic world during the 19th century. Special emphasis given to history of enslaved resistance, slaveholders, and abolitionists. Considers the influence of slavery on the cultural, economic, and political developments of Atlantic societies from the Haitian Revolution (1791) to Brazilian abolition (1888).</td>
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<td>HIST 408</td>
<td>THE JAPANESE EMPIRE</td>
<td>History</td>
<td>Undergraduate Upper-Level</td>
<td>3</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Upper-Level</td>
<td>A history of Japanese imperialism starting in the mid-19th century and ending in the 1990s and the end of the ‘bubble economy’ Econmic, political, intellectual history.</td>
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<tr>
<td>HIST 409</td>
<td>MUSLIMS, JEWS, CHRISTIANS, HERETICS, AND PAGANS IN THE AGE OF THE CRUSADES</td>
<td>History</td>
<td>Undergraduate Upper-Level</td>
<td>3</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Upper-Level</td>
<td>Examines the expansion and eradication of slavery in the Atlantic world during the 19th century. Special emphasis given to history of enslaved resistance, slaveholders, and abolitionists. Considers the influence of slavery on the cultural, economic, and political developments of Atlantic societies from the Haitian Revolution (1791) to Brazilian abolition (1888).</td>
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<td>HIST 410</td>
<td>THE AGE OF THE CRUSADES</td>
<td>History</td>
<td>Undergraduate Upper-Level</td>
<td>3</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Upper-Level</td>
<td>Examines the expansion and eradication of slavery in the Atlantic world during the 19th century. Special emphasis given to history of enslaved resistance, slaveholders, and abolitionists. Considers the influence of slavery on the cultural, economic, and political developments of Atlantic societies from the Haitian Revolution (1791) to Brazilian abolition (1888).</td>
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<td>HIST 411</td>
<td>THE MAKING OF EMANCIPATORY POLITICS</td>
<td>History</td>
<td>Undergraduate Upper-Level</td>
<td>3</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Upper-Level</td>
<td>Examines the expansion and eradication of slavery in the Atlantic world during the 19th century. Special emphasis given to history of enslaved resistance, slaveholders, and abolitionists. Considers the influence of slavery on the cultural, economic, and political developments of Atlantic societies from the Haitian Revolution (1791) to Brazilian abolition (1888).</td>
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<td>HIST 412</td>
<td>EMPIRE AND INTERNATIONAL LAW</td>
<td>History</td>
<td>Undergraduate Upper-Level</td>
<td>3</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Upper-Level</td>
<td>Examines the expansion and eradication of slavery in the Atlantic world during the 19th century. Special emphasis given to history of enslaved resistance, slaveholders, and abolitionists. Considers the influence of slavery on the cultural, economic, and political developments of Atlantic societies from the Haitian Revolution (1791) to Brazilian abolition (1888).</td>
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<td>HIST 413</td>
<td>SEMINAR IN CONTEMPORARY AFRICAN AMERICAN HISTORY</td>
<td>History</td>
<td>Undergraduate Upper-Level</td>
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<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Upper-Level</td>
<td>Examines the expansion and eradication of slavery in the Atlantic world during the 19th century. Special emphasis given to history of enslaved resistance, slaveholders, and abolitionists. Considers the influence of slavery on the cultural, economic, and political developments of Atlantic societies from the Haitian Revolution (1791) to Brazilian abolition (1888).</td>
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<td>HIST 414</td>
<td>MEXICAN HISTORY</td>
<td>History</td>
<td>Undergraduate Upper-Level</td>
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<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Upper-Level</td>
<td>Examines the expansion and eradication of slavery in the Atlantic world during the 19th century. Special emphasis given to history of enslaved resistance, slaveholders, and abolitionists. Considers the influence of slavery on the cultural, economic, and political developments of Atlantic societies from the Haitian Revolution (1791) to Brazilian abolition (1888).</td>
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</tr>
</tbody>
</table>
HIST 421 - RACE, EDUCATION AND SOCIETY IN THE URBAN SOUTH
Short Title: RACE, EDUCATION & SOCIETY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An examination of urban life and education since the decision in Brown v. Board. Seminar focuses on the Brown cases, the development of the post war city in the context of American race relations, the course of court-ordered desegregation, and the impact of recent reforms on urban schools and neighborhoods. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)
Graduate/Undergraduate Equivalency: HIST 521. Mutually Exclusive: Cannot register for HIST 421 if student has credit for HIST 521.

HIST 422 - TOPICS IN THE HISTORY OF RICE UNIVERSITY
Short Title: THE HISTORY OF RICE UNIVERSITY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Research seminar on selected topics in the history of the university, with papers to be based on primary sources in the Woodson Research Center of Fondren Library and/or oral interviews. Topics will include academic departments and schools, student life, administrative evolution, community involvement, and Rice in a comparative context. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)

HIST 424 - RAJ AND RESISTANCE
Short Title: AMERICAN RADICALS AND REFORMERS
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Seminar on radicals and reformers in American history. Readings vary and will focus on a selected group of reformers, such as abolitionists, labor radicals, socialists, feminists, pacifists, Progressives, environmentalists, or health reformers. Students may conduct original research for a thesis-driven paper related to course themes. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)

HIST 427 - HISTORY OF THE CIVIL RIGHTS MOVEMENT, 1954 TO THE PRESENT
Short Title: THE CIVIL RIGHTS MOVEMENT
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Examination of the modern Civil Rights movement, with emphasis on the goals and strategies of major spokespersons and leaders, as well as the achievements of the campaign. Includes the extent of its success or failure and whether or not an 'unfinished' agenda needs to be completed. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)
HIST 428 - MODERN SLAVERY AND HUMAN TRAFFICKING: GLOBAL AND LOCAL
Short Title: SLAVERY & HUMAN TRAFFICKING
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Seminar examines contemporary slavery and human trafficking in global historical context. It examines forms of gendered unfree labor that persisted after the legal abolition of slave trades and slavery. It explores the emergence of human rights discourse, activism, and law from the 19th century onwards. Houston is the contemporary case study. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)

HIST 432 - THOMAS JEFFERSON AND HIS AGE
Short Title: THOMAS JEFFERSON AND HIS AGE
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Junior or Senior. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An examination of the life and writings of Jefferson, Set in the Context of his Age: The American Revolution, France on the Eve of its Revolution, the Enlightenment, his Presidency, Slavery, and the Origins of the American Political System. Open to others only with permission of instructor.

HIST 433 - THE ARAB-ISRAELI CONFLICT
Short Title: THE ARAB-ISRAELI CONFLICT
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Seminar traces the history and politics of the Arab-Israeli conflict. Course seeks to understand how and at what costs Israeli and Palestinian nationalisms have been constructed in both Palestinian and Israeli understandings of the past and present using books, documentaries, and films. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)

HIST 434 - ISLAM AND THE WEST
Short Title: ISLAM AND THE WEST
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Seminar explores issues of contact and exploration between Western and Islamic worlds, from the Crusades to the modern era. Investigations will explore how identities are formed and reshaped through interaction with other cultures and how traditions are 'invented' by relationships between civilization and despotism, freedom and tyranny, religious tolerance and holy war. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)

HIST 436 - AMERICA IN THE MIDDLE EAST
Short Title: AMERICA IN THE MIDDLE EAST
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Seminar explores evolution of American involvement in the Middle East from missionary origins in the early 19th century to superpower hegemony in the 20th. Puts into perspective central issues such as the U.S. role in the Arab-Israeli conflict, the question of terrorism, and the U.S. invasion/occupation of Iraq in 2003. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)
Graduate/Undergraduate Equivalency: HIST 603. Mutually Exclusive: Cannot register for HIST 436 if student has credit for HIST 603.

HIST 437 - GLOBAL HISTORY OF SPORT
Short Title: GLOBAL HISTORY OF SPORT
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This reading and research seminar explores key aspects of the world history of sport from the late nineteenth century to the present. It investigates how and why sport history shaped, and was shaped by, various factors and historical forces, including cultural values, identity, economic interests and market forces and power relations between different categories of people.
HIST 443 - MULTICULTURAL EUROPE, 1400-1700
Short Title: MULTICULTURAL EUROPE, 1400-1700
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The art of Europe was never the product of a single culture working in isolation. This seminar will explore the multicultural aspects of medieval and early modern Europe by focusing on the visual culture of groups who defined themselves or are today defined by nationality, race, or religion. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.) Cross-list: HART 435, MDEM 435.

HIST 445 - WRITING HISTORIES OF WORK
Short Title: WRITING HISTORIES OF WORK
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Work in the modern world is about earning a living, identity, creativity, morality, and much more. This course emphasizes the full-length research papers related to experiences, struggles, and meanings of work. The arguments and conclusions of these papers will be based on sources from the time under investigation, and will show the student's grasp of the relevant scholarly literature. Assigned readings for all students mostly concern the modern European past; students can choose any setting worldwide since 1492 for their research paper. This class is useful for students considering law school or graduate study in history. HIST 305 Reading Histories of Work is complementary to this course, but one does not require the other. This course has fewer common assigned readings than HIST 305, in order to make space for project-specific reading and writing; students will periodically present sources and drafts to the class. The assignments for HIST 445 and HIST 305 do not overlap. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)

HIST 448 - WESTERN EUROPEAN WELFARE STATE, 1880-1980: ORIGINS, CONSOLIDATIONS, CRISIS
Short Title: WEST EUROPEAN WELFARE STATES
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This upper level seminar looks at why and how the welfare states came into being, how they were affected by the World Wars and dictatorship, postwar expansion, and the effects of the 1970s stagflation and oil crises. Focus on Germany, Britain, and France. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)

HIST 455 - THE HISTORY OF HUMAN RIGHTS
Short Title: THE HISTORY OF HUMAN RIGHTS
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: What are human rights, and what does it mean to call them “universal”? How do rights across borders, such as those needed by refugees, fit within the sovereignty of states? How do new (or previously unrecognized) rights emerge, such as rights for sexual minorities? And how can we write histories of ideas that are claimed to be timeless? This advanced history seminar draws on multiple disciplines, especially anthropology and law, to answer these and other questions. Students undertake independent research on an issue of their choosing. This class is important for students considering law school or graduate study in history. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)

HIST 457 - FOUR MODERN REVOLUTIONS: 1776, 1789, 1917, 1989
Short Title: FOUR MODERN REVOLUTIONS
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Seminar brings together four leading examples of modern revolution in the western world: the American Revolution, the French Revolution of 1789, the Russian Revolution of October 1917, and the Eastern European revolutions of 1989. Topics include: revolutionary subjects, reactionaries, terror, law, and constitutions. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)

HIST 459 - TOPICS IN MODERN GERMAN HISTORY: NAZISM AND THE HOLOCAUST
Short Title: TOPICS MODERN GERMAN HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Seminar uses sources from the time and historians’ interpretations to analyze Nazism and the Holocaust, especially pre-war racial policy; economic policy; labor; the war experience; and the phases and legacies of the Holocaust.
HIST 461 - THE SECOND WORLD WAR: A POLITICAL HISTORY
Short Title: WW II: A POLITICAL HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: World War Two was not just a military conflict, but also a violent political and social struggle. Seminar explores the main ideologies and political blueprints devised during the war in the United States, Western and Eastern Europe. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)

HIST 464 - U.S. FOREIGN POLICY IN THE ERA OF THE COLD WAR
Short Title: COLD WAR U.S. FOREIGN POLICY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Seminar on American foreign policy during the Cold War. Readings and research. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)

HIST 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: History
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Laboratory, Lecture, Seminar, Lecture/Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

HIST 478 - TOPICS IN LATIN AMERICAN HISTORY
Short Title: TOPICS LATIN AMERICAN HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Seminar on selected topics in Latin American history. Contents vary. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)

HIST 484 - THE BLACK CITY: AFRICAN AMERICAN URBAN LIFE IN THE UNITED STATES
Short Title: BLACK CITY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An examination of how African Americans become a largely urban people in the twentieth century, how their urbanization affects the nature and prospect of US cities, and how the demands and opportunities of city life contribute changing meanings of blackness in American life.

HIST 491 - COEXISTENCE AND SECTARIANISM IN THE MIDDLE EAST
Short Title: MIDDLE EAST SECTARIANISM
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Seminar will examine the validity of the notion of age-old religious and tribal violence in the region, relate the nature of religious violence in the Ottoman Empire to Zionism in Palestine and sectarianism in Lebanon, and analyze the sectarian struggle in contemporary Iraq in light of the American occupation.

HIST 494 - RULING HINDUSTAN: THE TIMURID-MUGHAL KINGS OF INDIA
Short Title: RULING HINDUSTAN
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Seminar on 16th century Central Asian Muslim Turks who conquered India and, in collusion with local political and social forces, developed a sophisticated syncretic royal culture. Focus on culture, fine arts, architecture, familial relations and religious/spiritual practices in Islam. Readings include memoirs and letters of the royal family, Hindu courtiers, visiting Jesuit priests, and European merchants. A major research component is included.

HIST 495 - COMPARATIVE MODERNIZATION OF CHINA AND JAPAN
Short Title: MODERNIZATION OF CHINA & JAPAN
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Research seminar examining not only the respective modernizing experiences of Japan and China in the 19th and 20th centuries, but also the way that developments in one country influenced developments in the other. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)
HIST 500 - GRADUATE SEMINAR IN MEXICAN HISTORY
Short Title: MEXICAN HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This reading seminar examines Mexico from the early nineteenth century to present through reading classic and current scholarship. It delves into questions in Mexican historiography such as political instability, economic development and inequality, the origins of social movements, the Mexican Revolution and the relationship with the US. Graduate/Undergraduate Equivalency: HIST 420. Mutually Exclusive: Cannot register for HIST 500 if student has credit for HIST 420.

HIST 501 - WOMEN AND GENDER IN NATIVE AMERICA
Short Title: NATIVE WOMEN'S HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This reading course consists of texts that focus on women and gender in indigenous history from the colonial period to the early twentieth century.

HIST 502 - EARLY AMERICA AND THE WORLD THAT MADE IT, 1450 - 1820
Short Title: EARLY AMERICA AND THE WORLD
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A reading seminar in the history of Early America (1450-1820) with an emphasis on its multifarious interactions with the wider world. Seminar participants will read books that have inaugurated key developments in the field of Early American history.

HIST 503 - HISTORY OF NORTH AMERICAN CAPITALISM
Short Title: NORTH AMERICAN CAPITALISM
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This reading seminar is an introduction for graduate students to scholarship on the burgeoning field of the history of capitalism. The course centers largely in the U.S. but also considers developments across the world while noting capitalist formations elsewhere in North America from ca. 1500 to the near present.

HIST 505 - THE ATLANTIC SLAVE TRADE
Short Title: THE ATLANTIC SLAVE TRADE
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This research seminar studies four centuries of transatlantic slave voyages in comparative perspective and complements existing literature on the Atlantic economy. Primary sources will be drawn from the quantitative data of www.slavevoyages.org. Students will be able to focus on particular regions on both sides of the Atlantic.

HIST 506 - COLONIAL TO REPUBLICAN BRAZIL
Short Title: COLONIAL TO REPUBLICAN BRAZIL
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course traces the history of Brazil from colony to republic. Topics to be covered include: encounters, Jesuit missions, Indian and African slavery, plantation society, the court in Rio de Janeiro, and change and continuities in the 19th century.

HIST 508 - MODERN LATIN AMERICA
Short Title: MODERN LATIN AMERICA
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate reading seminar on Latin America from the early nineteenth century to present through reading classic and current most relevant scholarship. Political events will provide the periodic framework of the course but it will delve on major economic, social and cultural developments to understand the complex social formations that comprise contemporary Latin American societies. Graduate/Undergraduate Equivalency: HIST 228.

HIST 509 - DIRECTED READINGS
Short Title: DIRECTED READINGS
Department: History
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate level independent readings course. Topics vary. Repeatable for Credit.

HIST 510 - DIRECTED READINGS
Short Title: DIRECTED READINGS
Department: History
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate level independent reading course. Topics vary. Repeatable for Credit.
HIST 512 - READINGS IN BORDERLANDS, CITIZENSHIP, AND IMMIGRATION HISTORY
Short Title: BORDERLANDS & IMMIGRATION
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This reading seminar is an introduction for graduate students to the historiography that constitutes the fields of U.S.-Mexico borderlands history. The seminar covers the period from the early colonial period to the near present. Special attention is given to historical questions that have been posed in the related but separate fields of American immigration history, including the significance and conceptualization of U.S. citizenship.

HIST 521 - RACE, EDUCATION AND SOCIETY IN THE URBAN SOUTH
Short Title: RACE, EDUCATION & SOCIETY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An examination of urban life and education since the decision in Brown v. Board. Seminar focuses on the Brown cases, the development of the post war city in the context of American race relations, the course of court-ordered desegregation, and the impact of recent reforms on urban schools and neighborhoods Graduate/Undergraduate Equivalency: HIST 421. Mutually Exclusive: Cannot register for HIST 521 if student has credit for HIST 421.

HIST 536 - AMERICA AND THE WORLD
Short Title: AMERICA & THE WORLD
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this graduate seminar, we will examine U.S. history in a global context, focusing particularly on imperialism and empire-building. Students are encouraged to think broadly about empire and imperial relationships of which the United States constitute an integral part, looking at domination in economic and cultural forms in addition to political subjugation, formal colonialism and military interventions/colonialism. Students will come away with an understanding of how the United States is a part of the larger world and how the world is influenced by U.S. actions and policies.

HIST 540 - INDUSTRIALIZING AMERICA
Short Title: INDUSTRIALIZING AMERICA
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate research seminar focused on central issues in the industrialization of the United States during the 19th and early 20th centuries. The seminar will explore how industrialization shaped American society and the world, with a particular emphasis on labor, immigration, and technological change.

HIST 542 - HISTORIOGRAPHY OF THE MODERN MIDDLE EAST
Short Title: MODERN MIDDLE EAST
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate seminar will explore the relationship between religion, race, and difference in the modern world. Using both American and non-American cases, the course will examine how and why unequal multi-religious and multi-racial societies - from the United States to the Middle East and South Asia - have elaborated and adapted to modern ideas of secular citizenship and multiculturalism.

HIST 558 - RELIGION, RACE, AND DIFFERENCE IN A GLOBAL PERSPECTIVE
Short Title: RELIGION, RACE, & DIFFERENCE
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate seminar will explore the relationship between religion, race, and difference in the modern world. Using both American and non-American cases, the course will examine how and why unequal multi-religious and multi-racial societies - from the United States to the Middle East and South Asia - have elaborated and adapted to modern ideas of secular citizenship and multiculturalism.

HIST 563 - RACE AND SLAVERY IN THE EARLY ATLANTIC
Short Title: EARLY ATLANTIC RACE & SLAVERY
Department: History
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate research seminar designed to help students formulate, research, and produce an initial draft of what will hopefully become a publishable scholarly article dealing with race or slavery in the Atlantic World.
HIST 565 - THE ATLANTIC WORLD
Short Title: THE ATLANTIC WORLD
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate reading seminar provides an introduction to the historiography of the Atlantic World, especially Africa and the British Atlantic during the 17th and 18th centuries with comparison to France and French Caribbean and to Iberia and Spanish and Luso-America. Thematic topics will include commercial networks, political/imperial/legal structures, and slavery.

HIST 566 - NORTH AMERICA, 1500-1800
Short Title: NORTH AMERICA, 1500-1800
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate reading seminar provides overview of historical literature pertaining to British North America and the Atlantic World from 1500 to 1800. Related topics in Spanish and French North America also considered.

HIST 570 - U.S. ENVIRONMENTAL HISTORY
Short Title: U.S. ENVIRONMENTAL HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate reading seminar on U.S. environmental history from the colonial era to the 20th century, including conservation and environmental movements.

HIST 571 - THE HISTORIOGRAPHY OF NATIONALISM, PLURALISM AND POLITICAL BELONGING.
Short Title: HISTORIOGRAPHY OF NATIONALISM
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar will explore the historiography of pluralism and political belonging and its relationship to various national formations, including the United States. It will read major figures such a W.E.B. DuBois alongside exemplary figures from the colonial and postcolonial worlds to explore how claims to national belonging are made through the construction of historical narratives.

HIST 574 - SLAVERY AND SLAVING IN AFRICA
Short Title: SLAVERY AND SLAVING IN AFRICA
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course introduces graduate students to the key debates, scholars, and historiography relating to slavery and slaving in African history. Students will also gain basic familiarity with the narrative of slavery in Africa as well as introductions to topics in slavery studies like gender, commodities, and identity.

HIST 575 - INTRODUCTION TO DOCTORAL STUDIES
Short Title: INTRO DOCTORAL STUDIES
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to a range of methodological and theoretical approaches to historical research, as well as to important current debates about the nature of historical investigation and interpretation.

HIST 577 - PEDAGOGY SEMINAR
Short Title: PEDAGOGY SEMINAR
Department: History
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: For ABD students who intend to teach. Required for those who intend to teach for the department.

HIST 578 - PROSPECTUS SEMINAR
Short Title: PROSPECTUS SEMINAR
Department: History
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar on prospectus and grant-writing for third-year graduate students. Required for students in the third year.

HIST 579 - COLONIAL LATIN AMERICA
Short Title: COLONIAL LATIN AMERICA
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate reading seminar on the Spanish and Portuguese colonies in the Americas. Topics covered include: the Iberian heritage, encounters and conquests, historical demography, the colonial economy, slavery, family life, religion, and the coming of independence.
HIST 582 - MAJOR ISSUES IN BRITISH AND BRITISH EMPIRE HISTORY
Short Title: BRITAIN AND BRITISH EMPIRE
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate research seminar in modern British and British Empire history. Open to all graduate students.

HIST 583 - SOUTHERN HISTORY
Short Title: SOUTHERN HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate research seminar on the history of the American South.

HIST 584 - THE EARLY SOUTH, 1600-1800
Short Title: THE EARLY SOUTH, 1600-1800
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate research seminar focusing on the southern portions of colonial British North America.

HIST 587 - 19TH CENTURY US RESEARCH
Short Title: 19TH CENTURY US RESEARCH
Department: History
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate research and writing seminar on U.S. nineteenth-century history, with an emphasis on social and cultural history. Research paper required.

HIST 588 - 19TH CENTURY AMERICA
Short Title: 19TH CENTURY AMERICA
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate reading seminar on American history from the early republic to World War I. Contents vary.

HIST 590 - INTRODUCTION TO WORLD HISTORY
Short Title: INTRODUCTION TO WORLD HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate reading seminar in world history.
HIST 601 - MASTER'S THESIS RESEARCH
Short Title: MASTER'S THESIS RESEARCH
Department: History
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Research for master's thesis. Must take both HIST 601 and 602 to receive credit. Offered as necessary.

HIST 602 - MASTER'S THESIS RESEARCH
Short Title: MASTER'S THESIS RESEARCH
Department: History
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Continuation of HIST 601. Must complete both HIST 601 and 602 to receive credit.

HIST 603 - AMERICA IN THE MIDDLE EAST
Short Title: AMERICA IN THE MIDDLE EAST
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate seminar examining the encounter between the United States and Middle Eastern societies since the nineteenth century. Graduate students will complete all UG requirements in as well as an additional 15 page essay to be submitted with the project prospectus. Final papers must be at least 25 pages and incorporate non-English research as appropriate. Graduate/Undergraduate Equivalency: HIST 436. Mutually Exclusive: Cannot register for HIST 603 if student has credit for HIST 436.

HIST 604 - ECONOMIC HISTORY
Short Title: ECONOMIC HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced graduate seminar examining world economic history and the history of political economy from 1500 to the present.

HIST 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: History
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

HIST 700 - THIRD-YEAR RESEARCH
Short Title: THIRD-YEAR RESEARCH
Department: History
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 4-12
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Appropriate for third-year graduate students who are working on their prospectus and have not yet taken their general exam. Repeatable for Credit.

HIST 800 - PH.D. RESEARCH
Short Title: PH.D. RESEARCH
Department: History
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 9-12
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Research for doctoral dissertation. Repeatable for Credit.

Honors Program (HONS)

HONS 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Rice Undergrad Scholar Program
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

HONS 470 - RICE UNDERGRADUATE SCHOLARS PROGRAM (RUSP)
Short Title: UNDERGRAD SCHOLARS PROGRAM
Department: Rice Undergrad Scholar Program
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: RUSP is a two-semester course for students pursuing careers in academia/research. With a faculty mentor, students engage in a year-long research project and attend weekly seminars on how to conduct and present research, work in the academy, apply to post-undergraduate education and fellowships, and understand the social impact of research. Instructor Permission Required.
HONS 471 - RICE UNDERGRADUATE SCHOLARS PROGRAM (RUSP)
Short Title: UNDERGRAD SCHOLARS PROGRAM
Department: Rice Undergrad Scholar Program
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): HONS 470
Description: RUSP is a two-semester course for students pursuing careers in academia/research. With a faculty mentor, students engage in a year-long research project and attend weekly seminars on how to conduct and present research, work in the academy, apply to post-undergraduate education and fellowships, and understand the social impact of research. Instructor Permission Required.

HONS 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Rice Undergrad Scholar Program
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

Humanities (HUMA)

HUMA 102 - FROM RENAISSANCE TO PRESENT: INTRODUCTION TO WESTERN LITERATURE, HISTORY, AND PHILOSOPHY
Short Title: RENAISSANCE TO PRESENT
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Study of the foundational intellectual and artistic texts of the Western tradition from the Renaissance to Einstein. Consideration of texts and images over time and in their historical development as we reflect on who are and how we got here. Readings from Machiavelli, Shakespeare, Kant, Flaubert, Nietzsche, Freud, Beauvoir, Einstein, Levi, Kuhn, Borges, and King, and images from such artists as Michelangelo, Goya, and Picasso.

HUMA 103 - LIBERTY AND TERROR: THE FRENCH REVOLUTION
Short Title: LIBERTY& TERROR: FRENCH REVOLUTION
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The French Revolution toppled an ancient monarchy and sent shockwaves throughout the world. We will interpret the historical sources, contexts, and problems of this watershed moment and investigate the problems by political, philosophical, literary, and visual documents regarding the pre-revolutionary status quo, the transformation of political liberty into repressive terror, worldwide warfare, and ideological struggle. The course will focus on historical contexts such as the influence of the Enlightenment; the emergence of citizenship and human rights; the development of social spectacles and the public sphere; the Reign of Terror and the regression to Tyranny; emancipationist discourses (the abolition of slavery, colonial revolt, radical feminism); and the contradictory figure of Napoleon. We will consider, finally, how the Revolution has come to be viewed, both within France and without, considering its many aftershocks and reverberations up until the present day.

HUMA 107 - GREEK CIVILIZATION AND ITS LEGACY
Short Title: GREEK CIVILIZATION & LEGACY
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An examination of the literary, artistic, and intellectual achievements of classical Greek civilization from Homer through the golden age of classical Athens to the spread of Greek culture in the Hellenistic world. The influence of ancient Greece on Western culture will be a focus. Case studies in the later reception of classical Greek literature (e.g. tragedy), philosophy (e.g., Socrates, history (e.g., democracy), and art (e.g., Parthenon) will be examined. Cross-list: CLAS 107.
Course URL: classicallegacy.rice.edu (http://classicallegacy.rice.edu)

HUMA 111 - ROMAN CIVILIZATION AND ITS LEGACY
Short Title: ROMAN CIVILIZATION &ITS LEGACY
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will investigate central aspects of Roman civilization: politics, religion, law, oratory, private life, public entertainment, literature, and visual art and architecture. Through case studies, we will also examine the place of ancient Rome in the western imagination, and the influence of ancient Rome on later politics, literature, and art. Cross-list: CLAS 108.
Course URL: classicallegacy.rice.edu/ (http://classicallegacy.rice.edu/)
HUMA 120 - WHERE IS UTOPIA? A BIG QUESTIONS COURSE
Short Title: WHERE IS UTOPIA?
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Where is utopia? Thomas More's original coinage, suggesting both “good place” and “no place,” might give little cause for hope, but that hasn't stopped visionaries, scientists, artists and scholars from seeking it out over the years. It might be in our past, or just ahead. We might be there now, if only we knew how to look: under the pavement, we might find the beach. Or utopia might be off our planet entirely.
Ideals shape societies; scientific research, architecture, city planning and cultural production all attest to the hopes and values that spawned them. But as we consider the fallout of past utopian efforts, corollary questions present themselves: do we even want to find utopia? Does every “perfect” society imply a dystopian counterpart? Who is utopia for, and who is excluded? This course will explore utopia through the work of scientists, architects, artists and art movements. Classes will fall into three categories: lectures and reading discussions; field trips; and group art projects. These latter Learning Lab projects will encourage students to work together and apply the readings, discussions and artistic precedents towards their own visions of utopia.

HUMA 121 - IS ALL THE WORLD A STAGE? A BIG QUESTIONS COURSE
Short Title: IS ALL THE WORLD A STAGE?
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: We seem to find or make theater wherever we look. In halls and on stages, but also in Senate chambers and check-out lines - not to mention online. In the small rooms of houses and on small screens of reality television programming. Whether streaming or tweeting, drama is everywhere. What is drama such that it enjoys such intensity and ubiquity? Is it an overflow of energy that creates authenticity? An artificially heightened state (as in “too much drama”)? A carefully crafted manipulation (as in “political drama”)? A way of being in space? A cultural habit? This course considers why theater is so central to our idioms and cultural practices even for people who have never seen, much less set foot on, a proscenium stage. We'll explore the many senses of drama central to social behavior by witnessing the long transit of theater from the classical amphitheater to just about anywhere. The course is designed to offer an introduction to the history and conventions of theatrical practice, from the ancient theater to 21st-century immersive and site-specific performance, which will offer a lens for understanding the drama of human interaction that spills out everywhere. Class sessions will include: 1) lecture/discussions about the histories of theater and languages of performance; 2) Learning Lab sessions that allow students to create their own personal theatrical experience with a combination of acting and directing exercises, live performance experiences, and conversations with theater professionals; and 3) theater of the everyday exercises inviting students to look at the world from the point of view of theatrical experience. No previous theater experience or training required.
HUMA 122 - WHO SHOULD VOTE? A BIG QUESTIONS COURSE
Short Title: WHO SHOULD VOTE?
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: In 2020, Americans will celebrate the centennial of the Nineteenth Amendment and the sesquicentennial of the Fifteenth Amendment. Both anniversaries make it seem like the history of voting rights is a story of continually expanding suffrage. But the humanities can help students understand the more complex reality. Contests over “Who Should Vote?” have existed since the nation’s beginnings and continue today, as people argue over the prevalence of voter suppression or debate whether to lower the voting age. Studying historical contests over this “Big Question” is important because they illuminate the contingency of democracy. Democracy did not always mean the same thing to earlier Americans that it does to us. Moreover, expansions of the right to vote for some groups have often occurred hand in hand with new restrictions on voting for others. The history of suffrage is not one of unbroken progress or decline, but instead of continuous protest and political struggle. By exploring how earlier Americans fought over the right to vote, students in this class will grapple with the meaning of American democracy itself.

HUMA 201 - PUBLIC SPEAKING
Short Title: PUBLIC SPEAKING
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is designed to give the student exposure to and experience using basic principles and skills of oral communication in the public context. Emphasis will be on the development of speech organization, support, and delivery. Informative and persuasive speeches will be practiced. An important outcome of the course is that the student better understand and appreciate the important role public speaking plays in modern society.

HUMA 202 - CULTURE, ENERGY AND THE ENVIRONMENT: AN INTRODUCTION TO ENERGY HUMANITIES
Short Title: CULTURE ENERGY & ENVIRONMENT
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Humanity faces extraordinary challenges in an era of climate change and energy transition. These challenges are not only technological but also questions of value, power, behavior, and understanding. This course draws upon new research across the arts, humanities and social sciences to help students better understand the cultural and social dimensions of our current patterns of energy use, their environmental impacts, and the possibility of new energy futures. Intended for both STEM majors and humanities and social science students. Cross-list: ENST 202.

HUMA 203 - CULTURES OF FUEL
Short Title: CULTURES OF FUEL
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Can fuels (prior to their insertion in systems of energy) offer us hope in the face of climate change? This seminar, open to undergraduates and graduates from all disciplines, will consider fuels (real and imaginary; fossil-based and renewable) in literature, film, art and culture. Grades based on participation in discussions.

HUMA 210 - FORENSICS PRACTICUM
Short Title: FORENSICS PRACTICUM
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will focus on junior varsity intercollegiate speech and debate competition. Students will be required to prepare speeches and debate material for local, regional and possibly national competitions. Participation in intercollegiate competition is mandatory. Instructor Permission Required. Repeatable for Credit.

HUMA 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory, Lecture/Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.
HUMA 302 - THEORIES OF RHETORICAL COMMUNICATION
Short Title: RHETORICAL THEORY
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will survey major theorists of speech and public communication ranging from classical to contemporary thinkers. Emphasis will be on understanding speech and public communication from consumer and scholarly perspectives. Students are expected to read and discuss material with the goals of gaining basic understanding of major rhetorical theorists specifically engage a particular topic in rhetorical theory. Our central questions involve the nature of and relationship between speaker, text, and audience.

HUMA 303 - PERSUASION AND POLITICAL RHETORIC
Short Title: PERSUASION&POLITICAL RHETORIC
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will survey research and writing in the fields of persuasion and political communication. Of particular interest will be explanations of political communication based in rhetorical theory. Students will study historically important political speeches, debates, and advertisements. Emphasis will be on academic exploration of political rhetoric as human expression.

HUMA 308 - BUSINESS AND PROFESSIONAL SPEAKING
Short Title: BUSINESS&PROFESSIONAL SPEAKING
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Practical application of communication theory with emphasis on oral presentations, interviewing and small group dynamics. The course will consider many aspects of the business and professional sphere as they pertain to public speaking and public discourse. Through a series of four or more in-class speeches, in-class group exercises, outside speaker presentations, reading, and writing, the course will serve as basis of instruction to ready the student for the public or private sphere. Class will focus particularly on aspects of business and professional leadership communication, and business and office communications both written and oral, toward a greater mastery of authentic organizational, management, competitive, and community discourse.

HUMA 309 - ARGUMENTATION AND DEBATE
Short Title: ARGUMENTATION & DEBATE
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Designed to help students develop communication, analysis, and research skills through the construction and presentation of arguments on questions of fact, value, and policy. Debate assignments will explore current issues. The course emphasizes argumentation exercises and in-class debates.

HUMA 310 - ADVANCED FORENSICS PRACTICUM
Short Title: ADVANCED FORENSICS PRACTICUM
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will focus on varsity intercollegiate speech and debate competition. Students will be required to prepare speeches and debate material for local, regional, and possibly national competitions. Participation in intercollegiate competition is mandatory. Instructor Permission Required. Repeatable for Credit.

HUMA 311 - THE RHETORIC OF LEADERSHIP
Short Title: RHETORIC OF LEADERSHIP
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will examine the relationship between leadership and communication within organizations. Explore leadership as a communication phenomenon. Emphasis will be on leadership as a set of relationships that manifest themselves in practices that arise from the implementation of theory. Historical and contemporary leadership and communication theory will be surveyed. An important outcome is an increased understanding of the relationship between communication and leadership. Cross-list: LEAD 320.
HUMA 312 - HISTORICAL AND INTELLECTUAL FOUNDATIONS OF LEADERSHIP
Short Title: FOUNDATIONS OF LEADERSHIP
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The focus of this course is to construct a historically informed philosophy of leadership that encompasses not just what leadership is but why it is valued, when it is legitimate, what its moral purpose is, and how it both shapes and reflects societal norms. Cross-list: LEAD 301.

HUMA 313 - THEORIES OF HUMAN COMMUNICATION
Short Title: THEORIES OF HUMAN COMM
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course offers an introduction to the study of human communication and surveys explanations of human communication from a variety of perspectives. Theories of interpersonal, intercultural, nonverbal and mass communication are explored.

HUMA 314 - COMMUNICATION, TECHNOLOGY, AND CHANGE
Short Title: COMMUNICATION/TECHNOLOGY/CHANG
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: New communication technologies have profoundly altered daily life and challenge the definition of some of humanity’s basic societal structures. This course explores interpretations of this transformation from many fields to better understand the change we are currently witnessing and to ask what the human experience is gaining and losing.

HUMA 315 - RHETORIC OF POPULAR CULTURE
Short Title: RHETORIC OF POPULAR CULTURE
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: What really persuades people? Many scholars consider popular culture to be the most influential persuasive force in the everyday lives of contemporary humans. Music, television, social media, film, fashion, books, and other elements of popular culture comprise a tremendous amount of the universe of meaning in which the modern human resides. This course will explore these phenomena by looking at current and historical popular cultural artifacts and trends and various ways of understanding them from a variety of fields. Students will pursue an original study of a specific artifact or trend.

HUMA 317 - INTERPERSONAL COMMUNICATION
Short Title: INTERPERSONAL COMMUNICATION
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course is a study of the historical and contemporary principles and theories of interdependent human communication. Communication skills which will increase interpersonal effectiveness will be studied, including verbal and nonverbal behavior, listening, assertiveness, and conflict resolution.

HUMA 320 - FROM PHYSICS LABS TO OIL FUTURES: SOCIAL STUDIES OF ENERGY
Short Title: SOCIAL STUDIES OF ENERGY
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: How did whale oil become replaced by fossil fuels? What were the turning points in implementing electricity networks within urban centers? What is the role of markets and industries when producing such new energy infrastructures? This interdisciplinary course will trace ideas of energy in anthropology, science and technology studies, literary studies and environmental history, and investigate how energy production and consumption affects social life.
HUMA 322 - MARX, FREUD, EINSTEIN: FOREBEARERS OF MODERNITY
Short Title: MARX, FREUD, EINSTEIN
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Like no others, these three thinkers of the 19th and 20th century have influenced the intellectual, historical, social, and cultural development not only of Germany, but of the entire world. The course examines the works of these authors in the context of their own time as well as their continued importance in the present. Works by Brecht, Christa Wolf, Schnitzler, Kafka will also be considered. Taught in English. Cross-list: GERM 322.

HUMA 324 - BERLIN, RESIDENCE, METROPOLIS, CAPITAL
Short Title: BERLIN:RESIDENCE,METRO,CAPITAL
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The course offers an introduction to German history, politics, and culture as mirrored in the history of the old and new German capital. Berlin has always been a city of contradictions: from imperial glamour to proletarian slums, from the Roaring Twenties to Hitler’s seizure of power. Emerging from the ruins of WWII Berlin became both the capital of Socialism and the display window of the Free World. After the fall of the wall, Berlin is still looking for its role in the center of a reshaped Europe. Readings and discussions encompass fine arts and literature from the 18th century to the present, including film. Taught in English. Cross-list: GERM 324.

HUMA 325 - MODERN GERMAN WRITERS: KAFKA
Short Title: MODERN GERMAN WRITERS: KAFKA
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: With Goethe’s vision of ‘world-literature’ came true in the twentieth century. German authors, among them Kafka, transcended the confines of national traditions and redefined the concepts of literature and authorship in view of a modern globally dispersed audience. Topics may vary. Taught in English. Cross-list: GERM 325. Repeatable for Credit.

HUMA 328 - GERMAN ADAPTATIONS: TEXT TO FILM
Short Title: GERMAN ADAPTATIONS: TEXT-FILM
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Prominent novels of the 20th century will be studied for their possibilities or impossibilities of rendition from print medium to cinematic medium. From the myriad of adaptations we will concentrate on Thomas Mann: Tod in Venedig; Franz Kafka: Das Schloss; Klaus Mann: Mehistro; Gunter Grass: Die Blechtrommel; H. Boll: Katharina Blum; Jurek Becker: Jacob der Lugner. All films are subtitled in English. Taught in English. Cross-list: GERM 328.

HUMA 329 - LITERATURE OF THE HOLOCAUST AND EXILE
Short Title: LIT OF HOLOCAUST & EXILE
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Prominent novels of the 20th century will be studied for their possibilities or impossibilities of rendition from print medium to cinematic medium. From the myriad of adaptations we will concentrate on Thomas Mann: Tod in Venedig; Franz Kafka: Das Schloss; Klaus Mann: Mehistro; Gunter Grass: Die Blechtrommel; H. Boll: Katharina Blum; Jurek Becker: Jacob der Lugner. All films are subtitled in English. Taught in English. Cross-list: GERM 328.

HUMA 340 - WALTER BENJAMIN: AESTHETICS, HISTORY AND POLITICS
Short Title: WALTER BENJAMIN
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Benjamin has been celebrated as a revolutionary Marxist, a theologian of Jewish Messianism, and as an essayist and literary critic. The course offers an introduction to his writings by way of situating them in the historical background of the Weimar Republic and the crises of European society on the eve of WWII. Taught in English. Cross-list: GERM 340.
HUMA 368 - CONCEIVING AND MISCONCEIVING THE MONSTROUS IN FICTION AND IN ART, IN MEDICINE AND IN BIOSCIENCE
Short Title: MONSTER
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: However various the forms of life, we draw boundaries between normal, not normal, and monstrous. From the Biosciences to the Arts, our conceptions of the ‘monstrous’ illuminate our identity, perceptions, and fears. Priority for enrollment beyond the cap given to students also enrolled in ARTS 358. Cross-list: BIOC 368.

HUMA 372 - THE GERMAN FAIRY TALE: OLD AND NEW
Short Title: GERMAN FAIRY TALE: OLD & NEW
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Discussion of several prototypes from the fairy-tale collection of the Brothers Grimm and the subsequent development of the ‘literary’ fairy tale from Goethe and the Romantics to the 20th century. Taught in English. Cross-list: GERM 326.

HUMA 373 - NEW GERMAN FILM: HITLER'S CINEMATIC CHILDREN
Short Title: NEW GERM FILM: HITLER'S CINEMA
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: From the 1960 to 2000, Germany has developed a very distinct auteur cinema with independent filmmakers such as Fassbinder, Herzog, Wenders, Adlon, Trotta, Sander, Brueckner, Doerrie, Garnier, Tykwer, and others. The first 20 years of German film were oriented on coming to terms with the fascist past; the second 20 years focused on more contemporary issues. Film, critical reading and class discussion in English. All films are subtitled in English and will be assessed with more contemporary issues. Film, critical reading and class discussion in English. Cross-list: GERM 338, SWGS 361.

HUMA 401 - INDEPENDENT STUDY IN MEDICAL HUMANITIES RESEARCH
Short Title: IND STDY MEDICAL HUMA RESEARCH
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Independent Study with a faculty member at the Texas Medical Center focusing on a medical humanities research topic. Students spend up to 10 hours/week at TMC and are graded on evaluations submitted by faculty supervisors. Instructor Permission Required. Mutually Exclusive: Cannot register for HUMA 401 if student has credit for PLST 402. Repeatable for Credit.

HUMA 406 - ARTS AND CULTURE INTERNSHIP
Short Title: ARTS AND CULTURE INTERNSHIP
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The Office of the Dean of Humanities and relevant faculty match students individually with one of a variety of projects in the area of arts/museums/public culture. Students conduct research or related activities under guidance of on-site supervisor and the section instructor of record. Department Permission Required. Repeatable for Credit.

HUMA 407 - ARTS AND CULTURE INTERNSHIP 2
Short Title: ARTS AND CULTURE INTERNSHIP 2
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The Office of the Dean of Humanities and relevant faculty match students individually with one of a variety of projects in the area of arts/museums/public culture. Students conduct research or related activities under guidance of on-site supervisor and the section instructor of record. Department Permission Required. Repeatable for Credit.

HUMA 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Independent Study, Laboratory, Seminar, Lecture/Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester’s topic(s), Repeatable for Credit.
HUMA 498 - INDEPENDENT STUDY  
Short Title: INDEPENDENT STUDY  
Department: Humanities Division  
Grade Mode: Standard Letter  
Course Type: Independent Study  
Credit Hours: 1-3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Independent Study. Instructor Permission Required.

HUMA 499 - RESEARCH IN THE HUMANITIES  
Short Title: RESEARCH IN THE HUMANITIES  
Department: Humanities Division  
Grade Mode: Standard Letter  
Course Type: Research  
Credit Hours: 1-3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: For advanced independent research in a humanities subject. Student must arrange mentorship with a faculty member and seek permission from the Dean of Humanities office, then a section of this course can be opened for the fall, spring, or summer. Department Permission Required. Repeatable for Credit.

Humanities Research Center (HURC)  
HURC 213 - THE DOCTOR IS ON  
Short Title: THE DOCTOR IS ON  
Department: Humanities Research Center  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: Fictionalized characters such as House, Doogie Houser, and Hawkeye Pierce reinforce stereotypes as much as they challenge assumptions and (re)define cultural attitudes toward doctors (and the medical profession in general). This course examines the portrayal of healthcare professionals in television, fiction and film to discuss philosophical and ethical questions as well as the modern medical apparatus from biopolitical and social systems perspectives.

HURC 238 - SPECIAL TOPICS  
Short Title: SPECIAL TOPICS  
Department: Humanities Research Center  
Grade Mode: Standard Letter  
Course Type: Internship/Practicum, Lecture, Seminar  
Credit Hours: 1-4  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

HURC 245 - INTERDISCIPLINARY APPROACHES  
Short Title: INTERDISCIPLINARY APPROACHES  
Department: Humanities Research Center  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: Interdisciplinary study of cultural forms as diverse as poetry, advertisement, and film as well as topical interdisciplinary courses on literature and the arts, psychology, cultural studies, film media, anthropology, social theory, philosophy, law, and ethics. Topics vary each semester. Taught by English Department Ph.D. candidates. Cross-list: ENGL 245. Repeatable for Credit.

HURC 299 - ENGLISH LITERATURE AND THE PUBLIC HUMANITIES  
Short Title: HISTORY AND MEANING  
Department: Humanities Research Center  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: In this course, students learn to apply critical humanistic methods to issues of public importance, especially in the Houston area. Participants study necessary applications of humanistic inquiry to civic life and contribute to this work themselves. Topics vary each semester. Past topics have included: Surreal Houston; Curating Heritage; (Dis)locating Art. Consult the Humanities Research Center or the English Department for more information. Cross-list: ENGL 299. Repeatable for Credit.

HURC 301 - HRC UNDERGRADUATE FELLOWSHIP  
Short Title: HRC UNDERGRADUATE FELLOWSHIP  
Department: Humanities Research Center  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Independent Study  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: The HRC Undergraduate Fellowship requires students to attend a series of workshops and lectures. Fellow will also conduct research with HRC faculty. Contact HRC to apply. Department Permission Required. Repeatable for Credit.  
Course URL: [www.hrc.rice.edu/undergraduate.aspx](http://www.hrc.rice.edu/undergraduate.aspx)

HURC 303 - HRC RICE SEMINAR UNDERGRADUATE COURSE  
Short Title: HRC RICE SEMINAR COURSE  
Department: Humanities Research Center  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Lecture  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: HURC Rice Seminar undergraduate course requires students to attend a series of lectures by scholars studying the historical and modern day issues of the year’s Rice Seminar topic and participate in monthly discussion groups. Repeatable for Credit.
HURC 304 - HRC SUPERVISED RESEARCH
Short Title: HRC SUPERVISED RESEARCH
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course designed for students who want to pursue intensive semester-long study of a particular topic that is the specialty of visiting faculty or postdoctoral fellow. Department Permission Required.

HURC 305 - URBAN SPACES, MAPPED PLACES
Short Title: URBAN SPACES, MAPPED PLACES
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will challenge students to understand what information about a city can be analyzed and conveyed via cartography. Students will acquire mapping skills using CartoDB, Mapbox and Leaflet and will examine historical cartography via Adobe Illustrator and qGIS. Readings will include urban theory, representation in cartography, critical debates on big data and social media, and works of fiction that involve mapping and the city. Mutually Exclusive: Cannot register for HURC 305 if student has credit for HART 405.

HURC 306 - HEALTH AND HUMANITIES MASTER CLASS
Short Title: HEALTH AND HUMANITIES MC
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Faculty from Rice University, University of Texas School of Public health, and University of Houston, as well as practitioners in the Texas Medical Center, will lead class discussions on different aspects of the health industry today. The class will meet Tuesday evenings at the McGovern Museum of Health and Medical Science and at Rice Thursdays. Students will read essays, case studies, and fiction or watch films to prepare for each discussion. Instructor Permission Required. Graduate/Undergraduate Equivalency: HURC 506. Mutually Exclusive: Cannot register for HURC 306 if student has credit for HURC 506.

HURC 307 - CRITICAL HUMANITIES - HEALTH AND BODY
Short Title: CRITICAL HUMA - HEALTH & BODY
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course comprises six modules co-taught by faculty and medical professionals. Modules will address DNA and genetics, changes in medical education, the pathologization of difference, the process of dying, disability and ability, the doctor-patient relationship, and more.

HURC 308 - ADVANCED STUDY IN MUSEUMS AND HERITAGE: ARTS OF ANCIENT MEDITERRANEAN AT THE MENIL COLLECTION
Short Title: ADV STUDY IN MUSEUMS/HERITAGE
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course introduces students to advanced ethical, legal and practical issues facing museums as they acquire and maintain collections from areas prone to looting and destruction, especially the Ancient Mediterranean. We will examine the civic engagement and operation of the Menil Collection through close, on-site archival and object study. Cross-list: HART 312. Graduate/Undergraduate Equivalency: HURC 508. Mutually Exclusive: Cannot register for HURC 308 if student has credit for HURC 508.

HURC 311 - PUBLIC HUMANITIES MASTERCLASS
Short Title: FUTURES OF ARCHITECTURAL EXHBT
Department: Humanities Research Center
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The course explores the place of humanities in the public sphere, presenting tools for critical assessment. Undergraduate and graduate students from across campus form research cohorts with Rice faculty, outside scholars, and members of local institutions. Graduate students serve as mentors for undergraduates and will be assessed on papers and the class sessions they design and lead. Instructor Permission Required. Graduate/Undergraduate Equivalency: HURC 511. Mutually Exclusive: Cannot register for HURC 311 if student has credit for HURC 511. Repeatable for Credit.
HURC 341 - MUSEUMS AND HERITAGE: EXHIBITING ART, EXHIBITING CULTURE
Short Title: MUSEUMS AND HERITAGE
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A wide-ranging introduction to museum studies with a particular focus on the collection and exhibition of cultural heritage materials. We will examine how heritage objects are displayed and represented in museums of art, natural historical history, and heritage. Topics include looking and ethics of collecting, policies of display, changing roles for museums; exhibition design and curatorial practice. Cross-list: ANTH 341.

HURC 361 - THE HUMANITIES OF CARE & END OF LIFE
Short Title: THE HUMANITIES OF CARE
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group 1
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Pairing the perspectives of medicine, bioethics, and the medical humanities with thematic case studies in art, literature, cinema, and visual culture, the class examines the humanities of care and the end of life. Cross-list: RELI 361.

HURC 403 - SAWYER SEMINAR: PLATFORMS FOR KNOWLEDGE IN A WIDE WEB OF WORLDS
Short Title: SAWYER SEMINAR
Department: Humanities Research Center
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The seminar explores digital knowledge platforms (e-learning, publishing, collaborative research, crowd-sourced) that uphold our academic mission to disseminate knowledge by enabling teachers, students and researchers to discover, analyze, and share information without regard to barriers of space and time. These same platforms, however, raise questions about expertise, access, metrics, power shifts, and academic autonomy. Department Permission Required. Repeatable for Credit.

HURC 404 - THE POET AND THE MUSEUM
Short Title: THE POET AND THE MUSEUM
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course considers what it means for poets to seek meaning and inspiration in the world of the visual arts. Students will visit Houston art venues to examine objects of cultural heritage, seek insight about the practice of making, preserving and presenting art with curators and conservators, and will have an opportunity to work with two practicing artists.

HURC 405 - DIACHRONIC MAPPING: THE RICE UNIVERSITY CAMPUS
Short Title: DIACHRONIC MAPPING
Department: Humanities Research Center
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The objective of this course is to collaboratively design a digital atlas of the Rice Campus where visual archives, locatable in time and space, can be embedded. The evolution of the campus will be presented by historians and training sessions in ArcGIS, Rhino, and Shared Shelf will be conducted by specialists. Instructor Permission Required. Graduate/Undergraduate Equivalency: HURC 605. Mutually Exclusive: Cannot register for HURC 405 if student has credit for HURC 605. Repeatable for Credit.
HURC 406 - MASTERCLASS IN PUBLISHING, EDITING, PRESENTING AND PUBLIC WRITING
Short Title: MASTERCLASS IN PUBLISHING
Department: Humanities Research Center
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Offers undergraduate and graduate students insight into the public life of writing with particular attention to academic and literary publishing, editing, and presenting. Sessions organized around topics in these areas and visits with experts (agents, editors, authors, presenters, etc.) with experience in publishing, and creating series, festivals, and other forms of presentation. Meets 3 times per semester, helps develop internship possibilities for participants, and develop strategies for increasing the presentation of public writing at Rice. Instructor Permission Required. Graduate/Undergraduate Equivalency: HURC 606. Mutually Exclusive: Cannot register for HURC 406 if student has credit for HURC 606. Repeatable for Credit.

HURC 408 - FUTURES OF THE BOOK
Short Title: FUTURES OF THE BOOK
Department: Humanities Research Center
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: From an ongoing interest in the book as a physical object, to the exploration of its potentials expanding into a four-dimensional digital realm, to rapidly changing demands for the storage and retrieval of knowledge, this master class will provide a platform to engage experts from various disciplines in a debate on the shifting futures of the book. Instructor Permission Required. Cross-list: ARCH 456. Graduate/Undergraduate Equivalency: HURC 608. Mutually Exclusive: Cannot register for HURC 408 if student has credit for HURC 608.

HURC 423 - HRC PRACTICUM IN CULTURAL HERITAGE
Short Title: PRACTICUM IN CULTURAL HERITAGE
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This research-based course is conducted in partnership with cultural heritage institutions in Houston. Qualified and advanced students work 10 hours/week on site with curators, artists, archivists, center directors, and others to develop projects in specific research areas. Students meet regularly with instructor to discuss research and to present work at an end of semester symposium. Instructor Permission Required. Repeatable for Credit.

HURC 432 - SPECIAL TOPICS: SPATIAL HUMANITIES
Short Title: SPATIAL HUMANITIES
Department: Humanities Research Center
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores current developments in humanistic practices and theories of cartography and 3-D modeling. Undergraduates and graduate students from across campus form research cohorts with Rice faculty, external scholars, and practitioners. Each course assigns credit hours based on the number of guess speakers and class meetings on a semester-by-semester basis. Instructor Permission Required. Graduate/Undergraduate Equivalency: HURC 650. Mutually Exclusive: Cannot register for HURC 432 if student has credit for HURC 650. Repeatable for Credit.

HURC 450 - SPATIAL HUMANITIES MASTERCLASS
Short Title: SPATIAL HUMANITIES MASTERCLASS
Department: Humanities Research Center
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture/Laboratory
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will trace the evolution of a city as it existed and as it was imagined. Views, historic maps, and ground-floor plans will be located in both time and space while their associated visual and spatial data will be integrated across digital platforms. Graduate students enroll in an additional bootcamp and mentor undergraduate students. Graduate/Undergraduate Equivalency: HURC 650. Mutually Exclusive: Cannot register for HURC 450 if student has credit for HURC 650. Repeatable for Credit.

HURC 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Humanities Research Center
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum, Laboratory, Lecture, Seminar, Independent Study, Lecture/Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

HURC 480 - HURC SUPERVISED RESEARCH
Short Title: HRC SUPERVISED RESEARCH
Department: Humanities Research Center
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course designed for students who want to pursue intensive semester-long study of a particular topic under the supervision of a faculty member. Instructor Permission Required. Repeatable for Credit.
HURC 501 - MELLON GRADUATE SEMINAR I
Short Title: QUANTA, PSYCHE, CELL
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Focusing on epistemologies of time and the problem of perceiving and capturing presence, the seminar will bring together theories and conceptions about time, temporalities, and temporal perception offered by quantum theories, psychoanalysis, and biology, engaging as well the myriad aspects of the multi-layered sensory, epistemological, psychological, and phenomenological registers through which humans perceive, remember, represent, and calculate time. Instructor Permission Required. Repeatable for Credit.
Course URL: hrc.rice.edu/aw-mellon/node/56

HURC 502 - HRC MELLON RESEARCH SEMINAR
Short Title: CRITICAL PLATFORM STUDIES
Department: Humanities Research Center
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The seminar will explore digital knowledge platforms (e-learning, publishing, crowd-sourced, etc.) that both disseminate knowledge and raise questions about what counts as expertise, who controls access to information, what power shifts from educational institutions to corporations, how quantification affects humanistic wisdom, and how academic autonomy and diversity are ultimately disrupted. Instructor Permission Required. Repeatable for Credit.
Course URL: www.hrc.rice.edu/mellonseminars.aspx

HURC 503 - MELLON GRADUATE SEMINAR II
Short Title: SPATIAL STUDIES
Department: Humanities Research Center
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The seminar will introduce students to Spatial Studies as an emerging field of knowledge production, as well as to prominent scholars working in the field. The seminar will be structured around the visits of scholars who will give public lectures during regularly scheduled class time. Also, students will look into ongoing research that not only stems from a surge of scholarly interest in space but that also exploits a vast assortment of information technologies; explore, critique, and experience the modeling and mapping of historic sites and events; and together incubate a multidisciplinary and broadly humanistic collaboration among interested tech innovators, faculty, and students. Instructor Permission Required. Repeatable for Credit.
Course URL: hrc.rice.edu/aw-mellon/node/56

HURC 506 - HEALTH AND HUMANITIES MASTER CLASS
Short Title: HEALTH AND HUMANITIES MC
Department: Humanities Research Center
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Faculty from Rice University, University of Texas School of Public health, and University of Houston, as well as practitioners in the Texas Medical Center, will lead class discussions on different aspects of the health industry today. The class will meet Tuesday evenings at the McGovern Museum of Health and Medical Science and at Rice Thursdays. Students will read essays, case studies, and fiction or watch films to prepare for each discussion. Graduate students will have additional assignments. Graduate students will not write 5 papers required of undergraduates and may opt out of 3 lectures and the corresponding discussions. Instructor Permission Required. Graduate/Undergraduate Equivalency: HURC 306. Mutually Exclusive: Cannot register for HURC 506 if student has credit for HURC 306.

HURC 508 - ADVANCED STUDY IN MUSEUMS AND HERITAGE: ARTS OF ANCIENT MEDITERRANEAN AT THE MENIL COLLECTION
Short Title: ADV STUDY IN MUSEUMS/HERITAGE
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course introduces students to advanced ethical, legal and practical issues facing museums as they acquire and maintain collections from areas prone to looting and destruction, especially the Ancient Mediterranean. We will examine the civic engagement and operation of the Menil Collection through close, on-site archival and object study. Cross-list: HART 540. Graduate/Undergraduate Equivalency: HURC 308. Mutually Exclusive: Cannot register for HURC 508 if student has credit for HURC 308.

HURC 511 - PUBLIC HUMANITIES MASTERCLASS
Short Title: FUTURES OF ARCHITECTURAL EXHIBT
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course explores the place of humanities in the public sphere, presenting tools for critical assessment. Undergraduate and graduate students from across campus form research cohorts with Rice faculty, outside scholars, and members of local institutions. Graduate students serve as mentors for undergraduates and will be assessed on papers and the class sessions they design and lead. Instructor Permission Required. Graduate/Undergraduate Equivalency: HURC 311. Mutually Exclusive: Cannot register for HURC 511 if student has credit for HURC 311. Repeatable for Credit.
HURC 601 - MASTER CLASS IN LITERARY STUDIES
Short Title: MASTER CLASS CULTURAL HERITAGE
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Description: This course consists of a series of sessions with Rice faculty and outside speakers that focus on specific texts to explore important critical questions and debates. There will be 14 master class sessions per term. At the end of the semester, the students will present their own work in a symposium. Graduate students will each present a topic of their choice in class related to the work on the syllabus. In addition, they will write one conference paper to present at the Flusser Symposium at the end of the term. Instructor Permission Required. Graduate/Undergraduate Equivalency: HURC 401. Mutually Exclusive: Cannot register for HURC 601 if student has credit for HURC 401. Repeatable for Credit.

HURC 602 - RICE SEMINARS
Short Title: VALUE/CONSCIOUSNESS/VALUE
Department: Humanities Research Center
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: Year long intellectual inquiry during which faculty and grad students develop, present, and discuss original scholarship that explores aspects of the seminar's annual topic. Instructor Permission Required. Repeatable for Credit.
Course URL: hrc.rice.edu/rice-seminars/ (http://hrc.rice.edu/rice-seminars/)

HURC 605 - DIACHRONIC MAPPING: THE RICE UNIVERSITY CAMPUS
Short Title: DIACHRONIC MAPPING
Department: Humanities Research Center
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: The objective of this course is to collaboratively design a digital atlas of the Rice Campus where visual archives, locatable in time and space, can be embedded. The evolution of the campus will be presented by historians and training sessions in ArcGIS, Rhino, and Shared Shelf will be conducted by specialists. Instructor Permission Required. Graduate/Undergraduate Equivalency: HURC 405. Mutually Exclusive: Cannot register for HURC 605 if student has credit for HART 405/HURC 405. Repeatable for Credit.

HURC 606 - MASTERCLASS IN PUBLISHING, EDITING, PRESENTING AND PUBLIC WRITING
Short Title: MASTERCLASS IN PUBLISHING
Department: Humanities Research Center
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Description: Offers undergraduate and graduate students insight into the public life of writing with particular attention to academic and literary publishing, editing, and presenting. Sessions organized around topics in these areas and visits with experts (agents, editors, authors, presenters, etc.) with experience in publishing, and creating series, festivals, and other forms of presentation. Meets 3 times per semester, helps develop internship possibilities for participants, and develop strategies for increasing the presentation of public writing at Rice. Instructor Permission Required. Graduate/Undergraduate Equivalency: HURC 406. Mutually Exclusive: Cannot register for HURC 606 if student has credit for HURC 406. Repeatable for Credit.

HURC 608 - FUTURES OF THE BOOK
Short Title: FUTURES OF THE BOOK
Department: Humanities Research Center
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Description: From an ongoing interest in the book as a physical object, to the exploration of its potentials expanding into a four-dimensional digital realm, to rapidly changing demands for the storage and retrieval of knowledge, this master class will provide a platform to engage experts from various disciplines in a debate on the shifting futures of the book. Instructor Permission Required. Cross-list: ARCH 656. Graduate/Undergraduate Equivalency: HURC 408. Mutually Exclusive: Cannot register for HURC 608 if student has credit for HURC 408.

HURC 623 - HRC GRADUATE PRACTICUM IN CULTURAL HERITAGE
Short Title: PRACTICUM IN CULTURAL HERITAGE
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: This research-based course is conducted in partnership with cultural heritage institutions in Houston. Graduate students work 10 hours/week on site with curators, artists, archivists, center directors, and others to develop projects in specific research areas. Students meet regularly with instructor to discuss research and to present work at an end of semester symposium. Instructor Permission Required. Repeatable for Credit.
HURC 630 - HRC GRADUATE PRACTICUM IN MEDICAL HUMANITIES
Short Title: PRACTICUM IN HEALTH HUMANITIES
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This research-based course is conducted in partnership with health institutions in Houston. Graduate students work 10 hours/week on site with curators, artists, archivists, center directors, and others to develop projects in specific research areas. Students meet regularly with instructor to discuss research and to present work at an end of semester symposium. Instructor Permission Required. Repeatable for Credit.

HURC 632 - SPECIAL TOPICS: SPATIAL HUMANITIES
Short Title: SPATIAL HUMANITIES
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will trace the evolution of a city as it existed and as it was imagined. Views, historic maps, and ground-floor plans will be located in both time and space while their associated visual and spatial data will be integrated across digital platforms. Graduate students enroll in an additional bootcamp and mentor undergraduate students. Graduate/Undergraduate Equivalency: HURC 432. Mutually Exclusive: Cannot register for HURC 632 if student has credit for HURC 432. Repeatable for Credit.

HURC 650 - SPATIAL HUMANITIES MASTERCLASS
Short Title: SPATIAL HUMANITIES MASTERCLASS
Department: Humanities Research Center
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture/Laboratory
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course explores current developments in humanistic practices and theories of cartography and 3-D modeling. Undergraduates and graduate students from across campus form research cohorts with Rice faculty, external scholars, and practitioners. Each course assigns credit hours based on the number of guest speakers and class meetings on a semester-by-semester basis. Over and above the undergraduate workload in this section, graduate students will be required to give one public talk as part of the Spatial Humanities Initiative lecture series, lead one class discussion or training session related to their talk, and submit a research proposal for a project that can be integrated into the initiative. Graduate/Undergraduate Equivalency: HURC 450. Mutually Exclusive: Cannot register for HURC 650 if student has credit for HURC 450. Repeatable for Credit.

HURC 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Laboratory, Seminar, Lecture, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

Italian Language and Culture (ITAL)
ITAL 106 - ACCELERATED FIRST YEAR ITALIAN
Short Title: ACCELERATED FIRST YEAR ITALIAN
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Alternative first year Italian for students who have already completed two semesters of French or Spanish. This is an intensive course covering the equivalents of ITAL 141 and ITAL 142. Students will be prepared for ITAL 263 upon completion of the course. Effective May 15, 2019, this course does not carry D1 credit. Mutually Exclusive: Cannot register for ITAL 106 if student has credit for ITAL 141/ITAL 142.

ITAL 141 - FIRST YEAR ITALIAN I
Short Title: FIRST YEAR ITALIAN I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Development of interactional competence in Italian (sociolinguistic and sociocultural knowledge) to communicate and interact with speakers of Italian. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. No prior knowledge of this language is necessary. Placement Test is required. Effective May 15, 2019, this course does not carry D1 credit. Mutually Exclusive: Cannot register for ITAL 141 if student has credit for ITAL 101/ITAL 106/ITAL 222.
ITAL 142 - FIRST YEAR ITALIAN II
Short Title: FIRST YEAR ITALIAN II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ITAL 141
Description: Continuation of ITAL 141. Development of interactional competence in Italian (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Italian. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Effective May 15, 2019, this course does not carry D1 credit. Mutually Exclusive: Cannot register for ITAL 142 if student has credit for ITAL 106/ITAL 262.

ITAL 222 - AP/OTH CREDIT IN ITALIAN LANGUAGE
Short Title: AP/OTH CREDIT ITALIAN LANGUAGE
Department: Cntr Lang & Intercultural Comm
Grade Mode: Transfer Courses
Course Type: Transfer
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation. Mutually Exclusive: Cannot register for ITAL 222 if student has credit for ITAL 101/ITAL 141.

ITAL 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

ITAL 263 - SECOND YEAR ITALIAN I
Short Title: SECOND YEAR ITALIAN I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ITAL 106 or ITAL 142
Description: Continuation of ITAL 142. Development of interactional competence in Italian (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Italian. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Cannot register for ITAL 263 if student has credit for ITAL 201.

ITAL 264 - SECOND YEAR ITALIAN II
Short Title: SECOND YEAR ITALIAN II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ITAL 263
Description: Continuation of ITAL 263. Development of interactional competence in Italian (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Italian. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Cannot register for ITAL 264 if student has credit for ITAL 202.

ITAL 301 - ADVANCED ITALIAN I
Short Title: ADVANCED ITALIAN I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ITAL 264
Description: This course helps students develop an ADVANCED level of proficiency in Italian through the analysis and use of the target language in the context of specific topics of interest that will vary.

ITAL 302 - ADVANCED ITALIAN II
Short Title: ADVANCED ITALIAN II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ITAL 301
Description: This course helps students develop an ADVANCED level of proficiency in Italian through the analysis and use of the target language in the context of specific topics of interest that will vary.

ITAL 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.
# Japanese (JAPA)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Short Title</th>
<th>Short Title</th>
<th>Department</th>
<th>Grade Mode</th>
<th>Course Type</th>
<th>Credit Hours</th>
<th>Restrictions</th>
<th>Course Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>JAPA 141</td>
<td>FIRST YEAR JAPANESE I</td>
<td>FIRST YEAR JAPANESE I</td>
<td>FIRST YEAR JAPANESE I</td>
<td>Cntr Lang &amp; Intercultural Comm</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Lower-Level</td>
<td>Development of interactional competence in Japanese (sociolinguistic and sociocultural knowledge) to communicate and interact with speakers of Japanese. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. No prior knowledge of this language is necessary. Placement Test is required. Effective May 15, 2019, this course does not carry D1 credit. Mutually Exclusive: Cannot register for JAPA 141 if student has credit for JAPA 101/JAPA 222.</td>
</tr>
<tr>
<td>JAPA 142</td>
<td>FIRST YEAR JAPANESE II</td>
<td>FIRST YEAR JAPANESE II</td>
<td>FIRST YEAR JAPANESE II</td>
<td>Cntr Lang &amp; Intercultural Comm</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Lower-Level</td>
<td>Continuation of JAPA 141. Development of interactional competence in Japanese (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Japanese. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Effective May 15, 2019, this course does not carry D1 credit. Mutually Exclusive: Cannot register for JAPA 142 if student has credit for JAPA 262.</td>
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<tr>
<td>JAPA 222</td>
<td>AP/OTH CREDIT IN JAPANESE LANGUAGE</td>
<td>AP/OTH CREDIT. JAPANESE LANG.</td>
<td>AP/OTH CREDIT. JAPANESE LANG.</td>
<td>Cntr Lang &amp; Intercultural Comm</td>
<td>Standard Letter</td>
<td>Transfer</td>
<td>3</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Lower-Level</td>
<td>This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation. Mutually Exclusive: Cannot register for JAPA 222 if student has credit for JAPA 101/JAPA 141.</td>
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<tr>
<td>JAPA 238</td>
<td>SPECIAL TOPICS</td>
<td>SPECIAL TOPICS</td>
<td>SPECIAL TOPICS</td>
<td>Cntr Lang &amp; Intercultural Comm</td>
<td>Standard Letter</td>
<td>Internship/Practicum, Lecture, Laboratory, Seminar</td>
<td>1-4</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Lower-Level</td>
<td>Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.</td>
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<tr>
<td>JAPA 263</td>
<td>SECOND YEAR JAPANESE I</td>
<td>SECOND YEAR JAPANESE I</td>
<td>SECOND YEAR JAPANESE I</td>
<td>Cntr Lang &amp; Intercultural Comm</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Lower-Level</td>
<td>Continuation of JAPA 264. Development of interactional competence in Japanese (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Japanese. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Cannot register for JAPA 263 if student has credit for JAPA 201.</td>
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<tr>
<td>JAPA 264</td>
<td>SECOND YEAR JAPANESE II</td>
<td>SECOND YEAR JAPANESE II</td>
<td>SECOND YEAR JAPANESE II</td>
<td>Cntr Lang &amp; Intercultural Comm</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Lower-Level</td>
<td>Continuation of JAPA 263. Development of interactional competence in Japanese (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Japanese. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Cannot register for JAPA 264 if student has credit for JAPA 202.</td>
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<tr>
<td>JAPA 301</td>
<td>THIRD YEAR JAPANESE I</td>
<td>THIRD YEAR JAPANESE I</td>
<td>THIRD YEAR JAPANESE I</td>
<td>Cntr Lang &amp; Intercultural Comm</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Upper-Level</td>
<td>Continuation of JAPA 264. Emphasis on developing reading and writing ability as more authentic materials and soci-cultural topics are introduced.</td>
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</tbody>
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2019-2020 General Announcements
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JAPA 302 - THIRD YEAR JAPANESE II
Short Title: THIRD YEAR JAPANESE II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): JAPA 301
Description: Continuation of JAPA 301. Emphasis on developing reading and writing ability as more authentic materials and socio-cultural topics are introduced.

JAPA 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

Jewish Studies (JWST)

JWST 120 - ISRAEL: LANGUAGE AND CULTURE I
Short Title: ISRAEL: LANGUAGE AND CULTURE I
Department: Jewish Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will combine a study of basic Hebrew vocabulary and grammar with literature, film, and popular culture from Israel. It will explore the history of Israel through a study of its culture and language, including poetry, songs, movies, and television.

JWST 121 - ISRAEL: LANGUAGE AND CULTURE II
Short Title: ISRAEL: LANGUAGE AND CULTURE II
Department: Jewish Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is a continuation of JWST 120, but is open to any student who can read basic Hebrew. It will explore Israeli culture through literature, music, current events, and film.

JWST 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Jewish Studies
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Laboratory, Lecture, Lecture/Laboratory, Seminar, Independent Study
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

JWST 301 - JEWISH FOOD: RELIGION, CULTURE, AND CONSUMPTION FROM THE BIBLE TO BAGELS
Short Title: JEWISH FOOD
Department: Jewish Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: "We are what we eat," the saying goes. But is that true? How do choices and practices connected to eating define us and our communities? Our study of Jewish food traditions from the Bible to the present will engage this and other important issues related to religion and identity politics. Repeatable for Credit.

JWST 317 - JEWISH GRAPHIC NOVEL
Short Title: JEWISH GRAPHIC NOVEL
Department: Jewish Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will examine contemporary works that combine image and text to depict Jewish history, culture, community, and identity in the form of the graphic novel.

JWST 318 - ISRAELI WOMEN WRITERS
Short Title: ISRAELI WOMEN WRITERS
Department: Jewish Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: In the last 25 years there has been an explosion of women's poetry and fiction in Israel. In this course we will explore Israeli women's writing since the inception of the state of Israel and examine what the work of contemporary women writers means for Israeli culture, society, and politics. Cross-list: SWGS 318.
JWST 325 - ARCHIVAL RESEARCH AND HISTORICAL METHODS: JEWISH HOUSTON
Short Title: JEWISH HOUSTON
Department: Jewish Studies
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Working with rare documents and materials in the Woodson Research Center, students will learn how to process archival collections, write finding aids, and conduct oral history interviews. By semester's end, each student will produce a major work of original research on a topic of interest in Houston/South Texas Jewish history. Instructor Permission Required.

JWST 338 - BECOMING AMERICANS: THE JEWISH IMMIGRANT EXPERIENCE IN THE UNITED STATES
Short Title: BECOMING AMERICANS
Department: Jewish Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group 1
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines the history of the American Jewish immigrant experience from colonial times to the present as a means of trying to understand how newcomers navigate the processes of adaptation, acculturation, and integration into American life. We will travel to Galveston and New York City to visit significant historical sites and immigrant communities.

JWST 348 - SEX AND GENDER IN MODERN JEWISH CULTURE
Short Title: SEX & GENDER IN JEWISH CULTURE
Department: Jewish Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: How has Jewish identity historically been constructed as gendered, and how has that affected Jewish self-perception and representation as well as the representations of others? This course explores the intersection between gender and Jewishness from several different historical and cultural perspectives, using literature, film, and philosophy. Cross-list: SWGS 348. Mutually Exclusive: Cannot register for JWST 348 if student has credit for RELI 347/SWGS 347.

JWST 351 - HOLOCAUST REPRESENTATION IN LITERATURE, ART, AND FILM
Short Title: HOLOCAUST REPRESENTATION
Department: Jewish Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will address the representation of the Holocaust in literature, art, and film. Is the Holocaust representable? What literary and artistic techniques and devices have been employed to represent the unrepresentable? Through Holocaust narrative, poetry, fiction, art, memorials, documentary and narrative film, we will explore these questions. Cross-list: FILM 351. Mutually Exclusive: Cannot register for JWST 351 if student has credit for FILM 349/RELI 349.

JWST 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Jewish Studies
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

Keck Center (KECK)

KECK 592 - TOPICS IN QUANTITATIVE BIOLOGY AND BIOMEDICAL INFORMATICS (KECK SEMINAR)
Short Title: TOPICS QUANT BIO & BIOMED INFO
Department: Keck Center
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A discussion of selected research topics in quantitative biology and biomedical informatics. Cross-list: BIOC 592. Repeatable for Credit.

KECK 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Keck Center
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.
Kinesiology (KINE)

KINE 120 - SCIENTIFIC FOUNDATIONS OF KINESIOLOGY
Short Title: FOUNDATIONS OF KINESIOLOGY
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Freshman. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An introduction to studies in the areas of human movement: anatomy and physiology, exercise physiology, biomechanics, motor learning and control, and psychological aspects of sport and exercise.

KINE 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Laboratory, Seminar
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

KINE 300 - HUMAN ANATOMY WITH LAB
Short Title: HUMAN ANATOMY WITH LAB
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An introduction to normal human anatomy structure and function. All major body systems will be examined in both lecture and laboratory format using a variety of physical and virtual models.

KINE 301 - HUMAN PHYSIOLOGY
Short Title: HUMAN PHYSIOLOGY
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will address the fundamental principles of human physiology at the cell, tissue, organ, organ system, and organism levels. Emphasis will be placed on mechanisms of function and homeostasis as achieved through the coordinated function of homeostatic control systems.

KINE 302 - BIOMECHANICS
Short Title: BIOMECHANICS
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): KINE 300
Description: An introduction to the discipline of mechanics as it applies to biological systems. Primary emphasis is placed on humans and other vertebrate species. Topics covered include the kinematics and kinetics of movement, material and functional properties of musculoskeletal tissues and the integration of musculoskeletal function from molecules and cells to whole animals. Recommended prerequisite(s): KINE 321.

KINE 310 - PSYCHOLOGICAL ASPECTS OF SPORT AND EXERCISE
Short Title: PSYC OF SPORT & EXERCISE
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Examine the psychological foundations that underlie sport and exercise participation. Recommended Prerequisite(s): PSYC 101.

KINE 311 - MOTOR LEARNING
Short Title: MOTOR LEARNING
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Designed to provide a basic understanding of the theories related to skill acquisition, development, and movement. Learners develop an understanding of the cognitive, behavioral, and neurological concepts needed to become skilled at movements. The course will also incorporate laboratory experiences in the physiological, neurological, and psychological factors of human movement.

KINE 319 - STATISTICS FOR THE HEALTH PROFESSIONAL
Short Title: STATS FOR HEALTH PROFESSIONAL
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics include displaying and describing data, the normal curve, regression, statistical inference including parametric and non-parametric analyses, and hypothesis testing. Students also have the opportunity to analyze data using SPSS and Excel software.
KINE 321 - EXERCISE PHYSIOLOGY
Short Title: EXERCISE PHYSIOLOGY
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): KINE 300 and KINE 301
Corequisite: KINE 323
Description: This course examines the acute and chronic effects of exercise on physiological functions. Topics include nutrition, energy transfer, fatigue, metabolism, disease, aging, preventative medicine, genetics, elite performance, ergogenic aids, exercise testing, and specificity of training.

KINE 323 - EXERCISE PHYSIOLOGY LABORATORY
Short Title: EXERCISE PHYSIOLOGY LABORATORY
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): KINE 300 and KINE 301
Corequisite: KINE 321
Description: This course introduces the concepts and assessment techniques used to quantify physiological function. Laboratory experiences will require students to acquire and apply knowledge of systems physiology to make direct functional assessments using themselves as subjects. A major emphasis will be placed on metabolism and energy transfer in the body. Cardiovascular, musculoskeletal, and central nervous system function will also be covered. Individual body composition, musculoskeletal levers, metabolic power and fitness, and neuromuscular control and coordination.

KINE 326 - EXERCISE EPIDEMIOLOGY
Short Title: EXERCISE EPIDEMIOLOGY
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course provides an epidemiological foundation to exercise and physical activity research related to public health. The course is designed to present evidence of the positive effects of physical activity and exercise in preventing disease, disability, and increasing quality of life. Recommended Prerequisite(s): KINE 321 or KINE 323.

KINE 351 - ADVANCED HUMAN ANATOMY LAB
Short Title: ADVANCED HUMAN ANATOMY LAB
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): KINE 300
Description: Study of the pro-sections and cadavers are used for learning and understanding human anatomy in a gross anatomy examination laboratory at BCM in the Texas Medical Center. Hands-on examination of human anatomy in this course provides supplemental practical experience for lectures in KINE 300, Human Anatomy courses.

KINE 375 - SPORTS MEDICINE INTERNSHIP
Short Title: SPORTS MEDICINE INTERNSHIP
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1-3
Restrictions: Enrollment limited to students with a class of Junior or Senior. Enrollment is limited to students with a major in Kinesiology. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Internship experience for upperclassmen in the sports medicine concentration. Department Permission Required. Repeatable for Credit.

KINE 403 - SPORT NUTRITION
Short Title: SPORT NUTRITION
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): HEAL 103
Description: This course will address current scientific knowledge about common macronutrients, micronutrients, and supplements, and how they may enhance athletic performance. The course will also focus on the role of nutritional timing, volume, and periodization to achieve practical results in endurance, strength, power and speed. Recommended Prerequisite(s): KINE 321.

KINE 410 - CASE STUDIES IN HUMAN PERFORMANCE
Short Title: CASE STUDIES HUMAN PERFORMANCE
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An advanced, multidisciplinary consideration of how humans perform. Class work will center around problem solving using a case study methodology.
KINE 412 - MOTOR CONTROL
Short Title: MOTOR CONTROL
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Exploration of the neurophysiological, behavioral, and biomechanical aspects of human movement and development.

KINE 415 - PSYCHOLOGICAL ASPECTS OF SPORTS INJURY & REHABILITATION
Short Title: PSYCHOLOGY OF SPORT INJURY
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines the psychological factors involved in sport-related injuries and the rehabilitation process. Topics include personal and situational factors influencing injury and recover, adherence to rehabilitation programs, social support, returning to play after injury, and the application of psychological interventions to optimize the recovery process. Recommended Prerequisite(s): KINE 310

KINE 419 - MOVEMENT DISORDERS
Short Title: MOVEMENT DISORDERS
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): KINE 300 and KINE 301 and KINE 311
Description: This course offers an in-depth look into selected developmental, degenerative, and hyperkINETIC movement disorders resulting in abnormal muscle tone and/or motor control. Multiple aspects of each disorder (presentation, treatment, and progression) will be considered through a variety of sources.

KINE 421 - ADVANCED TOPICS IN EXERCISE PHYSIOLOGY AND PREVENTIVE MEDICINE
Short Title: ADV TOPICS IN EX PHYS & MED
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): KINE 321 and KINE 323
Description: This course is a seminar style course that examines acute and chronic effects of exercise stimuli on physiological adaptation as relevant to health, disease and human performance. Topics will vary depending on current issues in exercise physiology. Examples include metabolism, fatigue, diabetes, genetics, muscular dystrophy, orthopedics, cancer and cardiovascular disease. The course is intended for those with a background in biology and/or physiology and interest in exercise and health.

KINE 430 - SPORTS INJURY: EVALUATION, MANAGEMENT, AND TREATMENT
Short Title: SPORTS INJURY
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): KINE 300
Description: Upper level course designed to provide students with practical application of basic science knowledge obtained in lower level courses within the department of Kinesiology. The course will address the management of common sports injuries from time of injury to return to play. At the end of the course, students will have a comprehensive understanding of athletic injuries and their management.

KINE 440 - RESEARCH METHODS
Short Title: RESEARCH METHODS
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): KINE 319
Description: Designed to introduce students to research methods, statistical techniques, and topics appropriate for experimental research.

KINE 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.
KINE 490 - SEMINAR IN SPORTS MEDICINE
Short Title: SEMINAR IN SPORTS MEDICINE
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Considers issues related to athletic injury including mechanisms, assessment, management, and rehabilitation.

KINE 495 - INDEPENDENT RESEARCH IN SPORTS MEDICINE
Short Title: INDEPENDENT RESEARCH
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-3
Restrictions: Enrollment limited to students with a class of Junior or Senior. Enrollment is limited to students with a major in Kinesiology.
Course Level: Undergraduate Upper-Level
Prerequisite(s): KINE 319 and KINE 440
Description: To provide the student with an opportunity to participate in a research project under the supervision of a Rice Kinesiology faculty member and/or an external researcher. Department Permission Required. Recommended Prerequisite(s): KINE 319 and KINE 440. Repeatable for Credit.

KINE 498 - SPECIAL TOPICS IN SPORTS MEDICINE
Short Title: SPECIAL TOPICS IN SPORTS MED
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Junior, Sophomore or Senior. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): KINE 300 and KINE 301
Description: This course offers an in-depth look into selected developmental, degenerative, and hyperkinetic movement disorders resulting in abnormal muscle tone and/or motor control. Multiple aspects of each disorder (presentation, treatment, and progression) will be considered through a variety of sources. Spring 2019 Topic: Movement Disorders. Repeatable for Credit.

KINE 499 - TEACHING PRACTICUM IN SPORTS MEDICINE
Short Title: TEACHING PRACTICUM
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Advanced teaching experience for upper level students who have demonstrated particular aptitude and interest in one area of kinesiology. Students will assist in conducting a course in which they have previously excelled. The student will learn techniques in course management, instruction, and evaluation. Department Permission Required. Recommended prerequisite(s): Junior or Senior standing, declared major in Kinesiology, and at least an 'A-' in the course serving as the practicum. Repeatable for Credit.

KORE 106 - ACCELERATED FIRST YEAR KOREAN
Short Title: ACCELERATED 1ST YR KOREAN
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Alternate first year Korean course for students with some background in Korean. This is an intensive course covering the equivalents of KORE 141 and 142. Students will be prepared for KORE 263 upon completion of the course. Effective May 15, 2019, this course does not carry D1 credit. Mutually Exclusive: Cannot register for KORE 106 if student has credit for KORE 141/KORE 142.

KORE 141 - FIRST YEAR KOREAN I
Short Title: FIRST YEAR KOREAN I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Development of interactional competence in Korean (sociolinguistic and sociocultural knowledge) to communicate and interact with speakers of Korean. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. No prior knowledge of this language is necessary. Placement Test is required. Effective May 15, 2019, this course does not carry D1 credit. Mutually Exclusive: Cannot register for KORE 141 if student has credit for KORE 106.
KORE 142 - FIRST YEAR KOREAN II
Short Title: FIRST YEAR KOREAN II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): KORE 141
Description: Continuation of KORE 141. Development of interactional competence in Korean (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Korean. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Effective May 15, 2019, this course does not carry D1 credit. Mutually Exclusive: Cannot register for KORE 142 if student has credit for KORE 106/KORE 262.

KORE 206 - ACCELERATED SECOND YEAR KOREAN
Short Title: ACCEL 2ND YEAR KOREAN
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): KORE 106
Description: Alternate second year Korean for students who have some background in the language, especially heritage students. This is an intensive course covering the equivalents of KORE 263 and 264. Mutually Exclusive: Cannot register for KORE 206 if student has credit for KORE 263/KORE 264.

KORE 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Laboratory, Seminar
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

KORE 263 - SECOND YEAR KOREAN I
Short Title: SECOND YEAR KOREAN I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): KORE 106 or KORE 142
Description: Continuation of KORE 142. Development of interactional competence in Korean (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Korean. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Cannot register for KORE 263 if student has credit for KORE 201/KORE 206.

KORE 264 - SECOND YEAR KOREAN II
Short Title: SECOND YEAR KOREAN II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): KORE 263
Description: Continuation of KORE 263. Development of interactional competence in Korean (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Korean. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Cannot register for KORE 264 if student has credit for KORE 202/KORE 206.

KORE 301 - THIRD YEAR KOREAN I
Short Title: THIRD YEAR KOREAN I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): KORE 206 or KORE 264
Description: Continuation of KORE 264. Emphasis on developing reading and writing ability as more authentic materials and socio-cultural topics are introduced.
KORE 302 - THIRD YEAR KOREAN II
Short Title: THIRD YEAR KOREAN II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): KORE 301
Description: Continuation of KORE 301. Emphasis on developing reading and writing ability as more authentic materials and socio-cultural topics are introduced.

KORE 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

Latin (LATI)

LATI 101 - ELEMENTARY LATIN I
Short Title: ELEMENTARY LATIN I
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Study of the fundamentals of Latin grammar with emphasis on acquisition of reading skills. Effective May 15, 2019, this course does not carry D1 credit. Cross-list: MDEM 101.

LATI 102 - ELEMENTARY LATIN II
Short Title: ELEMENTARY LATIN II
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): LATI 101 or MDST 101
Description: Continuation of LATI 101 and MDST 101. Graduate students require permission of instructor. Effective May 15, 2019, this course does not carry D1 credit. Cross-list: MDEM 102.

LATI 104 - AP/OTH CREDIT IN ELEMENTARY LATIN
Short Title: AP/OTH CREDIT ELEMENTARY LATIN
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Transfer
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation.

LATI 201 - INTERMEDIATE LATIN I: PROSE
Short Title: INTERMEDIATE LATIN I: PROSE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Review of grammar and readings in Latin prose. Cross-list: MDEM 211.

LATI 202 - INTERMEDIATE LATIN II
Short Title: INTERMEDIATE LATIN II
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): LATI 201 or MDST 211
Description: Readings in Virgil. Cross-list: MDEM 212.

LATI 204 - AP/OTH CREDIT IN INTERMEDIATE LATIN
Short Title: AP/OTH CREDIT INTERM. LATIN
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Transfer
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation.
LATI 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

LATI 302 - ADVANCED LATIN
Short Title: ADVANCED LATIN
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: We will read Propertius' elegies with a view to understanding the poetics of Latin love elegy and the relationship of this genre to its social context. D1 credit.

LATI 303 - ADVANCED LATIN: PLAUTUS AND TERENCE
Short Title: ADV LATIN: PLAUTUS & TERENCE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: We will read Plautus' Pseudolus and Terence's Adelphoe. We will consider the background of Greek comedy and the contemporary social situation in Rome.

LATI 304 - ADVANCED LATIN: ROMAN EPIC
Short Title: ADV. LATIN: ROMAN EPIC
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Readings in Latin epic poetry, from the Republic through late antiquity. Topics will include the nature of the epic genre, the development of Roman epic, the styles of individual epic poets, and the works' political and cultural contexts.

LATI 305 - ADVANCED LATI: HORACE
Short Title: ADVANCED LATI: HORACE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Readings from Horace.

LATI 306 - ADVANCED LATIN: OVID'S METAMORPHOSES
Short Title: OVID'S METAMORPHOSES
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Readings in Ovid's Metamorphoses. Repeatable for Credit.

LATI 307 - LATIN POETRY OF LATE ANTIQUITY
Short Title: LATIN POETRY OF LATE ANTIQUITY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Readings from Latin poetry, ca. 300 CE - ca. 600 CE. Topics include the relationship of this poetry to its classical past, its identity as 'late' literature, the historical contexts and purposes of the texts and the development of a Christian Latin poetic tradition.

LATI 308 - LUCRETIUS
Short Title: LUCRETIUS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LATI 202
Description: This course will study the great philosophical poem of the Roman Epicurean Lucretius, De Rerum Nature (On the Nature of Things). In addition to selections from the Latin, students will read the entire poem in English translation as well as scholarship on the poem from a variety of perspectives.
LATI 309 - RECOVERY, REBIRTH, REGENERATION: CLASSICS AND THE EUROPEAN RENAISSANCE
Short Title: CLASSICS/EUROPEAN RENAISSANCE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores the Renaissance reception of classical culture; it offers a comparative study of ancient and early modern cultures and literatures. Readings are conducted in both Latin and English. Authors include Cicero, Lucretius, Ovid, Augustine, Petrarch, Shakespeare, Kepler, and Galileo. Recommended Prerequisite(s): LATI 202 or MDEM 212

LATI 312 - ADVANCED LATIN: LATIN LOVE ELEGY
Short Title: LATIN LOVE ELEGY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: We will study the genre of Latin love elegy by reading selected poems of its three major exponents (Propertius, Tibullus, and Ovid), its founding figures (Catullus and Gallus), and other minor poets (Lygdamus and Sulpicia).

LATI 317 - READINGS IN LIVY
Short Title: READINGS IN LIVY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Selections from the Roman historian Livy. Close attention will be given to Livy’s prose style and narrative techniques. We will also examine his historical method, the Augustan context of his work, and the information he provides as a source on Roman history. Repeatable for Credit.

LATI 318 - READINGS IN CICERO
Short Title: CICERO
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course features readings in Cicero (1st c. BCE), the politician, orator, and philosopher of first-century BCE Rome. The single most influential writer in Latin, Cicero is also a primary source for the fall of the Roman Republic. Spring 2016 will focus on the speech Pro Caelio, addressed to a law course in defense of the Roman aristocrat Caelius Rufus, and one of Cicero’s most entertaining speeches. Repeatable for Credit.

LATI 320 - SILVER LATIN PROSE: SENECA AND TACITUS
Short Title: SENECA AND TACITUS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Latin culture during the Silver Age (AD 18-133) developed in unforeseen directions, which remain provocative and stimulating today. This course will focus on the two writers who developed new pathways in prose writing and new ideas about Rome, the moralist Seneca and the historian Tacitus. We will read one of Seneca’s moral essays, De brevitate vitae, and book four of Tacitus’ Annals.

LATI 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.
**LATI 491 - DIRECTED READING**
*Short Title:* DIRECTED READING  
*Department:* Classical and European Studies  
*Grade Mode:* Standard Letter  
*Course Type:* Independent Study  
*Credit Hours:* 3  
*Restrictions:* Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
*Course Level:* Undergraduate Upper-Level  
*Description:* Independent work for qualified juniors and seniors in genres or authors not presented in other upper level courses. Repeatable for Credit.

**LATI 492 - DIRECTED READING**
*Short Title:* DIRECTED READING  
*Department:* Classical and European Studies  
*Grade Mode:* Standard Letter  
*Course Type:* Independent Study  
*Credit Hours:* 3  
*Restrictions:* Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
*Course Level:* Undergraduate Upper-Level  
*Description:* Independent work for qualified juniors and seniors in genres or authors not presented in other upper level courses. Instructor Permission Required. Repeatable for Credit.

**LATI 504 - DIRECTED READING FOR GRADUATE STUDENTS**
*Short Title:* GR STUDENTS DIRECTED READING  
*Department:* Classical and European Studies  
*Grade Mode:* Standard Letter  
*Course Type:* Independent Study  
*Credit Hours:* 3  
*Restrictions:* Enrollment is limited to Graduate level students.  
*Course Level:* Graduate  
*Description:* Graduate level, independent reading course. Topics vary. Offered in the spring semester. Repeatable for Credit.

**LATI 677 - SPECIAL TOPICS**
*Short Title:* SPECIAL TOPICS  
*Department:* Classical and European Studies  
*Grade Mode:* Standard Letter  
*Course Type:* Laboratory, Lecture, Seminar, Internship/Practicum  
*Credit Hours:* 1-4  
*Restrictions:* Enrollment is limited to Graduate or Visiting Graduate level students.  
*Course Level:* Graduate  
*Description:* Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

**Latin American Studies (LASR)**

**LASR 158 - INTRODUCTION TO LATIN AMERICAN STUDIES**
*Short Title:* INTRO LATIN AMERICAN STUDIES  
*Department:* Span Port & Latin Amer Studies  
*Grade Mode:* Standard Letter  
*Course Type:* Lecture  
*Distribution Group:* Distribution Group I  
*Credit Hours:* 3  
*Restrictions:* Enrollment is limited to Graduate level students.  
*Course Level:* Undergraduate Lower-Level  
*Description:* This course immerses students into Caribbean and Latin American studies by introducing them to the history, society, politics, and culture of the region, through a cross-disciplinary and a multi-national approach. Taught in English. Open to all students. Cross-list: SPPO 158.

**LASR 238 - SPECIAL TOPICS**
*Short Title:* SPECIAL TOPICS  
*Department:* Span Port & Latin Amer Studies  
*Grade Mode:* Standard Letter  
*Course Type:* Seminar, Lecture, Laboratory, Internship/Practicum  
*Credit Hours:* 1-4  
*Restrictions:* Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
*Course Level:* Undergraduate Lower-Level  
*Description:* Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

**LASR 251 - CONTINUITIES AND CHANGES IN BRAZILIAN HISTORY**
*Short Title:* BRAZIL: CONTINUITY & CHANGE  
*Department:* Span Port & Latin Amer Studies  
*Grade Mode:* Standard Letter  
*Course Type:* Lecture  
*Distribution Group:* Distribution Group I  
*Credit Hours:* 3  
*Restrictions:* Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
*Course Level:* Undergraduate Lower-Level  
*Description:* An exploration of themes essential to understanding modern Brazil, such as the origins of a multi-racial society, the transition from monoculture to industry, authoritarian and democratic trends, the emergence of a uniquely Brazilian culture, and the conflicts - environmental, political, and economic - over the development of the Amazon. Cross-list: HIST 251.

**LASR 350 - PIRATES, REBELS, NARCOS: LATIN AMERICAN OUTLAWS IN THE POLITICAL-CULTURAL IMAGINATION**
*Short Title:* PIRATES, REBELS, NARCOS  
*Department:* Span Port & Latin Amer Studies  
*Grade Mode:* Standard Letter  
*Course Type:* Lecture  
*Distribution Group:* Distribution Group I  
*Credit Hours:* 3  
*Restrictions:* Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
*Course Level:* Undergraduate Upper-Level  
*Description:* The outlaw is a central figure in the political-cultural imagination on Latin America. Through a study of popular culture and literature, this course provides a critical exploration of this figure: from pirates and runaway slaves in colonial times, to nineteenth century bandits, and more recently guerrillas and narcos. Taught in English. Recommended Prerequisite(s): LASR 158
LASR 373 - WOMEN'S SOCIAL MOVEMENTS IN LATIN AMERICA AND THE CARIBBEAN
Short Title: WOMEN'S SOCIAL MOVEMENTS IN THE CARIBBEAN
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The course will examine the historical development of women's social movements in Latin America and the Caribbean. We will explore how they are transforming the region through their diverse forms of political engagement. This is a lecture/seminar course that emphasizes writing and discussion. Cross-list: SWGS 373.

LASR 374 - FEMINIST AND QUEER THEORY IN THE AFRICAN DIASPORA
Short Title: FEMINIST AND QUEER THEORY IN THE AFRICAN DIASPORA
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course provides an interdisciplinary overview of the body of Black feminist and queer theory that has emerged within the last forty years. We will examine these frameworks in order to understand how racial difference shapes gender and sexual identities. This is a seminar that emphasizes research and discussion. Cross-list: SWGS 374.

LASR 375 - LATINA AND AFRICAN AMERICAN WOMEN'S ACTIVISM IN THE URBAN METROPOLIS
Short Title: WOMEN'S ACTIVISM IN URBAN METRO
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will investigate the contemporary writings of Latina and African American women in urban spaces across the U.S. Understanding these women's experiences in relationship to each other will reveal the shared, yet distinct, trajectories that orient their struggle to resist poverty, racism, homophobia, and sexual and reproductive violence. Cross-list: SWGS 375.

LASR 376 - CHICANA AND LATINA EXPERIENCE THRU FILM
Short Title: CHICANA/LATINA EXP THRU FILM
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar explores the Chicana and Latina experience in the U.S. We examine these women's response to each other and forces of conquest, capitalism, and patriarchy. Novels, oral life histories, film, and art will be used to interrogate these women's conceptualization and assertion of feminism, activism, and history. Cross-list: SWGS 376.

LASR 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

LASR 491 - LATIN AMERICAN STUDIES CAPSTONE
Short Title: LATIN AMERICAN STUDIES CAPSTN
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Students will write original seminar paper on Latin America incorporating reading and research in English and in the Spanish or Portuguese language sources; to be drawn from their research conducted during a study abroad semester in Latin America.

Liberal Studies Core/Capstone (MLSC)

MLSC 501 - THE SHAPING OF WESTERN THOUGHT
Short Title: THE SHAPING OF WESTERN THOUGHT
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of the foundational, intellectual and artistic texts of the western tradition from Ancient Greece to Medieval Islam. Consideration of texts and images over time and in their historical development as we reflect on who we are and how we got here. Readings would include: The Gilgamesh Epic, Homer’s Iliad, Thucydides’ War, Plato’s Republic, Book of Genesis, Virgil’s Aeneid, Gospels of Luke and of Thomas, Augustine’s Confessions and The Qur’an. Department Permission Required.
MLSC 502 - OUR ENVIRONMENT: SCIENCE AND CULTURE

Short Title: OUR ENVIRONMENT: SCIENCE & CULT

Department: School of Continuing Studies

Grad Mode: Standard Letter

Course Type: Seminar

Credit Hours: 3

Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.

Course Level: Graduate

Description: This course will introduce students to the collaboration between music and other arts - poetry, drama, mythology, the visual arts (as applied to set and costume design) and dance - that often occurs during the creation of large musical works such as symphonies, operas and ballets. By investigating six musical masterpieces, it will be possible to discuss aspects of the collaborative process and how they lead to artistic fusion. Department Permission Required.

MLSC 505 - SHAKESPEARE AND FILM

Short Title: SHAKESPEARE AND FILM

Department: School of Continuing Studies

Grad Mode: Standard Letter

Course Type: Seminar

Credit Hours: 3

Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.

Course Level: Graduate

Description: This course will examine several Shakespeare plays and their theatrical productions. The instructor will teach each play as a text (and a script) first, and then study the films of these plays in an effort to understand the choices the film-makers have made in adapting Shakespeare’s plays to the screen. In this course, then, we will be concerned with studying both Shakespeare’s plays and what happens to those plays in the hands of a creative film-maker. Department Permission Required.

MLSC 506 - THE SOLAR SYSTEM, THE SUN AND THE MIND OF MAN

Short Title: SOLAR SYSTEM, SUN & MIND OF MAN

Department: School of Continuing Studies

Grad Mode: Standard Letter

Course Type: Seminar

Credit Hours: 3

Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.

Course Level: Graduate

Description: This course will explore the beauty of our near-by cosmic environment, the solar system, both as a work of nature and also from the standpoint of a challenge to the observational and analytical capabilities of human beings. The course will follow two parallel tracks: a historical/conceptual understanding of the solar system and the various paradigms or models used to describe the physical ‘universe.’ In the second track, we will tour the solar system beginning with the Sun, examining each planet and its satellite(s) in detail. The course will be non-mathematical; however, a few equations maybe show to illustrate a point. Department Permission Required.

MLSC 508 - EARTH SYSTEMS DYNAMICS

Short Title: EARTH SYSTEMS DYNAMICS

Department: School of Continuing Studies

Grad Mode: Standard Letter

Course Type: Seminar

Credit Hours: 3

Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.

Course Level: Graduate

Description: This course involves exposing the advanced student to the interactions among the several mechanisms that combine to produce a working Earth. It would include concepts of Physics, Chemistry, Biology, Geology, Meteorology and Ecology. Department Permission Required.

MLSC 509 - STEREOTYPES, PREJUDICE AND DISCRIMINATION

Short Title: STEREOTYPES, PREJUDICE, DISCRIM

Department: School of Continuing Studies

Grad Mode: Standard Letter

Course Type: Seminar

Credit Hours: 3

Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.

Course Level: Graduate

Description: In the past century social scientists have learned an enormous amount about stereotypes, prejudice and discrimination, yet they remain poorly understood by the public at large and especially by public policy makers. We all hold stereotypes, show prejudices and discriminate although not necessarily in traditional racist or sexist ways. This course will explore what social scientists, especially social psychologists, have learned about these issues especially in the last quarter century. While we will cover traditional racial and gender issues, we will also consider material related to obesity, homosexuality, mental and physical disability and age among other topics. Department Permission Required.

MLSC 510 - MUSIC AND OTHER ARTS: COLLABORATION AND FUSION

Short Title: MUSIC AND OTHER ARTS

Department: School of Continuing Studies

Grad Mode: Standard Letter

Course Type: Seminar

Credit Hours: 3

Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.

Course Level: Graduate

Description: This course will explore the beauty of our near-by cosmic environment, the solar system, both as a work of nature and also from the standpoint of a challenge to the observational and analytical capabilities of human beings. The course will follow two parallel tracks: a historical/conceptual understanding of the solar system and the various paradigms or models used to describe the physical ‘universe.’ In the second track, we will tour the solar system beginning with the Sun, examining each planet and its satellite(s) in detail. The course will be non-mathematical; however, a few equations maybe show to illustrate a point. Department Permission Required.
MLSC 513 - DNA: HUMAN IDENTITY AND ORIGINS
Short Title: DNA: HUMAN IDENTITY & ORIGINS
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: ‘Who am I?’ ‘Where did I come from?’ All branches of knowledge address these fundamental questions. This course examines how DNA informs the structure and function of humans, and how humans have in turn used DNA as a source of information to solve mysteries and improve lives. We will introduce the structure of DNA and show how it influences physical traits and is passed on from parent to child. We will review the original goals of the Human Genome Project and discuss how the surprising results that emerged from it have altered the way we view the role of genes in human development. We will examine how breakthroughs in DNA technology have allowed us to answer questions about human origins, worldwide migrations and personal genealogy and aided criminal investigations and medical treatment. This course will also use the specifics of DNA investigation as examples of science in action. Department Permission Required.

MLSC 515 - SCIENCE IN THE FIRST PERSON
Short Title: SCIENCE IN THE FIRST PERSON
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Have you wondered what it would be like to participate in a major scientific discovery, or to deal with highly competitive or cantankerous colleagues, or to convince a skeptical world that your idea is right and the rest of the world has got it wrong? By reading material written by scientists who have made major discoveries, we will look at how science is done from the first-person perspective. We will see how scientists confront troubling thoughts when they see the modern world in conflict with the nature they love, and why science has been called a ‘contact sport.’ Department Permission Required.

MLSC 517 - MODERN DRAMA ON FILM AND IN PERFORMANCE
Short Title: MODERN DRAMA
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will focus on drama not only as text but also as performance. We will read modern plays and discuss them as they are often discussed in English courses, concentrating on theme, character, world, imagery, language and dramatic action. In addition, we will also examine the ‘texts’ as scripts, as working papers for actors and directors: in short, as source materials for performance. To this end we will also view movie versions of many of these plays. Department Permission Required.

MLSC 519 - PSYCHOLOGY OF BELIEFS
Short Title: PSYCHOLOGY OF BELIEFS
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Beliefs are among the most primitive, important and central of mental constructs. Many of our reactions to others are based on our beliefs and our perceptions of theirs, and it is impossible to understand racism, prejudice, religious and national conflicts without considering disagreement over basic belief systems. While there are several ways to approach the study of beliefs, we will focus on problematic beliefs, sometimes called anomalous or bizarre beliefs. Examples are beliefs in ESP and the paranormal, astrology, the reality of events that could not possibly have occurred, scientific theories and medical cures that are rejected by most experts, as well as extreme religious and political ideas. Department Permission Required.

MLSC 523 - THEORY AND PRACTICE OF PUNISHMENT
Short Title: THEORY & PRACTICE OF PUNISHMENT
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will focus on the writings of some of the most influential scholars in sociology, legal philosophy and political theory who have contributed to the creation of ideal or normative views of legal punishment and exposing the harsh realities of how non-violent and violent criminals are actually punished. Department Permission Required.

MLSC 525 - PLAGUES AND POPULATIONS
Short Title: PLAGUES AND POPULATIONS
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will examine the interaction of pathogens and human societies. It will cover the biological nature of pathogens and disease, the human immune system and therapeutic and societal interventions to prevent and cure disease. Specific diseases will be studied to determine the biology of the disease agent, its exploitation of the human host, its transmission and epidemiology and how the disease impacts the economic, political, social structure and values of the affected populations, and how the response to disease may limit its impact. Department Permission Required.
MLSC 526 - CONTEMPORARY MORAL ISSUES
Short Title: CONTEMPORARY MORAL ISSUES
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The cardinal objective of the course is to stimulate students to analyze and evaluate the opposing viewpoints of some scholars who have expressed their views on some of the most disputed moral issues in contemporary American culture. Specifically, the required readings for the class focus on abortion, the death penalty, euthanasia, world hunger and poverty, sexual morality, drugs, addiction and affirmative action. Arrangements will be made for a tour of a prison unit and the opportunity to discuss the death penalty with several inmates. Department Permission Required.

MLSC 532 - THE GRAND DESIGN
Short Title: THE GRAND DESIGN
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The book "The Grand Design" by Stephen Hawking and Leonard Mlodinow asks the big questions: how did our universe begin and is it the only one or are there multiple parallel universes; why is there something rather than nothing; why are we here; why are the laws of nature so finely tuned that they allow a stable universe? Guided by the Hawking/Mlodinow book, this course will explore these questions. We will address the question: do the laws of physics provide for the possibility of a multiplicity of universes of which ours, by happenstance or probability, turned out to have the right set of physical constants to provide for a stable universe and hence the possibility of life or is a Devine Creator necessary? To address these questions we will take a layman's tour of basic concepts of cosmology, quantum mechanics, relativity, string theory, and extra-dimensions. Department Permission Required.

MLSC 533 - SELF-DETERMINATION IN ARAB WORLD
Short Title: SELF-DETERMINATION ARAB WORLD
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course investigates the history of the struggle for self determination and democracy in the Arab world. It provides a historical perspective by exploring the antecedents to the current so-called 'Arab Spring,' specifically by comparing the anti-colonial nationalisms of the twentieth century with the today's pro-democracy movements. It will also examine the role of the West, including the United States, in hindering or promoting anti-colonialism, nationalism and democracy in the Arab world. Department Permission Required.

MLSC 534 - HUMAN RIGHTS IN WORLD AFFAIRS
Short Title: HUMAN RIGHTS IN WORLD AFFAIRS
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course examines the history of human rights and humanitarianism from the eighteenth century Enlightenment era to the present. How did human rights become the premier moral language of our times and the idiom in which recent generations frame their idealism? While universal human rights may seem timeless, they have a long and checkered political and philosophical history. This seminar will explore that history through anthropology and legal studies as well as through case studies of non-governmental organizations. Special attention will be given to international law and shifts in international politics in the twentieth century. The course will also analyze the passions that motivated people to pursue human rights and the empathy that led them to uproot injustice. Department Permission Required.

MLSC 535 - 'PLEASE SIR, I WANT SOME MORE': DICKENS, OLIVER TWIST, POVERTY, AND SOCIAL JUSTICE
Short Title: DICKENS, TWIST, SOCIAL JUSTICE
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: During the worldwide celebrations of Charles Dickens's bicentenary in 2011-12 Oliver Twist received vibrant new attention because its treatment of children, welfare, poverty, domestic violence, and anti-Semitism seemed so relevant to contemporary issues. In this course we will read the novel alongside and against the economic and social theories and practices of Dickens's time, and ask many questions. Department Permission Required.

MLSC 536 - TRADITIONAL CHINESE CULTURE AND ITS MODERN LEGACY
Short Title: TRADITIONAL CHINESE CULTURE
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An analysis of the language, philosophy, religion, art, literature, institutions and social customs of the Qing dynasty (1644-1912), the last imperial regime and a crucial bridge between 'traditional' and 'modern' China. Although this course is intended in part as an exercise in appreciation, it is designed primarily to encourage critical and creative thinking about another place and time. Department Permission Required.
MLSC 537 - PROFILES FROM THE PAST: FAMOUS FIGURES IN WESTERN HISTORY
Short Title: PROFILES FROM THE PAST
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: What has happened during the course of time, regarding culture and human experience that has been transmitted from the ancient to the modern world? What ideas and concepts concerning subjects such as politics, art, music, and philosophy have been our legacy from the western past? This course will survey the answers to these questions covering the time of classical Greece through the period of the high middle ages. Department Permission Required.

MLSC 538 - OUR CHANGING PLANET
Short Title: OUR CHANGING PLANET
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The Earth can be studied by considering it to be made up of certain elements or systems that interact. The systems that we will consider in this course are the lithosphere, atmosphere, hydrosphere and biosphere. Not quite earth, air, fire and water, but close. We will then explore how these systems interact and finally attempt to evaluate the human impact on the entire earth. Department Permission Required.

MLSC 539 - IMMIGRATION AND THE STATE: EUROPE AND THE US IN COMPARATIVE PERSPECTIVE
Short Title: IMMIGRATION AND THE STATE
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course traces the history of immigration within and to Europe and to the United States from the late 19th century to the present. How did the United States and the European states elicit, regulate or contain successive waves of labor and colonial migrants, stateless persons and asylum seekers? And what type of legal, political and cultural debates did the 'immigrant question' raise in the public sphere since the advent of mass migration? We will discuss key issue regarding immigration including political asylum, guest-worker programs, assimilation and integration debates, and immigrants and the welfare state Department Permission Required.

MLSC 540 - IS ANYBODY OUT THERE: THE SEARCH FOR LIFE BEYOND EARTH
Short Title: IS ANYBODY OUT THERE
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Imagine what the reaction would be if life were discovered on another planet in the solar system or on a planet orbiting another star. With the dawn of the space age tools have become available to tackle this problem with serious scientific research. This course will look at some of this research and examine the prospects for finding life. Department Permission Required.

MLSC 541 - HUMAN RIGHTS, GENDER EQUALITY AND RELIGIOUS BELIEFS
Short Title: EQUALITY & RELIGIOUS BELIEFS
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This class aims to explore the intertwined relationship between gender equality, human rights and religious beliefs globally. Additionally, the class will focus on realities and misconceptions on women's status in the Middle East and North Africa and explore the impact of the socio-cultural and political context on shaping gender relations across the region. Department Permission Required.

MLSC 542 - THE EPIC JOURNEY
Short Title: THE EPIC JOURNEY
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This class explores some of the classic texts of Western literature, books from the ancient world that have had, and continue to have a formative influence on who we are and how we got here. The works we will study all share a common theme: the epic journey. We explore different variations of this theme, follow ancient travelers on their journeys, and reflect with them about their discoveries. Department Permission Required.
MLSC 543 - THE CITY IN LITERATURE
Short Title: THE CITY IN LITERATURE
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: We will read a variety of writers from both the nineteenth and twentieth centuries. For some historical background and city discourse, we will also read parts of Lewis Mumford's The City in History, Jane Jacobs's The Death and Life of Great American Cities, and the essays of Michel de Certeau, Georg Simmel, E B White, among others. Department Permission Required.

MLSC 544 - WRITING LITERATURE FOR CHILDREN
Short Title: WRITING CHILDREN'S LITERATURE
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Many of us have beloved stories we either read or that someone read to us when we were children. This course returns us to those roots and delves deeply into the meaning and purpose of children's literature with the ultimate goal of trying our hand at writing several original pieces. Students will produce a portfolio of creative work that includes poetry, fiction, and/or drama for very young and older children. Department Permission Required.

MLSC 545 - WINDOW TO THE SOUL: EXPLORING RELIGION AND ETHNICITY THROUGH MUSIC
Short Title: RELIGION & ETHNICITY MUSIC
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will explore the music of a variety of religious and ethnic groups in an attempt to bridge differences and create understanding among those of different traditions. Each class session will be based upon the music connected to a specific religious or ethnic group. Department Permission Required.

MLSC 546 - THE ROLE OF CHEMISTRY IN HISTORY
Short Title: ROLE OF CHEMISTRY IN HISTORY
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Could the outcome of a war be decided simply on the material chosen for the buttons on the soldier's garments? What in pantyhose was desired for WWII? How did phenols and formaldehyde lead to a worldwide revolution via plastics? These questions and more will be answered as we explore important molecules that have changed the course of human history. Department Permission Required.

MLSC 547 - PROFILES FROM THE PAST II: FAMOUS FIGURES IN WESTERN HISTORY
Short Title: PROFILES FROM THE PAST II
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers the span of years from the end of the middle Ages through the eve of the French Revolution. In addition to the study of a selected group of people from these years, there will also be an examination of the Renaissance, the Reformation, the Enlightenment, and Absolutism. Department Permission Required.

MLSC 548 - HISTORY OF PHILOSOPHY SET IN INTERDISCIPLINARY CONTEXT
Short Title: HIST OF INTERSIC PHILOSOPHY
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will introduce students to leading figures, ideas and arguments of the history of western philosophy, set in interdisciplinary context in this interdisciplinary MLS program. For a general educated audience philosophy is best approached from multiple perspectives - historical, literary, scientific, religious, artistic - and we will take this approach.
MLSC 549 - COMPARATIVE IMPERIAL PLEASURE GARDENS: POWER AND LANDSCAPE  
**Short Title:** IMPERIAL PLEASURE GARDENS  
**Department:** School of Continuing Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This course examines pre-modern designed landscapes used for crating, declaring, and reading social and political claims. While understanding the garden as art form and sacred space, we focus on the relationship between landscape and power in a globally comparative context. Department Permission Required.

MLSC 550 - MODERN ASTRONOMY AND OUR PLACE IN THE UNIVERSE  
**Short Title:** MODERN ASTRONOMY  
**Department:** School of Continuing Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** An introduction to modern astrophysics beyond the solar system including a brief history of astronomy from antiquity through Galileo and Newton. Our modern understanding of the formation, evolution, and death of stars; the composition and evolution of galaxies; the structure and evolution of the universe will then be surveyed. Department Permission Required.

MLSC 551 - PROFILES FROM THE PAST III: FAMOUS FIGURES IN WESTERN HISTORY  
**Short Title:** PROFILES FROM THE PAST III  
**Department:** School of Continuing Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This course will cover the span of years from the beginning of the French Revolution to the middle of the 20th century. In addition to the study of selected individuals such as Napoleon Bonaparte, Czar Alexander I, Cecil Rhodes, Gregor Rasputin, Vladimir Lenin, Joseph Stalin, Adolf Hitler and Mohandas Gandhi, there will be examinations of Romanticism, Nationalism, Imperialism, and Fascism. Department Permission Required.

MLSC 552 - CONSERVING BIODIVERSITY  
**Short Title:** CONSERVING BIODIVERSITY  
**Department:** School of Continuing Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Many scientists have coined the current geological age as the ‘Anthropocene’ in reference to the impact of mankind on the planet. This course will examine biodiversity, how biodiversity influences our lives, the forces that affect biodiversity worldwide, and how we can protect it. Local species and ecosystems will be highlighted.

MLSC 553 - SOLVING THE CLIMATE CHALLENGE  
**Short Title:** SOLVING THE CLIMATE CHALLENGE  
**Department:** School of Continuing Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This course overviews climate science and explores strategies for transforming electricity, transportation, and agriculture to avert the impacts of abrupt climate change. Department Permission Required.

MLSC 554 - MY FAVORITE NOVELS AND GREAT FILMS MADE FROM THEM  
**Short Title:** MY FAVORITE NOVELS AND FILMS  
**Department:** School of Continuing Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** In this class we will carefully examine four great novels from different eras: 'Pride and Prejudice,' 'Great Expectations,' 'One Flew Over the Cuckoo's Nest,' and 'Atonement,' to see what makes them so successful. Then we will watch and discuss the great films made from them. Department Permission Required.

MLSC 555 - THE POLITICAL PHILOSOPHY OF THE AMERICAN REVOLUTION  
**Short Title:** POL PHIL OF AMER REVOLUTION  
**Department:** School of Continuing Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This course will 1) discuss the significance of some events in Colonial American that precipitate the clarion call the dissolve forever all political ties to Great Britain: 2) discuss the ideological origins of the American Revolution in the key documents, specifically the Declaration of Independence, the Constitution, the Bill of Rights and the Federalist Papers. Department Permission Required.
MLSC 556 - HEAVEN AND HELL: FROM DANTE TO MILTON AND BEYOND
Short Title: LITERATURE FROM HEAVEN & HELL
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The ultimate end of human life resides in landscapes defined by aspiration or terror, punishment or reward. Thus heaven and hell are places frequently conjured by the literary imagination. This course looks closely at the implications of such imaginings from Dante's Divine Comedy to Milton's Paradise Lost to the present. Department Permission Required.

MLSC 557 - EARLY MODERN ISLAMIC WORLD: ART AND EMPIRE
Short Title: ISLAMIC EMPIRES
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to Islamic empires of the early modern Muslim world: Ottoman, Safavid, and Mughal. Focus on art, architecture, literature, religion, kingship, family, which shape the cultural heritage of the Muslim world today. Opportunity to study works of art produced in these imperial workshops at MFAH. Department Permission Required.

MLSC 558 - EVOLUTION AND SOCIETY
Short Title: EVOLUTION AND SOCIETY
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The science of evolution has come a long way since Charles Darwin first proposed his theory for how species change through natural selection in 1859. This course will provide an overview of modern evolutionary biology, with a focus on its relevance for 21st century society. Department Permission Required.

MLSC 559 - ENVIRONMENTAL LITERATURE
Short Title: ENVIRONMENTAL LITERATURE
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Environmental Literature will focus on nature essay writers, ecopoets, and ecocriticism. The course will include poetry and other literary writing designed to inspire and creatively capture the natural environment and nonfiction nature writing that highlights major concerns about the environment and aims to transform the thoughts and behavior of society. Department Permission Required.

MLSC 560 - WOMEN IN SOUTHERN LITERATURE
Short Title: WOMEN IN SOUTHERN LITERATURE
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Consider the authentic models for medievalist works, establish the romanticizing methodology, and then observe how medievalism plays out in the concert hall, film, and other media. Department Permission Required.

MLSC 561 - HISTORY OF SOUTH ASIA: THE ORIGINS OF INDIA AND PAKISTAN
Short Title: HISTORY OF SOUTH ASIA
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A broad introduction to the history of the cultural, religious, economic and political systems of South Asia, this course explores the centuries-long development of Hinduism and Buddhism, rise of Islamic state power and establishment of British control, culminating in resistance movements among South Asians and establishment of modern nation states, alongside the wrenching experience of Partition. Department Permission Required.

MLSC 562 - MUSIC AND MEDIEVALISM
Short Title: MUSIC AND MEDIEVALISM
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines the history and aesthetics of medievalist music in the context of literature, drama, and film. We consider the authentic models for medievalist works, establish the romanticizing methodology, and then observe how medievalism plays out in the concert hall, film, and other media. Department Permission Required.
**MLSC 563 - A HISTORY OF TUDOR ENGLAND**

*Short Title:* A HISTORY OF TUDOR ENGLAND  
*Department:* School of Continuing Studies  
*Grade Mode:* Standard Letter  
*Course Type:* Seminar  
*Credit Hours:* 3  
*Restrictions:* Enrollment is limited to Graduate level students.  
*Course Level:* Graduate  
*Description:* At the end of the long and brutal Wars of the Roses, a new royal dynasty emerged in England to great acclaim and relief - and uncertainty. Henry Tudor, who styled himself as Henry VII, began a successful reign and the beginning of a family dynasty lasting a little longer than a century. This course will study the Tudor century. Department Permission Required.

**MLSC 564 - THE POLITICS OF WORLD WAR TWO IN EUROPE**

*Short Title:* THE POLITICS OF WORLD WAR TWO  
*Department:* School of Continuing Studies  
*Grade Mode:* Standard Letter  
*Course Type:* Seminar  
*Credit Hours:* 3  
*Restrictions:* Enrollment is limited to Graduate level students.  
*Course Level:* Graduate  
*Description:* The course is an in-depth exploration of the Second World War in Europe. Hitler’s conquest of Europe elicited political, social, economic and demographic upheavals in all parts of the continent. While closely following the military chronology of the conflict, our course will examine the radical transformations brought about by Nazi rule in Western and Eastern Europe as well as the Balkans. Department Permission Required.

**MLSC 565 - PAST AND FUTURE CLIMATE CHANGE: NATURAL VERSUS HUMAN INFLUENCE**

*Short Title:* PAST AND FUTURE CLIMATE CHANGE  
*Department:* School of Continuing Studies  
*Grade Mode:* Standard Letter  
*Course Type:* Seminar  
*Credit Hours:* 3  
*Restrictions:* Enrollment is limited to Graduate level students.  
*Course Level:* Graduate  
*Description:* Have humans really altered the course of natural climate change? Can this course be altered? This course introduces students to the methods used by scientists to study Earth’s climate history. We will examine methods used to study Earth’s climate evolution over hundreds of millions to decadal time scales. Why did Earth’s climate undergo extreme changes from ‘icehouse’ conditions when much of its surface was covered by ice, to ‘greenhouse’ conditions when the planet was much warmer than present? What was the impact of these changes on Earth’s inhabitants? Lastly, we will use Earth’s climate history as context for understanding the role of humans in altering the course of our planet. How reliable are climate predictions and what can be done to curtail climate change? Department Permission Required.
MLSC 606 - THE HEBREW BIBLE AND ITS INTERPRETERS
Short Title: HEBREW BIBLE/ITS INTERPRETERS
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar seeks to acquaint students with the principal parts of the Hebrew Bible/Old Testament, with the modern, historical-critical study of the Bible as an academic discipline, and a few episodes in the recent history of the Bible in the West. Our reading of the biblical literature will primarily be historical-critical in the sense that it emphasizes that the Hebrew Bible is rooted in the ancient Near East, its history and literature. At the same time we will be sensitive to traditional, Jewish and Christian readings of the Bible as they evolved over two millennia and examine how these faith-based traditions arose, how they differ from modern critical approaches and how the two can complement each other. Department Permission Required.

MLSC 610 - PSYCHOLOGY OF HAPPINESS
Short Title: PSYCHOLOGY OF HAPPINESS
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Truth, beauty and, yes, happiness, are issues that have engaged thoughtful people over the centuries. What is happiness (and what makes us happy)? Until recently we have relied on philosophers and religious thinkers for answers to that question, and many of them have provided useful recipes that seem to work for at least some people some of the time. The last century or so has seen many psychologists and self-help gurus who have also handed out (well, more often sold) recipes that generally seem to be less satisfactory than the wisdom of the ancients. Interestingly until recently psychologists have tended to ignore this seeming important topic, but in the past 10 or so years social and personality psychologists, neuroscientists and even economists have begun to pose empirically answerable questions about happiness and to find some data-based answers to what makes people happy. In this course we will read some of the traditional wisdom provided by religious and philosophical thinkers, but we will focus primarily on questions and issues that are subject to empirical resolution. Department Permission Required.

MLSC 612 - THE DEAD SEA SCROLLS
Short Title: THE DEAD SEA SCROLLS
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The discovery of the Dead Sea Scrolls a little over a half a century ago in the Judean desert has been celebrated as the most significant manuscript discovery of the 20th century. Students will study the fascinating history of the discovery and publication of the Scrolls. They will read the most important Scrolls, learn about the beliefs and practices of the Jewish group that authored them and discuss what can be learned from the Scrolls about the nature of Early Judaism and the origins of Christianity. Department Permission Required.

MLSC 614 - PUBLIC SPEAKING
Short Title: PUBLIC SPEAKING
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is designed to give the student exposure to and experience using basic principles and skills of oral communication in the public context. Emphasis will be on the development of speech organization, support and delivery. Informative and persuasive speeches will be practiced. An important outcome of the course is that the student better understand and appreciate the important role public speaking plays in modern society. Instructor Permission Required.

MLSC 615 - TEN MASTERPIECES OF NORTHERN RENAISSANCE ART
Short Title: MASTERPIECES OF REN ART
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will introduce students to the great ‘masterpieces’ of painting produced in Northern Europe during the Renaissance of the fifteenth and sixteenth centuries. Each week we will focus on a single work of art from this period and explore a constellation of issues around the creation and reception of the painting. Students will learn in-depth methods of visual analysis and interpretation of works within their historical context. These same skills and strategies may be applied to the full range of western painting and provide useful tools for enriching visits to museums or experiences of European travel. Department Permission Required.
MLSC 616 - OCEANWAYS OF THE BRITISH EMPIRE  
**Short Title:** OCEANWAYS OF THE BRITISH EMPIRE  
**Department:** School of Continuing Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Never in the history of imperial expansion has there ever been anything that compared to the British Empire as it reached its height in the days of Queen Victoria. In size the Empire was supreme, ruling the largest area and the largest number of people. This course will examine these aspects of the Victorian Empire and compare them with imperial activities of the present day. Department Permission Required.

MLSC 617 - CREATIVE NONFICTION  
**Short Title:** CREATIVE NONFICTION  
**Department:** School of Continuing Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Creative nonfiction takes many forms, including expository writing, personal essay, narrative story-telling, literary journalism, memoir, nature and science writing, travel and food writing, historical narrative, biographical narrative, and academic and cultural criticism. This course is designed to help students read and write creative nonfiction with a focus on the voice, structure, messages, style, and technique found in contemporary creative nonfiction. The material covered applies to the humanities, the social sciences, and the sciences. Department Permission Required. Repeatable for Credit.

MLSC 618 - THE AWAKENING OF RUSSIA: A MUSICAL AND HISTORICAL PASSAGE  
**Short Title:** THE AWAKENING OF RUSSIA  
**Department:** School of Continuing Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** There was a spectacular flowering of Russian culture in the aftermath of the death of Czar Nicholas I (1825-55). Ushered in was a relatively liberal ear which, combined with a powerful natural upsurge, yielded a period of remarkable creativity - noted especially in this course by Russian music. This interdisciplinary course will couple the historical and musical threads of Russian culture. Department Permission Required.

MLSC 620 - MASTERPIECES OF THE POETIC TRADITION  
**Short Title:** POETIC TRADITION MASTERPIECES  
**Department:** School of Continuing Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This course will introduce students to the appreciation and analysis of poetic masterpieces. We will focus on poetry produced in the English and American literary tradition, with particular attention paid to the poems, poets, and cultures that influence the development of those traditions. Department Permission Required.

MLSC 621 - ART MUSIC IN WESTERN EUROPEAN CULTURE II  
**Short Title:** ART MUSIC EUROPEAN CULTURE II  
**Department:** School of Continuing Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This is the second course in a sequence devoted to advanced musical understanding. In the first part of this sequence (Art Music in Western European Culture I) we will examine a wide range of music from a single time period. In this, the second part of the sequence, we will instead concentrate in depth upon one piece of music per class and will combine a focus upon advanced listening skills with music specific research techniques. The first weeks of the class will review musical listening, discourse, and the specialized skills necessary for musical research. Subsequently, each class session will focus upon a major work by a significant composer such as Mozart, Beethoven, Schubert, Mahler, and Debussy, among others. Department Permission Required.

MLSC 622 - THE SCEPTER'D ISLE: ANCIENT AND MEDIEVAL BRITAIN  
**Short Title:** ANCIENT AND MEDIEVAL BRITAIN  
**Department:** School of Continuing Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** From the murky prehistoric times of Stonehenge and New Grange to the tumultuous times of Henry II and Eleanor of Aquitaine, the dramatic combinations of history and myth have continually fascinated lovers of the British Isles. This course will explore ancient and medieval Britain, meandering from prehistoric sites to the early invaders, from the delightful legends of Glastonbury to the centuries of Roman invasions, from the Anglo-Saxon heptarchy to the Norman invasion, and from the hegemony of the Roman Catholic church to the challenge of secular kings. Department Permission Required.
MLSC 623 - WHAT MODERN WAS: CELEBRATING THE CENTENNIAL
Short Title: CELEBRATING THE CENTENNIAL
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: What constituted ‘modern music’ in 1912? Works such as Arnold Schoenberg’s Perrot lunaire, Claude Debussy’s Jeux, and compositions by American composers Henry Cowell and Charles Ives set the bar for musical modernism that year. But other pieces from France, Germany, Russia, Spain, Hungary and England suggested that the future would present major changes. What did audiences in the United States know about such music? What did they think about it? What did the founders of the Rice Institute think about the new musical trends? How did the music played at the opening festivities of the Rice Institute reflect these perceptions of musical modernism? This course will consider these questions from a variety of parameters and get a sense of ‘what modern was’ and its relationship to the momentous events of 1912 in Houston, Texas. Department Permission Required.

MLSC 624 - ADVANCED CREATIVE NONFICTION
Short Title: ADVANCED CREATIVE NONFICTION
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course offers students an opportunity to continue to practice writing creative nonfiction in a guided workshop format. The primary emphasis in the course will be on the professor and students reading and providing constructive feedback on the students’ creative nonfiction writings. In addition, the students will read further examples of various types of creative nonfiction writing and complete writing exercises designed to allow them to work on the voice, structure, and technique of their writing. This course is designed for students with experience in writing creative nonfiction, such as completion of MLSC 617 or a similar course or creative writing workshop experience elsewhere. For those who have not taken a creative nonfiction course in the MLS program, consultation with the instructor is recommended before enrolling. Department Permission Required.

MLSC 625 - THE SHAPES OF POETRY: A WORKSHOP
Short Title: THE SHAPES OF POETRY
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines fundamental architecture of poetry. How do poets create a sense of shape? What are the nuts and bolts of a poem? Students will read widely in the history of poetry, from traditional meters and historical forms to contemporary free verse and experimental or open forms. Part workshop and part seminar, this course will feature critical and creative assignments and is designed for writers and non-writers of any level of experience. Department Permission Required.

MLSC 626 - THE BROTHERHOOD: LIVES AND LOVES OF THE PRE-RAPHAELITES
Short Title: PRE-RAPHAELITES LIVES & LOVES
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The Pre-Raphaelite Brotherhood (PRB), founded in 1848, was a small group of British artists who boldly challenged the conventions of Victorian-era art and the materialism of industrialized England. While the PRB influenced the British art world for the remainder of the century, this course will focus on the intriguing personal lives of the artists, including Dante Gabriel Rossetti, William Holman Hunt, and John Millais, rather than the art they created. These artists, along with their wives, paramours, and models (often all one and the same) were part of a highly prolific Victorian creative class which for this course will revolve around the locale of central London and the influence of the towering figure of art and architecture - critic John Ruskin. Department Permission Required.

MLSC 627 - JOHN RUSKIN AND HIS WORLD
Short Title: JOHN RUSKIN AND HIS WORLD
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will examine John Ruskin (1819-1900), who rose from a troubled childhood to become one of the most influential critics of art and architecture of his century, forever fulminating the notion that art had a moral purpose and especially that art and architecture produced in France and Italy in the Middle Ages. Department Permission Required.

Short Title: THE BIRTH OF MODERNISM
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: One hundred years have passed since the momentous decade that brought us the beginnings of modernism, the ‘war to end all wars,’ and post war cynicism. This course will examine those tumultuous years from the perspective of the wide array of music written to satisfy all types of tastes and circumstances. Department Permission Required.
MLSC 629 - EFFECTIVE THINKING
Short Title: EFFECTIVE THINKING
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The basis of success in everything, academics, personal relationships, professional life, business leadership, or anything, is effective thinking. This course will address the process and practice of how to think effectively, analytically, and creatively. Department Permission Required.

MLSC 630 - POST-BOP: JAZZ'S GOLDEN AGE
Short Title: JAZZ'S GOLDEN AGE
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this course we will explore the music of some of the most influential and important jazz musicians of the period, and we will also study the social, cultural and political context within which the music was created. We will focus in particular on Charlie Parker, Thelonious Monk, Billie Holiday, Miles Davis, Charles Mingus, and John Coltrane. Department Permission Required.

MLSC 631 - INTRODUCTION TO READING AND WRITING FICTION
Short Title: INTRO READING WRITING FICTION
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course provides an introduction to reading fiction critically and writing short fiction successfully. The reading portion of the class focuses on the primary elements of fiction: scenes, tension and conflict, character, point of view, structure, voice, and dialogue. For the writing portion, students will compose original prose and provide feedback on one another's work in a workshop format. Department Permission Required.

MLSC 632 - MUSIC MYTH AND MADNESS
Short Title: MUSIC MYTH AND MADNESS
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A study of biographical narratives about musicians including Bach, Bob Dylan, Thelonious Monk, Mozart, and Schumann. Considers the nature of creativity and inspiration. Examines the extent to which biography borrows from mythology and literary fiction. Materials include memoirs, letters, novels, and films. Department Permission Required.

MLSC 633 - HOW TO READ A NOVEL
Short Title: HOW TO READ A NOVEL
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: We will start this course by making one of Jane Austen's novels our "norm" and then read a survey of the novel's great variety through the nineteenth, twentieth, and twenty-first centuries. As we read the novels, we will keep asking what we mean by narrative, point of view, the nature of character, the paradigm of character relationships each novel creates, and the meaning of the end. Department Permission Required.

MLSC 634 - CONCEPTS OF MODELS, METAPHORS AND ANALOGIES
Short Title: MODELS, METAPHORS & ANALOGIES
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will start by developing the concepts of model, metaphor, and analogy. The model is a basis for the scientific method and rational thought. The metaphor is a powerful tool in literature and description. Analogy ties all of this together. We will finish by looking at a computer simulation (model) of the world. Department Permission Required.

MLSC 635 - THE ORIGINS OF CHRISTIANITY
Short Title: THE ORIGINS OF CHRISTIANITY
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An examination of the origins and earliest history of Christianity, from Jesus to the second century CE. The class is based on a close reading of texts; Jewish texts; texts from the Old Testament; and Christian texts from the second century CE. Department Permission Required.

MLSC 637 - THE LITERATURE OF THE SIXTIES
Short Title: THE LITERATURE OF THE SIXTIES
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Some decades are not simply a ten-year period but a cultural phase. The Sixties, it seems, started in 1963 with the assassination of JFK and lasted until 1975, when we withdrew our military forces from Saigon and quit the war we lost. The literature of the period reflects some of this upheaval-new themes, greater candor, many different kinds of experiments.
MLSC 638 - THE ART AND ART HISTORY OF EUROPE IN THE LONG NINETEENTH CENTURY (1789-1918)
Short Title: 19TH-CENTURY EUROPEAN ART
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will consider European art from the long nineteenth century, looking in detail at the key movements and artists from this dramatic period of history. We will begin by placing Neo-Classicism in the context of the emergence of the French Revolution, while ending with the emergence of abstraction in the era of the First World War. In so doing we will also consider the varied art historical methods through which scholars have addressed the art of this period. Department Permission Required.

MLSC 639 - EXPLORING THE ARTS
Short Title: EXPLORING THE ARTS
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is designed to introduce students to an array of contemporary and traditional arts practices and to deepen experience and understanding of those arts through writing. Engaging with the arts offerings available during the semester, the course will cover concepts in theater, opera, dance, and art exhibitions. Department Permission Required.

MLSC 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

MLSC 700 - CAPSTONE I
Short Title: CAPSTONE I
Department: School of Continuing Studies
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The capstone course is designed to help students utilize the knowledge gained in the previous courses and to demonstrate mastery of the intellectual skills required for a Master of Liberal Studies degree. The capstone course will culminate in an extensive written paper (or original creative work such as poetry or fiction) and an oral presentation to MLS faculty and fellow students. The capstone course may be completed in one term as one course, or, optionally, the student may with the advisor’s approval, take two terms to complete the capstone. The determination as to whether the capstone will be a one or two term project should, in most cases, be made before the start of the first term. Department Permission Required.

MLSC 701 - CAPSTONE II
Short Title: CAPSTONE II
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Continuation of MLSC 700 Capstone I; or for students who plan to take only one term to complete the capstone. Department Permission Required.

MLSC 750 - INTRODUCTION TO DIPLOMA RESEARCH
Short Title: INTRO TO DIPLOMA RESEARCH
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students in the DLS program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Open only to students in the Diploma in Liberal Studies Program. The purpose of this course is to prepare students for diploma research in general and for the diploma project research in particular. The course will accomplish this by giving students an opportunity to gain knowledge of research in the two chosen disciplines outlined in their Diploma Proposal. Department Permission Required.
MLSC 797 - ADVANCED INDEPENDENT READINGS
Short Title: ADVANCED INDEPENDENT READINGS
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment limited to students in the DLS program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Independent study under faculty supervision and open only to students in the Diploma in Liberal Studies Program. The primary purpose of this course is to allow for study centrally relevant to the two disciplines chosen by the DLS student not covered by existing coursework in liberal studies curriculum. Department Permission Required. Repeatable for Credit.

MLSC 798 - DIPLOMA PROJECT I
Short Title: DIPLOMA PROJECT I
Department: School of Continuing Studies
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment limited to students in the DLS program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Research for Diploma Project. Open only to students in the Diploma in Liberal Studies Program. This is the first of a two-term course sequence in which the diploma student works on his or her diploma project under the supervision of the diploma first reader (advisor), second reader and third reader. Department Permission Required.

MLSC 799 - DIPLOMA PROJECT II
Short Title: DIPLOMA PROJECT II
Department: School of Continuing Studies
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment limited to students in the DLS program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Research for Diploma Project. Open only to students in the Diploma in Liberal Studies program. This is the second and final course in the two-term course sequence in which the diploma student works on his or her diploma project under the supervision of the diploma first reader (advisor), second reader and third reader. Department Permission Required.

Lifetime Phys Activity Credit (LPCR)

LPCR 200 - ADVANCED MENTAL TRAINING
Short Title: ADVANCED MENTAL TRAINING
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is designed to focus on the psychology of performance excellence. Specifically, it will highlight the relationship between mental toughness and performance and will explore the ways in which the psychological skills training can be applied to a variety of performance setting (e.g. business, music, drama and sport). LPCR 200 is excluded and cannot be substituted or used to meet the University LPAP Requirement for graduation. Instructor Permission Required.

LPCR 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

LPCR 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

Lifetime Phys Activity Program (LPAP)

LPAP 100 - INTRODUCTION TO TENNIS
Short Title: INTRODUCTION TO TENNIS
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This class will provide the student with foundational knowledge of tennis skills and rules as well as appropriate sports person-like qualities so that the game can be played with confidence and competence throughout one's lifetime.
LPAP 101 - STRETCH LAB
Short Title: STRETCH LAB
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: As a basic component of fitness, flexibility is needed to perform everyday activities with a relative amount of ease. To get out of bed, lift objects, or clean our room, we need healthy range of motion around our joints. Over time, our inefficient habits of movement, and the decreased suppleness of muscle tissue that occurs naturally as we age can lead to reduced mobility of joints and compromised body positions. Staying active and stretching regularly reduces the chance of experiencing occasional and chronic musculoskeletal pain and helps prevent this loss of mobility. No previous experience is required and all fitness levels are welcome.

LPAP 102 - PENCAK SILAT: INDONESIAN MARTIAL ARTS
Short Title: PENCAK SILAT
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will introduce students to the traditional martial arts of Indonesia, also known as pencak silat. Topics include fundamentals of self-defense, physical conditioning, yoga, and traditional dance. Because of its longstanding cultural relevance, pencak silat's history, philosophy and widespread impact will also be explored.

LPAP 104 - INTRODUCTION TO RACQUETBALL, SQUASH, AND BADMINTON
Short Title: INTRO RACQUET SPORTS
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An introduction to basic skills and knowledge necessary to play badminton, racquetball and squash at the beginning level.

LPAP 107 - INTERMEDIATE TENNIS
Short Title: INTERMEDIATE TENNIS
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This class is intended for an intermediate level player. Course content includes demonstration of and brief lectures on the American Style Foxtrot and Waltz. Students will participate in drills created to improve footwork, arm positioning, leading and following skills.

LPAP 109 - INTRODUCTION TO FOXTROT AND WALTZ
Short Title: INTRO TO FOXTROT AND WALTZ
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An introduction to basic skills and knowledge necessary to perform everyday activities with a relative amount of ease. To get out of bed, lift objects, or clean our room, we need healthy range of motion around our joints. Over time, our inefficient habits of movement, and the decreased suppleness of muscle tissue that occurs naturally as we age can lead to reduced mobility of joints and compromised body positions. Staying active and stretching regularly reduces the chance of experiencing occasional and chronic musculoskeletal pain and helps prevent this loss of mobility. No previous experience is required and all fitness levels are welcome.

LPAP 110 - INTRODUCTION TO GOLF
Short Title: INTRODUCTION TO GOLF
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): LPAP 110
Description: This class will introduce students to the traditional game of golf. Course content includes demonstration of and brief lectures on the American Style Foxtrot and Waltz. Students will participate in drills created to improve footwork, arm positioning, leading and following skills.

LPAP 111 - INTERMEDIATE GOLF
Short Title: INTERMEDIATE GOLF
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): LPAP 110
Description: This course will provide a broad overview of sport psychology concepts that are relevant to most performance related activity. Specifically, the class will cover topics designed to enhance performance such as arousal and anxiety regulation, behavior modification, goal setting, leadership and communication skills, intrinsic motivation and self-confidence.
LPAP 115 - MINDFULNESS: MEDITATION FOR STRESS REDUCTION  
Short Title: MINDFULNESS MEDITATION  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: This course is designed to help students cultivate mindfulness by intentionally bringing awareness to the present, and noticing and letting go of judgment, critical thoughts and preconceived ideas. The course consists of instruction in and practice of mindfulness meditations as well as discussion of integrating mindfulness into everyday life.

LPAP 116 - INTERMEDIATE SALSA/CHA CHA  
Short Title: INTERMEDIATE SALSA/CHA CHA  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Activity Course  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Prerequisite(s): LPAP 138  
Description: Students will develop increased proficiency at leading and following and creating complex turns/footwork as are commonly utilized in American style salsa and cha cha.

LPAP 117 - INTRODUCTION TO OUTDOOR LEADERSHIP  
Short Title: INTRO TO OUTDOOR LEADERSHIP  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: This course will establish a foundation for leading groups in the outdoors. An 8-week class schedule covers leadership theory, risk management and facilitation. The course is supplemented with required outdoor weekend trips to put new skills into practice. There is a $45 fee associated with this course. Instructor Permission Required.

LPAP 118 - INTRODUCTION TO TEAM SPORTS  
Short Title: INTRODUCTION TO TEAM SPORTS  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Activity Course  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: This course is designed to offer an introduction to the skills, basic rules, and strategies of a variety of team sports.

LPAP 119 - INTRODUCTION TO TEAM SPORTS OFFICIATING  
Short Title: INTRO TEAM SPORTS OFFICIATING  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Activity Course  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: This course is designed to introduce students to the fundamental rules, regulations, mechanics and strategies required to officiate a multitude of team sports. In addition, students will develop strong interpersonal and communication skills necessary for effective game management.

LPAP 120 - INTRODUCTION TO DISC GOLF/ULTIMATE FRISBEE  
Short Title: DISC GAMES  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Activity Course  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: This is a course designed to offer an introduction to the fundamental disc golf and ultimate frisbee skills, basic rules, and team play strategies. The acquisition and understanding of these skills and strategies will be presented through activity and lecture sessions.

LPAP 125 - INTRODUCTION TO SOCCER  
Short Title: INTRODUCTION TO SOCCER  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Activity Course  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: This is an entry level course offering fundamental soccer skills, basic rules, and team tactics. These basic principles will be presented through active participation and instruction and evaluated through physical performance, participation and written assessment.

LPAP 126 - INTERMEDIATE SOCCER  
Short Title: INTER SOCCER  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Activity Course  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Prerequisite(s): LPAP 125  
Description: This is an intermediate level course offering advanced soccer skills and team tactics. These skills and tactics will be presented through active participation and instruction and evaluated through physical performance, participation and written assignments.
LPAP 130 - CONTACT IMPROVISATION
Short Title: CONTACT IMPROVISATION
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is designed to help students develop the physical and perceptual skills basic to the movement of Contact Improvisation including: falling, rolling, responding to touch, momentum and gravity, and developing awareness to the physical environment. Additionally, the course provides an overview of the history of Contact Improvisation and its relevance as a global social dance form.

LPAP 131 - INTRODUCTION TO MIDDLE EASTERN DANCE
Short Title: INTRO TO MIDDLE EASTERN DANCE
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This is a beginning level course which will introduce the basic movements of Middle Eastern Dance. Students will also be expected to develop a knowledge and appreciation of Middle Eastern dance as a cultural, communal, and recreational activity. Due to cultural restrictions, this course is for women only.

LPAP 132 - INTERMEDIATE MIDDLE EASTERN DANCE
Short Title: INTER MIDDLE EASTERN DANCE
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): LPAP 131
Description: This is an intermediate course which will introduce advanced movements of Middle Eastern Dance. Students will also be expected to develop a knowledge and appreciation of Middle Eastern Dance as a cultural, communal, and recreational activity. Due to cultural restrictions, this course is for women only.

LPAP 133 - CAPOEIRA
Short Title: CAPOEIRA
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Capoeira is a truly unique art, combining martial arts, dance and music. Students will learn the history, traditions and essential moves and strategies, as well as how to play the music associated with this activity.

LPAP 134 - INDIAN DANCE: FROM CLASSICAL TO BOLLYWOOD
Short Title: INDIAN DANCE
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course focuses on the Bharatanatyam form of dance that is very popular in South India. Bharatanatyam is the oldest of all classical Indian forms and its narrative style is known for its grace, purity, tenderness and statuesque poses.

LPAP 135 - INTRODUCTION TO DANCE
Short Title: INTRODUCTION TO DANCE
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This survey course introduces students to various dance techniques, (e.g. hip-hop, modern, ballet), choreography, improvisation, and performance as fundamental elements in the art of dance. Students will investigate dynamic and expressive methods of dance, and will develop foundational dance abilities including aerobic conditioning, coordination, alignment and dexterity.

LPAP 136 - INTRODUCTION TO LATIN DANCE: MERENGUE AND SAMBA
Short Title: INTRO TO MERENGUE AND SAMBA
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Course content includes demonstration of and brief lectures on Merengue and Samba. Students will participate in drills created to improve footwork, arm positioning, and leading and following skills.

LPAP 137 - INTRODUCTION TO EAST COAST SWING
Short Title: INTRO TO EAST COAST SWING
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Course content includes demonstration of and brief lectures on the East coast Swing, including swing and triple step versions. Students will participate in drills to improve footwork, arm positioning, and leading and following skills.
LPAP 138 - INTRODUCTION TO LATIN DANCE - SALSA/MAMBO & CHA CHA
Short Title: INTRO TO SALSA/MAMBO & CHA CHA
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Course content includes demonstration of and brief lectures on the American Style Salsa/Mambo and Cha Cha. Students will participate in drills created to improve footwork, arm positioning, and leading and following skills.

LPAP 139 - INTRODUCTION TO BALLROOM DANCE - TANGO AND RUMBA
Short Title: INTRO TO TANGO & RUMBA
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Course content includes demonstration of and brief lectures on the American Style Tango and Rumba. Students will participate in drills created to improve footwork, arm positioning, and leading and following skills.

LPAP 141 - INTERMEDIATE BALLROOM DANCE
Short Title: INTER BALLROOM DANCE
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): LPAP 109
Description: Course content includes demonstration of and brief lectures on intermediate-level American Style Foxtrot and Waltz. Students will participate in drills created to improve footwork, arm positioning, and leading and following skills.

LPAP 143 - MUSICAL THEATER JAZZ
Short Title: MUSICAL THEATER JAZZ
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will focus on fundamental musical theater vocabulary and steps. Students will study musical theater styles from the golden era of Broadway to contemporary shows.

LPAP 144 - INTRODUCTION TO COUNTRY WESTERN DANCE
Short Title: COUNTRY WESTERN DANCE
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): LPAP 144
Description: Course content includes demonstration of and brief lectures on the intermediate level Two Step and Country Western Polka. Students will participate in drills created to improve footwork, arm positioning, and leading and following skills.

LPAP 145 - INTERMEDIATE COUNTRY WESTERN DANCE
Short Title: INTER COUNTRY WESTERN DANCE
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): LPAP 144
Description: Course content includes demonstration of and brief lectures on the intermediate level Two Step and Country Western Polka. Students will participate in drills created to improve footwork, arm positioning, and leading and following skills.

LPAP 147 - INTERMEDIATE EAST COAST SWING DANCE
Short Title: INTER EAST COAST SWING DANCE
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): LPAP 137
Description: Course content includes demonstration of and brief lectures on the intermediate level of East Coast Swing, including single step and triple step versions.

LPAP 148 - DANCE CHOREOGRAPHY
Short Title: CHOREOGRAPHY
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course teaches basic dance making skills (choreography) for all styles of dance. Units covered will include the creation of inventive movement through improvisation, structures for dance, how to extend your movement ideas, partnering, working with a group, and the selection of dance themes, music, and props. Students will be required to compose short dance studies that will be critiqued in class through codified dance criticism methods then revise work.
LPAP 150 - IMPROVISATION DANCE
Short Title: IMPROVISATION DANCE
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The class will focus on expanding students’ creative movement through dance improvisation which will allow for self-discovery, self-experience, and will build composition skills. Each class will focus on improvisational structures, and the elements of dance that will lead to choreography methods.

LPAP 151 - THE ALEXANDER TECHNIQUE
Short Title: THE ALEXANDER TECHNIQUE
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: We all have habits of tension that interfere with our natural ease in movement. The Alexander Technique helps us to first recognize our habits and then interrupt them so we can experience greater freedom, strength, and coordination in our movement.

LPAP 152 - INTRODUCTION TO CONTEMPORARY DANCE
Short Title: INTRO TO CONTEMPORARY DANCE
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This is a beginning dance class that introduces students to contemporary dance technique and the performing of dance combinations to music. The class has a progression: core work on the floor; exercises at center; moving across the floor; and movement combinations. The majority of the classes are spent learning dance technique, the history of modern dance and modern dance choreography.

LPAP 153 - INTERMEDIATE MODERN DANCE
Short Title: INTERMEDIATE MODERN DANCE
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An intermediate level modern dance class that incorporates a variety of modern dance techniques. The class places emphasis on correct anatomical alignment, breathe and release, rhythmic and spatial accuracy, and performance commitment. This class is for students who audition for the Rice Dance Theatre and are accepted into the company. Auditions and class registration are held during the second week of classes. Class requirements include participation in a minimum of one rehearsal per week and a dance performance series near the end of the semester.

LPAP 154 - THE ALEXANDER TECHNIQUE
Short Title: THE ALEXANDER TECHNIQUE
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will introduce students to the basic principles and steps of ballet technique. It is designed to increase the students’ knowledge and understanding of the structure of the human body while engaged in ballet technique. Each student is required to attend a ballet performance during the semester.

LPAP 155 - INTRODUCTION TO BALLET
Short Title: INTRODUCTION TO BALLET
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): LPAP 155 or LPCR 155
Description: This course will introduce students to advanced principles and steps of ballet technique. Students must have dance experience (ballet preferred) to take this class. Students are required to attend a ballet performance during the semester.

LPAP 156 - INTERMEDIATE BALLET
Short Title: INTERMEDIATE BALLET
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A beginning level dance class that teaches basic technique, performance, dance fitness, alignment, and introduces the stylistic and historical components of jazz dance and hip/hop.

LPAP 157 - JAZZ DANCE/HIP HOP
Short Title: JAZZ DANCE/HIP HOP
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course provides the skills and knowledge to become lifeguard certified. Students will learn to prevent and respond to aquatic emergencies. $35 book fee. Students must be able to swim at least 300 yards.

LPAP 158 - LIFEGUARDING
Short Title: LIFEGUARDING
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will focus on expanding students’ creative movement through dance improvisation which will allow for self-discovery, self-experience, and will build composition skills. Each class will focus on improvisational structures, and the elements of dance that will lead to choreography methods.
LPAP 161 - INTRODUCTION TO AQUATIC ACTIVITIES  
Short Title: INTRO TO AQUATIC ACTIVITIES  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Activity Course  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: This course is designed to offer basic knowledge and skill development in a variety of aquatic activities. Focus will be given to basic swimming and diving techniques as well as competitive, recreational and fitness activities.

LPAP 164 - FITNESS SWIMMING  
Short Title: FITNESS SWIMMING  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Activity Course  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: This course is designed to increase fitness through the sport of swimming. Course includes information regarding fitness, health, stroke mechanics and wellness. The objective of the course is for students to design their own swimming workouts to meet their fitness goals. You must be able to swim at least 300 yards.

LPAP 165 - INTERMEDIATE FITNESS SWIMMING  
Short Title: INTERMEDIATE FITNESS SWIMMING  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Activity Course  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Prerequisite(s): LPAP 164  
Description: This intermediate course is designed to increase fitness through the sport of swimming. Course includes information about health, stroke mechanics and wellness. Students will design their own swimming program based on self-selected goals for the semester. Students must be competent swimmers.

LPAP 166 - BEGINNING SWIMMING  
Short Title: BEGINNING SWIMMING  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Activity Course  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: This course is designed to offer basic knowledge and skill for the beginning swimmer. The following strokes and skills will be taught during the class: water entries, floating, rhythmic breathing patterns, front crawl, elementary back stroke, back crawl, deep water exploration, and treading water.

LPAP 169 - TRIATHLON TRAINING  
Short Title: TRIATHLON TRAINING  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Activity Course  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: This course is designed to introduce students to triathlon training. Students will participate in a fitness conditioning program comprised of swimming, cycling, and running designed specifically for the completion of a sprint triathlon. Additionally, students will learn about technical aspects of the sport including equipment needs and maintenance, and safety requirements. Equipment needed to take the course: bike, swimsuit, running shoes.

LPAP 170 - YOGA  
Short Title: YOGA  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Activity Course  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: This course provides a solid foundation in the principals of yoga theory and practice. By incorporating traditional philosophy, physical poses (asana) and breath control (pranayama), this class helps you to discover vitality, flexibility and strength within yourself.

LPAP 171 - TAI CHI  
Short Title: TAI CHI  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Activity Course  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: Translated as Grand Ultimate Boxing, Taijiquan (also Tai Chi Chuan) has five major family styles in practice today. These are the Chen, Yang, Wu, Wu (Hao), and Sun styles. Through kung fu warm ups and a series of special Chen Taiji drills called silk reeling, students will be introduced to a deeper awareness of physical fitness, body movement, and mental clarity. The student will then be taught a basic introductory level form designed to give a taste of what Chen Style Taijiquan has to offer. The students will also be introduced to some Push Hands training (a two person drill) and basic martial applications.

LPAP 172 - INTRODUCTION TO FENCING  
Short Title: INTRODUCTION TO FENCING  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Activity Course  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: Fencing is a fast paced sport that develops mental agility and focus. This class will teach students the fundamentals of movement, bladework, and basic strategies in foil. Course goals are to compete at a beginner level and to understand the history and rules of the sport. Students will use exercises, drills, and bouts to develop their abilities and meet these goals.
LPAP 173 - INTERMEDIATE FENCING
Short Title: INTER FENCING
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): LPAP 172
Description: This course is designed to introduce the student to the skills and strategy necessary to participate in fencing at the intermediate level.

LPAP 175 - INTRODUCTION TO MARTIAL ARTS
Short Title: INTRO TO MARTIAL ARTS
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is designed to introduce students to the basic principles of Martial Arts. Students will learn the philosophy and physical conditioning components associated with this martial arts form with a particular emphasis on reflex development, timing, eye-hand coordination, balance and a sense of well-being.

LPAP 176 - SELF DEFENSE FOR WOMEN
Short Title: SELF DEFENSE FOR WOMEN
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course exposes students to a program of realistic self-defense tactics and techniques. It is a comprehensive course for women that begins with awareness, prevention, risk reduction and avoidance, while progressing through the basics of hands-on defense training.

LPAP 177 - INTERMEDIATE YOGA TECHNIQUES
Short Title: INTER YOGA
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): LPAP 170
Description: This course builds on the primary principles of yoga theory and practice that are learned in basic yoga courses. This class will introduce more advanced physical poses, breath control and meditation techniques.

LPAP 178 - THE ART OF RELAXATION
Short Title: THE ART OF RELAXATION
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is designed to provide students with an overview of the evolution of relaxation techniques and the various forms they have taken in different cultures across time. Each class will focus on the stress-relieving benefits of and different modalities for relaxation practice.

LPAP 180 - WALK, JOG, RUN
Short Title: WALK, JOG, RUN
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The purpose of this class is to teach students how to improve cardiovascular and muscular strength and endurance as well as stress management through fitness walking and jogging.

LPAP 181 - PERSONAL FITNESS
Short Title: PERSONAL FITNESS
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Class will consist of brief lectures on health and fitness topics. Students will be exposed to activities that may be incorporated into an individualized personal fitness program. The goal of this course is to motivate the students to include physical activity as an integral part of his/her lifestyle.

LPAP 182 - WEIGHT TRAINING
Short Title: WEIGHT TRAINING
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The class will consist of brief lectures and discussions on topics related to weight training. Students will be exposed to several different types of weight training techniques throughout the semester that may be incorporated into an individual’s personal fitness program.
LPAP 183 - WEIGHT TRAINING AND CONDITIONING
Short Title: WEIGHT TRAINING & CONDITIONING
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Students will be exposed to several different types of weight training and cardiovascular conditioning techniques throughout the semester that may be incorporated into an individual's personal fitness program.

LPAP 185 - CARDIO KICKBOXING
Short Title: CARDIO KICKBOXING
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Kickboxing combines the best of boxing and other martial arts techniques and brings it to you in an exciting and easy to learn format. As the name implies, cardio kickboxing involves kickboxing movements, but with cardiovascular training principles.

LPAP 186 - PILATES
Short Title: PILATES
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This is a beginning level course designed to offer an introduction to the fundamentals and beginner/intermediate classic Pilates mat work exercises. The acquisition and understanding of these exercises, their goal, and intent will be presented through activity and lecture sessions and will be evaluated through physical performance, participation, and written assessment.

LPAP 187 - GROUP FITNESS
Short Title: GROUP FITNESS
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The purpose of this class will be to provide students a learning opportunity in the broad area of group exercise.

LPAP 190 - INTRODUCTION TO OUTDOOR RECREATION
Short Title: INTRO TO OUTDOOR RECREATION
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course offers the opportunity to explore a variety of outdoor activities including camp craft, canoeing, rock climbing and team building. The class is divided between 8 weeks of instruction supplemented with required weekend trips to put skills into practice. $45 fee associated with course.

LPAP 192 - EXERCISE AND WEIGHT MANAGEMENT
Short Title: EXERCISE & WEIGHT MANAGEMENT
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is designed to provide female students with a non-intimidating environment in which they can learn the fundamentals of resistance training, the focus of the course will be on safe lifting practices, exercise variation/manipulation, and program design.

LPAP 193 - WEIGHT TRAINING FOR WOMEN
Short Title: WEIGHT TRAINING FOR WOMEN
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is intended to help overweight students gain a comprehensive understanding of weight and exercise management, including nutrition/portion control, emotional eating, medical perspectives and creating sustainable exercise programs. Participants will gain the necessary skills and understanding for obtaining optimum health. All classes will feature both lecture and physical activity.

LPAP 194 - OPEN WATER SCUBA
Short Title: SCUBA
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is designed to provide female students with a non-intimidating environment in which they can learn the fundamental principles of resistance training, the focus of the course will be on safe lifting practices, exercise variation/manipulation, and program design.

LPAP 195 - OPEN WATER SCUBA
Short Title: SCUBA
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course offers the opportunity to explore a variety of outdoor activities including camp craft, canoeing, rock climbing and team building. The class is divided between 8 weeks of instruction supplemented with required weekend trips to put skills into practice. $45 fee associated with course.

LPAP 198 - WEIGHT TRAINING AND CONDITIONING
Short Title: WEIGHT TRAINING & CONDITIONING
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Students will be exposed to several different types of weight training and cardiovascular conditioning techniques throughout the semester that may be incorporated into an individual's personal fitness program.

LPAP 197 - EXERCISE AND WEIGHT MANAGEMENT
Short Title: EXERCISE & WEIGHT MANAGEMENT
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is intended to help overweight students gain a comprehensive understanding of weight and exercise management, including nutrition/portion control, emotional eating, medical perspectives and creating sustainable exercise programs. Participants will gain the necessary skills and understanding for obtaining optimum health. All classes will feature both lecture and physical activity.

LPAP 191 - EXERCISE AND WEIGHT MANAGEMENT
Short Title: EXERCISE & WEIGHT MANAGEMENT
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is intended to help overweight students gain a comprehensive understanding of weight and exercise management, including nutrition/portion control, emotional eating, medical perspectives and creating sustainable exercise programs. Participants will gain the necessary skills and understanding for obtaining optimum health. All classes will feature both lecture and physical activity.
LPAP 195 - CRITICAL THINKING IN SEXUALITY
Short Title: CRITICAL THINKING IN SEXUALITY
Department: Dean of Undergraduates
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Course Level: Undergraduate Lower-Level
Description: CTIS will draw from a public health model of violence prevention to teach students the dynamics of domestic and sexual violence, bystander intervention, healthy relationships and healthy sexuality. This course is only available to first time matriculants in the fall but anyone can register for it in the spring.

LPAP 197 - DISCOVERING PERSONAL WELLNESS: CREATING AWARENESS & DEVELOPING SKILLS FOR BEHAVIOR CHANGE
Short Title: DISCOVERING PERSONAL WELLNESS
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Students will discuss the many factors that influence personal well-being, giving particular attention to individual needs and behavior change goals. Major areas to be covered include: time management, coping strategies, healthy relationships, body image, food choices, self-esteem, physical activity, spirituality, environmental awareness, alternative medicine and self-care.

LPAP 198 - NUTRITION
Short Title: NUTRITION
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The class will consist of lectures and discussions on the science of nutrition.

LPAP 199 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Independent Study is intended for the student who shows interest in an area of study not offered or who wishes to pursue a discipline in greater depth than possible through the regular curriculum. A contract between the student and the teacher shall define the responsibilities of both student and the teacher, and will specify standards for the successful completion of the project. Department Permission Required.

LPAP 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course, Lecture, Laboratory, Seminar, Internship/Practicum
Credit Hours: 1-4
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

Linguistics (LING)

LING 200 - INTRODUCTION TO THE SCIENTIFIC STUDY OF LANGUAGE
Short Title: INTRO TO STUDY OF LANGUAGE
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Overview of the scientific study of the structure and function of language. Introduces the main fields of linguistics: phonetics, phonology, morphology, syntax, semantics, discourse, historical linguistics, sociolinguistics, and psycholinguistics. Highlights the interdisciplinary relationship of linguistics with anthropology, sociology, psychology, and cognitive sciences. Fall 2019 Section 002 is open only to Fall 2019 New Matrics. Cross-list: ANTH 200.

LING 205 - LANGUAGE AND SOCIETY
Short Title: LANGUAGE AND SOCIETY
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course treats language as a social phenomenon to show how language, personal identity and institutions of social control inter-relate. The course focuses on linguistic interaction in daily life and how gender, ethnic, class, activity, and geographic variation affect language use. Cross-list: SWGS 205.
LING 216 - WORDS IN ENGLISH
Short Title: WORDS IN ENGLISH
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Course Level: Undergraduate Lower-Level
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Description: Introduction to the systematic study of English words. Topics include word formation, origins and history of English, etymology, new words, slang and jargon. Students will investigate words using online lexical tools and collect and describe neologisms. Understanding of word formation helps increase mastery of English vocabulary for GRE and other tests. No linguistics background required. Mutually Exclusive: Cannot register for LING 216 if student has credit for ENGL 215/LING 215.

LING 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Laboratory, Lecture, Seminar, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

LING 300 - LINGUISTIC ANALYSIS
Short Title: LINGUISTIC ANALYSIS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 200 or ANTH 200
Description: Introductory study of sound as it relates to speech and sound systems in the world's languages. Speech sounds are examined in terms of production mechanisms (articulatory phonetics), propagation mechanisms (acoustic phonetics), and perception mechanisms (auditory phonetics). Includes a basic introduction to Digital Signal Processing. Cross-list: ANTH 301. Graduate/Undergraduate Equivalency: LING 501. Mutually Exclusive: Cannot register for LING 300 if student has credit for LING 501.

LING 301 - PHONETICS
Short Title: PHONETICS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 200 or ANTH 200
Description: Introductory study of sound as it relates to speech and sound systems in the world's languages. Speech sounds are examined in terms of production mechanisms (articulatory phonetics), propagation mechanisms (acoustic phonetics), and perception mechanisms (auditory phonetics). Includes a basic introduction to Digital Signal Processing. Cross-list: ANTH 301. Graduate/Undergraduate Equivalency: LING 501. Mutually Exclusive: Cannot register for LING 301 if student has credit for LING 501.

LING 303 - LANGUAGE AND GENDER
Short Title: LANGUAGE AND GENDER
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines the theoretical, cultural, and social grounding of gender and language use. We use analytical tools from linguistics, cognitive science, cultural anthropology, psychology and biology. Emphasis is placed on the historical role of gender in such research, and the debates that result as perspectives shift.

LING 304 - INTRODUCTION TO SYNTAX
Short Title: INTRODUCTION TO SYNTAX
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 300 or ANTH 300
Description: An introduction to syntactic theory and analysis. Functional and formal approaches to both universal and language specific aspects of various syntactic phenomena are compared and evaluated in the light of the data drawn from typologically and geographically diverse languages. LING 300/500 is an absolute prerequisite to this course. Graduate/Undergraduate Equivalency: LING 504. Mutually Exclusive: Cannot register for LING 304 if student has credit for LING 504.
LING 305 - HISTORICAL LINGUISTICS  
**Short Title:** HISTORICAL LINGUISTICS  
**Department:** Linguistics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group II  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** (LING 200 or ANTH 200) and (ANTH 301 or LING 301)  
**Description:** Exploration of the nature of language change. Topics covered include sound change, syntactic and semantic change, modeling language splits, the sociolinguistics of language change, and the history of European languages. Cross-list: ANTH 305. Graduate/Undergraduate Equivalency: LING 505. Mutually Exclusive: Cannot register for LING 305 if student has credit for LING 505.

LING 306 - LANGUAGE, THOUGHT, AND MIND  
**Short Title:** LANGUAGE, THOUGHT, AND MIND  
**Department:** Linguistics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group II  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** LING 200 or ANTH 200  
**Description:** Study of language as a cognitive system. Linguistic data as evidence for the cognitive structures and processes that enable people to learn and use language; how linguistic structure influences concept formation and patterns of thinking. Graduate/Undergraduate Equivalency: LING 506. Mutually Exclusive: Cannot register for LING 306 if student has credit for LING 506.

LING 307 - INTRODUCTION TO LINGUISTIC MODELING  
**Short Title:** INTRO TO LING MODELING  
**Department:** Linguistics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** LING 200 or ANTH 200  
**Description:** This course addresses phenomena which span a variety of linguistic domains and sub-disciplines with the objective of modeling data in various frameworks.

LING 309 - PSYCHOLOGY OF LANGUAGE  
**Short Title:** PSYCHOLOGY OF LANGUAGE  
**Department:** Linguistics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group II  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** PSYC 203  
**Description:** Study of human and other animal communication. Includes the structure of human language, word meaning and semantic memory, psychological studies of syntax, bilingualism, language and thought, and language errors and disorders. Cross-list: PSYC 309.

LING 310 - MORPHOLOGY  
**Short Title:** MORPHOLOGY  
**Department:** Linguistics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** LING 300 or LING 311  
**Description:** Morphology is the study of word formation and the relationship between form, meaning, and syntax. This course is an introduction to morphological theory. Topics covered include approaches to word formation, morphological change, and morphological phenomena in diverse languages. Graduate/Undergraduate Equivalency: LING 510. Mutually Exclusive: Cannot register for LING 310 if student has credit for LING 510.

LING 311 - INTRODUCTION TO PHONOLOGY  
**Short Title:** INTRODUCTION TO PHONOLOGY  
**Department:** Linguistics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** ANTH 200 or LING 200  
**Description:** Introduction to analysis techniques and theory concerning patterning of sounds in the world's languages. The course will involve extensive work with non-English data sets, and development of analytical techniques such as identification of sound alternations or restrictions, and formalization of abstract representations and rules to account for them. Cross-list: ANTH 323. Graduate/Undergraduate Equivalency: LING 511. Mutually Exclusive: Cannot register for LING 311 if student has credit for LING 511.
LING 313 - LANGUAGE AND CULTURE
Short Title: LANGUAGE AND CULTURE
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Investigation of the relation between language and thought, language and worldview, and language and logic. Cross-list: ANTH 313. Graduate/Undergraduate Equivalency: LING 513. Mutually Exclusive: Cannot register for LING 313 if student has credit for LING 513.

LING 320 - ORIGINS AND EVOLUTION OF HUMAN LANGUAGE
Short Title: ORIGIN&EVOLUTION OF HUMAN LANG
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 200 or ANTH 200
Description: How did Human Language arise, and what role did language play in the evolution of our species? This course introduces the basic sources of evidence (e.g., fossil remains, comparative primatology, neonatal development) for knowledge of human linguistic prehistory, including the spread of modern humans and human language throughout the world.

LING 322 - LANGUAGE AND ETHNICITY
Short Title: LANGUAGE AND ETHNICITY
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 205 or SWGS 205 or ANTH 200 or LING 200
Description: This course explores the role that ethnicity plays in various language varieties used in the U.S., and the role that language varieties play in ethnic identity. We examine this from both speech production and speech perception perspectives.

LING 325 - LANGUAGE ACQUISITION
Short Title: LANGUAGE ACQUISITION
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 101
Description: The aim of this course is to explore language development closely through a variety of theories and research findings. Students will become familiar with different theories concerning language development, and develop an understanding of relevant issues, theoretical positions and relevant methodologies in language development using critical thinking skills. Cross-list: PSYC 325.

LING 330 - CORPUS LINGUISTICS
Short Title: CORPUS LINGUISTICS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Investigation of the nature of linguistic representations from corpus-based analyses as compared to more traditional methodologies. Includes the collection of individual text data (or the exploration of existing text sources), the use of various text analysis programs (e.g. concordance software), and the production of lexical, syntactic, semantic, discourse, or cultural analyses of selected texts, using computer-based methods. Graduate/Undergraduate Equivalency: LING 530. Mutually Exclusive: Cannot register for LING 330 if student has credit for LING 530.
LING 336 - INTRO TO INDO-EUROPEAN
Short Title: INTRO TO INDO-EUROPEAN
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will begin with a brief survey of the Indo-European languages, followed by a detailed reconstruction of Proto-Indo-European phonology, morphology, and syntax. The second half of the course will deal with Indo-European culture, laws, society and poetics, together with a consideration of advanced topics in the individual branches. Cross-list: CLAS 336.

LING 340 - THEORY AND METHODS OF TEACHING ESL AND FL
Short Title: TEACHING ESL/FL-THEORY&METHODS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Introduction to the theory and practice of teaching a second language. Includes the process of language learning viewed from social, psychological, and linguistic perspectives, as well as commonly used teaching 'methods,' such as the audio-lingual method, situational language teaching, the natural approach, and TPR, among others. Graduate/Undergraduate Equivalency: LING 540. Mutually Exclusive: Cannot register for LING 340 if student has credit for LING 540.

LING 390 - THE LANGUAGES OF ASIA
Short Title: THE LANGUAGES OF ASIA
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 200 or ANTH 200
Description: This course surveys the remarkable linguistic diversity of the Pacific Rim Asia covering important grammatical features, including word origins, tones and sounds, writing systems, characteristic syntactic patterns, language families, cultural keywords and communicative styles of the major, as well as some minority languages of the region. Cross-list: ASIA 390. Recommended Prerequisite(s): Prereqs as listed or 3 courses in Chinese, Japanese or Korean with special permission.

LING 393 - STRUCTURE OF ENGLISH
Short Title: STRUCTURE OF ENGLISH
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will describe the basics of speech and hearing science, including but not limited to: anatomy and physiology of speech and hearing mechanisms, neural pathways involved in speech and hearing, speech pathology and audiology, types of speech and hearing disorders, their causes, and types of therapies available for the remediation of these disorders. Mutually Exclusive: Cannot register for LING 397 if student has credit for LING 212.

LING 400 - LINGUISTIC ANALYSIS II
Short Title: LINGUISTIC ANALYSIS II
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 300 or ANTH 300
Description: Analysis of language beyond the clausal level. Grammatical and semantic analyses using corpora and concordance queries. Recording, transcription, and analysis of natural spoken discourse. The intricate relation between meaning, grammar, and discourse (i.e. the 'usage-based model'). The socially contextualized nature of language. The complex relationship between discourse and ideology.
LING 401 - ANALYSIS OF SOUND PATTERNS
Short Title: ANALYSIS OF SOUND PATTERNS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ANTH 301 or LING 301
Description: Introduction to various theories of phonological knowledge. Course involves extensive work in the collection and analysis of empirical data, in both English and other languages, including corpora analysis, and acoustic and experimental analysis. Attention is paid to the way phonetic data informs phonological theory.

LING 404 - RESEARCH METHODOLOGY AND LINGUISTIC THEORIES
Short Title: RSRCH METHOD & LINGUISTIC THEO
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (LING 300 or ANTH 300) or (LING 500 or ANTH 500)
Description: Focus on morphosyntactic description. Cross-list: ANTH 408. Repeatable for Credit.

LING 405 - DISCOURSE
Short Title: DISCOURSE
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 300 or ANTH 300
Description: An overview of features and organization of language-in-use. Examination of the macro-structure of different genres of discourse, the interplay between language and social/cultural interaction, and the role of discourse and communication in motivating and shaping grammatical form.

LING 407 - LINGUISTIC FIELD METHODS
Short Title: LINGUISTIC FIELD METHODS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 5
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 300 or ANTH 300 and (LING 301 or ANTH 301) and (LING 304 or ANTH 304) and (LING 311 or ANTH 323) or (LING 500 or ANTH 500) and (LING 501 or ANTH 501) and (LING 504 or ANTH 504) and (LING 511 or ANTH 523)
Description: Techniques and practice in the observation, analysis, and recording of a human language. Cross-list: ANTH 407. Repeatable for Credit.

LING 408 - LINGUISTIC FIELD METHODS
Short Title: LINGUISTIC FIELD METHODS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 5
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ANTH 407 or LING 407
Description: Observation, analysis and recording of a human language. Focus on morphosyntactic description. Cross-list: ANTH 408. Repeatable for Credit.

LING 409 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 200 or ANTH 200
Description: Special Topics in linguistics. Please contact the department for details on offered topics. SPRING 2020 TOPIC: RESEARCH ON BRAILLE. This semester's Special Topics course introduces students to the linguistic, cognitive, and social aspects of braille. Students will gain a basic understanding and appreciation of braille, its relevance to the reading sciences (and vice versa) and thorough grounding in the research literature. Students will also have a chance to help design experiments and studies for future research. Repeatable for Credit.

LING 410 - RHETORIC
Short Title: RHETORIC
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Overview of classical series of rhetoric and followed by more intensive discussions both of contemporary theories and applications in a wide variety of disciplines. Cross-list: ANTH 412.
LING 411 - NEUROLINGUISTICS
Short Title: NEUROLINGUISTICS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of language and the brain. Includes localization of speech, language, and memory functions, hemispheric dominance, pathologies of speech and language associated with brain damage, and hypotheses of the representation and operation of linguistic information in the cortex. Cross-list: ANTH 411, NEUR 411.

LING 414 - HERMENEUTICS AND LINGUISTIC ANTHROPOLOGY
Short Title: HERMENEUTICS &LINGUISTIC ANTH
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level

LING 415 - SOCIOLINGUISTICS
Short Title: SOCIOLINGUISTICS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 301 or ANTH 301 or LING 311 or ANTH 323 or LING 501 or ANTH 501 or LING 511 or ANTH 523
Description: This course covers contemporary sociolinguistic theory and methodologies. We examine the linguistic consequences to speakers of their group memberships such as gender, race, class and sexuality. Cross-list: SWGS 415.

LING 416 - LANGUAGE UNIVERSALS AND TYPOLOGY
Short Title: LANGUAGE UNIVERSALS & TYPOLOGY
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 300 or ANTH 300 or LING 500 or ANTH 500
Description: Investigation of what human languages have in common and a range of ways in which they can differ. Includes marking patterns in particular linguistic domains (e.g., case marking, animacy, and passives) and theoretical and methodological issues.

LING 419 - MULTILINGUALISM
Short Title: MULTILINGUALISM
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 200 or ANTH 200
Description: This course analyzes multilingualism from a variety of perspectives including cognitive linguistic and socio-cultural viewpoints. Topics to be covered include neural activation, conceptual representations of the lexicon, lexical, phonological, syntactic and pragmatic interference, code switching, cultural identity, etc.

LING 427 - ADVANCED PHONOLOGY
Short Title: ADVANCED PHONOLOGY
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (LING 301 or ANTH 301) and (LING 311 or ANTH 323) or (LING 501 or ANTH 501) and (LING 511 or ANTH 523)
Description: Examination of issues in contemporary phonological theory. Special attention will be given to more advanced representational theories (feature geometry, moraic phonology) and phonetically motivated phonological analysis, especially within the framework of optimality theory.

LING 428 - LABORATORY PHONOLOGY
Short Title: LABORATORY PHONOLOGY
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (LING 301 or ANTH 301) and (LING 311 or ANTH 323) or (LING 501 or ANTH 501) and (LING 511 or ANTH 523)
Description: This course will examine phonetic and phonological phenomena from an empirical point of view, placing priority on first-hand acoustic or experimental data. The primary goal will be the investigation of theoretical issues in the areas of phonetic processing, lexical representation, and phonological patterning. A secondary goal is familiarity with laboratory techniques.

LING 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.
LING 480 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

LING 481 - UNDERGRADUATE RESEARCH
Short Title: UNDERGRADUATE RESEARCH
Department: Linguistics
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

LING 482 - HONORS PROJECT
Short Title: HONORS PROJECT
Department: Linguistics
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Independent directed research toward preparation of an undergraduate honors project or thesis. Instructor Permission Required. Repeatable for Credit.

LING 499 - RESEARCH SEMINAR
Short Title: RESEARCH SEMINAR
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (LING 300 or ANTH 300) and (LING 301 or ANTH 301) and LING 400 and LING 401
Description: A topics research course with different issues investigated every semester, and it is repeatable for credit. The range of topics explored follows the research interests of the students and faculty. Repeatable for Credit.

LING 500 - LINGUISTIC ANALYSIS
Short Title: LINGUISTIC ANALYSIS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A hands-on, data-oriented approach to how different languages construct words and sentences. Students will develop skills in linguistic problem solving and the foundations for pursuing grammatical description. Topics: word classes, morphology, tense-aspect-modality, clause structure, word order, grammatical relations, existentials/possessives/locatives, voice/valence, questions, negation, relative clauses, complements causatives. Without Permission of Instructor, must have Graduate Standing. Cross-list: ANTH 500. Graduate/Undergraduate Equivalency: LING 300. Mutually Exclusive: Cannot register for LING 500 if student has credit for LING 300.

LING 501 - PHONETICS
Short Title: PHONETICS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introductory study of sound as it relates to speech and sound systems in the world's languages. Speech sounds are examined in terms of production mechanisms (articulatory phonetics), propagation mechanisms (acoustic phonetics), and perception mechanisms (auditory phonetics). Includes a basic introduction to Digital Signal Processing. Without Permission of Instructor, must have Graduate Standing. Cross-list: ANTH 501. Graduate/Undergraduate Equivalency: LING 301. Mutually Exclusive: Cannot register for LING 501 if student has credit for LING 301.

LING 504 - INTRODUCTION TO SYNTAX
Short Title: INTRODUCTION TO SYNTAX
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): LING 500
Description: An introduction to syntactic theory and analysis. Functional and formal approaches to both universal and language specific aspects of various syntactic phenomena are compared and evaluated in the light of the data drawn from typologically and geographically diverse languages. LING 300/500 is an absolute prerequisite to this course. Graduate/Undergraduate Equivalency: LING 304. Mutually Exclusive: Cannot register for LING 504 if student has credit for LING 304.
LING 505 - HISTORICAL LINGUISTICS
Short Title: HISTORICAL LINGUISTICS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Exploration of the nature of language change. Topics covered include sound change, syntactic and semantic change, modeling language splits, the sociolinguistics of language change, and the history of European languages. Without Permission of Instructor, must have Graduate Standing. Cross-list: ANTH 505. Graduate/Undergraduate Equivalency: LING 305. Mutually Exclusive: Cannot register for LING 505 if student has credit for LING 305.

LING 506 - LANGUAGE, THOUGHT, AND MIND
Short Title: LANGUAGE, THOUGHT, AND MIND
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of language as a cognitive system. Linguistic data as evidence for the cognitive structures and processes that enable people to learn and use language; how linguistic structure influences concept formation and patterns of thinking. Without Permission of Instructor, must have Graduate Standing. Cross-list: ANTH 523. Graduate/Undergraduate Equivalency: LING 306. Mutually Exclusive: Cannot register for LING 506 if student has credit for LING 306.

LING 510 - MORPHOLOGY
Short Title: MORPHOLOGY
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): LING 500 or ANTH 500 or LING 511 or ANTH 523
Description: Introduction to analysis techniques and theory concerning patternings of sounds in the world's languages. The course will involve extensive work with non-English data sets, and development of analytical techniques such as identification of sound alternations or restrictions, and formalization of abstract representations and rules to account for them. Without Permission of Instructor, must have Graduate Standing. Cross-list: ANTH 523. Graduate/Undergraduate Equivalency: LING 310. Mutually Exclusive: Cannot register for LING 510 if student has credit for LING 310.

LING 511 - INTRODUCTION TO PHONOLOGY
Short Title: INTRODUCTION TO PHONOLOGY
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to analysis techniques and theory concerning patternings of sounds in the world's languages. The course will involve extensive work with non-English data sets, and development of analytical techniques such as identification of sound alternations or restrictions, and formalization of abstract representations and rules to account for them. Without Permission of Instructor, must have Graduate Standing. Cross-list: ANTH 523. Graduate/Undergraduate Equivalency: LING 311. Mutually Exclusive: Cannot register for LING 511 if student has credit for LING 311.

LING 513 - LANGUAGE AND CULTURE
Short Title: LANGUAGE AND CULTURE
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Investigates the relation between language and thought, language and world view, language and logic. Without Permission of Instructor, must have Graduate Standing. Cross-list: ANTH 513. Graduate/Undergraduate Equivalency: LING 313. Mutually Exclusive: Cannot register for LING 513 if student has credit for LING 313.

LING 515 - INTRODUCTION TO SEMANTICS
Short Title: INTRODUCTION TO SEMANTICS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to basic approaches to the study of meaning in linguistics and related fields. Includes the cognitive representation of meaning, lexical categorization, conceptual structures, metaphor/metonymy, meaning change, pragmatic inference, and the relation of language and mind. Without Permission of Instructor, must have Graduate Standing. Graduate/Undergraduate Equivalency: LING 315. Mutually Exclusive: Cannot register for LING 515 if student has credit for LING 315.
LING 530 - CORPUS LINGUISTICS
Short Title: CORPUS LINGUISTICS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Investigation of the nature of linguistic representations from corpus-based analyses as compared to more traditional methodologies. Includes the collection of individual text data (or the exploration of existing text sources), the use of various text analysis programs (e.g. concordance software), and the production of lexical, syntactic, semantic, discourse, or cultural analyses of selected texts, using computer-based methods. Without Permission of Instructor, must have Graduate Standing. Graduate/Undergraduate Equivalency: LING 330. Mutually Exclusive: Cannot register for LING 530 if student has credit for LING 330.

LING 540 - THEORY AND METHODS OF TEACHING ESL AND FL
Short Title: TEACHING ESL/FL-THEORY&METHODS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the theory and practice of teaching a second language. Includes the process of language learning viewed from social, psychological, and linguistic perspectives, as well as commonly used teaching ‘methods,’ such as the audio-lingual method, situational language teaching, the natural approach, and TPR, among others. Without Permission of Instructor, must have Graduate Standing. Graduate/Undergraduate Equivalency: LING 340. Mutually Exclusive: Cannot register for LING 540 if student has credit for LING 340.

LING 550 - DEPARTMENTAL COLLOQUIUM
Short Title: DEPARTMENTAL COLLOQUIUM
Department: Linguistics
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Faculty, graduate students, and invited guests meet weekly to present reports on current research or to discuss current issues in Linguistics. Without Permission of Instructor, must have Graduate Standing. Repeatable for Credit.

LING 551 - SEMINAR IN LINGUISTIC THEORY
Short Title: SEMINAR IN LINGUISTIC THEORY
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics vary from year to year. Without Permission of Instructor, must have Graduate Standing. Repeatable for Credit.

LING 552 - SEMINAR IN SYNTAX AND SEMANTICS
Short Title: SEMINAR IN SYNTAX & SEMANTICS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics vary from year to year. Without Permission of Instructor, must have Graduate Standing. Repeatable for Credit.

LING 553 - SEMINAR IN LINGUISTIC STRUCTURE
Short Title: SEMINAR LINGUISTIC STRUCTURE
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics vary from year to year. Without Permission of Instructor, must have Graduate Standing. Repeatable for Credit.

LING 554 - SEMINAR IN COGNITIVE LINGUISTICS
Short Title: COGNITIVE LINGUISTICS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics vary from year to year. Without Permission of Instructor, must have Graduate Standing. Repeatable for Credit.

LING 555 - SEMINAR IN PHonetics
Short Title: SEMINAR IN PHONETICS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): LING 301 or LING 501 or ANTH 301 or ANTH 501
Description: Topics vary from year to year. Without Permission of Instructor, must have Graduate Standing. Repeatable for Credit.

LING 556 - SEMINAR IN SOCIOlinguistics
Short Title: SEMINAR IN SOCIOLINGUISTICS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): LING 415
Description: This course will examine the concepts of social class and community of practice in depth as they relate to sociolinguistic variation. Specific attention will be paid to how these concepts are treated in the field of linguistics, as well as complimentary fields such as sociology and anthropology. Cross-list: SWGS 556.
**LING 557 - SEMINAR IN DISCOURSE**  
**Short Title:** SEMINAR IN DISCOURSE  
**Department:** Linguistics  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Topics vary from year to year. Without Permission of Instructor, must have Graduate Standing. Repeatable for Credit.  

**LING 558 - SEMINAR IN LANGUAGE CHANGE**  
**Short Title:** SEMINAR IN LANGUAGE CHANGE  
**Department:** Linguistics  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Prerequisite(s):** LING 505  
**Description:** Topics vary from year to year. Without Permission of Instructor, must have Graduate Standing. Repeatable for Credit.  

**LING 561 - SEMINAR IN LANGUAGE DOCUMENTATION AND DESCRIPTION**  
**Short Title:** SEMINAR IN LG. DOC. & DESCRIP  
**Department:** Linguistics  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Without Permission of Instructor, must have Graduate Standing. Repeatable for Credit.  

**LING 562 - SECOND LANGUAGE ACQUISITION**  
**Short Title:** SECOND LANGUAGE ACQUISITION  
**Department:** Linguistics  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This course presents the major issues in Second Language Acquisition in natural and formal settings (classrooms). Particular attention will be placed on less commonly taught languages, as well as community-based efforts of language revitalization. Students must be second-year graduate students or have permission of the instructor to enroll. Without Permission of Instructor, must have Graduate Standing. Instructor Permission Required.  

**LING 581 - GRADUATE RESEARCH**  
**Short Title:** GRADUATE RESEARCH  
**Department:** Linguistics  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Research  
**Credit Hours:** 1-12  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Without Permission of Instructor, must have Graduate Standing. Instructor Permission Required. Repeatable for Credit.  

**LING 590 - TEACHING LINGUISTICS**  
**Short Title:** TEACHING LINGUISTICS  
**Department:** Linguistics  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Internship/Practicum  
**Credit Hours:** 3-6  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Without Permission of Instructor, must have Graduate Standing. Instructor Permission Required. Repeatable for Credit.  

**LING 677 - SPECIAL TOPICS**  
**Short Title:** SPECIAL TOPICS  
**Department:** Linguistics  
**Grade Mode:** Standard Letter  
**Course Type:** Internship/Practicum, Lecture, Seminar, Laboratory  
**Credit Hours:** 1-4  
**Restrictions:** Enrollment is limited to Graduate or Visiting Graduate level students.  
**Course Level:** Graduate  
**Description:** Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.  

**LING 800 - DISSERTATION RESEARCH**  
**Short Title:** DISSERTATION RESEARCH  
**Department:** Linguistics  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Research  
**Credit Hours:** 1-12  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Repeatable for Credit.  

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**Management (MGMT)**

**MGMT 500 - BCM HEALTH SERVICES ADMINISTRATION**  
**Short Title:** BCM HEALTH SERVICES ADMIN.  
**Department:** Management  
**Grade Mode:** Standard Letter  
**Course Type:** Research  
**Credit Hours:** 15  
**Restrictions:** Enrollment limited to students in the MBA program.  
**Course Level:** Graduate  
**Description:** Health services research project/externship; arranged by BCM faculty with input from Jones School faculty as part of the MD/MBA (BCM/RICE) dual degree program. Course work, research, etc. taken at Baylor College of Medicine.  

**MGMT 501 - FINANCIAL ACCOUNTING**  
**Short Title:** FINANCIAL ACCOUNTING  
**Department:** Management  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment limited to students in the MBA or OMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.  
**Course Level:** Graduate  
**Description:** Introduction to the preparation, analysis, and use of corporate financial reports. Covers the basic techniques of financial reporting and analysis from the perspective of managers as well as external users of information such as investors. Required for MBA.
MGMT 502 - MANAGERIAL ACCOUNTING
Short Title: MANAGERIAL ACCOUNTING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or OMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course builds on earlier courses on cost management and corporate strategy and focuses on the management control systems that can be used for the effective implementation of strategy. Included topics are the balanced scorecard, stretch budgets, performance evaluation and incentives, organizational and operational controls, and the development of metrics to motivate and evaluate performance.

MGMT 503 - MANAGEMENT CONTROL
Short Title: MANAGEMENT CONTROL
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMB MBA XMB MBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course builds on earlier courses in cost management and corporate strategy and focuses on the management control systems that can be used for the effective implementation of strategy. Included topics are the balanced scorecard, stretch budgets, performance evaluation and incentives, organizational and operational controls, and the development of metrics to motivate and evaluate performance.

MGMT 510 - ORGANIZATIONAL BEHAVIOR
Short Title: ORGANIZATIONAL BEHAVIOR
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or OMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Study of the many factors, which influence how individuals, groups, and teams behave and function in complex organizations and how they can be effectively managed. Required for MBA.

MGMT 511 - LEADERSHIP
Short Title: LEADERSHIP
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA, OMBA or PMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course aims to develop a more thorough understanding of leadership and the leadership process. Through this exploration, it is hoped that students will come to understand themselves better within the leadership context (i.e., as a follower, as a self-leader, and as a leader of others).

MGMT 512 - LEADING CHANGE
Short Title: LEADING CHANGE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course builds on earlier courses on cost management and corporate strategy and focuses on the management control systems that can be used for the effective implementation of strategy. Included topics are the balanced scorecard, stretch budgets, performance evaluation and incentives, organizational and operational controls, and the development of metrics to motivate and evaluate performance.

MGMT 513 - NEGOTIATIONS ILE
Short Title: NEGOTIATIONS ILE
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA, OMBA or PMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Course provides opportunities for students to experience different phases of two-party, multi-party, and team negotiations. Its interactive format facilitates development of analytical and behavioral skills for effective negotiation. Topics include diagnosing conflict, decision making, adversarial vs. cooperative strategies, ethical and cultural factors, and third-party intervention.

MGMT 514 - ORGANIZATIONAL CHANGE ILE
Short Title: ORGANIZATIONAL CHANGE ILE
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA, OMBA or PMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: The primary goal of this course is to help you become effective leaders of organizational change. Students will learn, discuss and put into action an important framework for managing organizational change. Participation in this course will: 1) Provide you with an effective framework for managing organizational change. 2) Improve your competencies as both a leader and participant in change.

MGMT 515 - GLOBAL FIELD EXPERIENCE
Short Title: GLOBAL FIELD EXPERIENCE
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the OMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This unique experiential learning opportunity requires students to apply what was learned in the first year of the program through consulting projects on the ground in a designated country. The course fosters a global mindset and further develops the ability to tackle business challenges in dynamic, divers and complex environments. Department Permission Required.
MGMT 521 - BUSINESS LAW
Short Title: BUSINESS LAW
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA, OMBA or PMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course examines the broad subject of law as it relates to business and is designed to help the student develop "legal astuteness." That is, the ability to communicate effectively with counsel and to work together with counsel to solve complex problems and/or to protect and leverage the firm's resources.

MGMT 527 - INTRODUCTION TO ENTREPRENEURSHIP
Short Title: INTRO TO ENTREPRENEURSHIP
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the OMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Evaluating opportunities and developing a business concept; analyzing new ventures; pricing, selling, and cost control; attracting stakeholders and bootstrap finance; the legal form of business and taxation; financing, deal structure and venture capital; harvesting value; developing a business plan.

MGMT 531 - THE NEW ENTERPRISE
Short Title: THE NEW ENTERPRISE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the OMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Evaluating opportunities for a new innovation-based enterprise; conceptualizing and developing a venture plan through an iterative process; articulating venture assumptions. Intended for students who want to start their own venture, join an early-stage venture, be entrepreneurial within an existing organization, or want to understand entrepreneurs and how to think entrepreneurially.

MGMT 540 - MANAGERIAL ECONOMICS
Short Title: MANAGERIAL ECONOMICS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or OMB program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: We study production and pricing decisions under different assumptions about firm market power. Emphasis is placed on understanding the relevant costs in firm decision-making. Examples are used from marketing and accounting areas. Required for MBA.

MGMT 541 - ECONOMIC ENVIRONMENT OF BUSINESS
Short Title: ECONOMIC ENVIRONMENT OF BUSI
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: MBA OMBA PMBA WMBA XMBA Enrollment is limited to Graduate or Quadmester level students.
Course Level: Graduate
Description: Examination of the global economic environment that serves as a backdrop for business decision making, with emphasis on the key macroeconomic policy goals and tools and how they affect exchange rates, interest rates, business cycles, and long-term economic growth.

MGMT 543 - FINANCE
Short Title: FINANCE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA or OMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Introduction to the theory and practice of corporate finance, with emphasis on topics such as valuation, capital budgeting, risk and return, and capital structure. Required for MBA.

MGMT 560 - CORPORATE SOCIAL RESPONSIBILITY
Short Title: CORP SOCIAL RESPONSIBILITY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: An exploration of the necessary ethical and legal basis of managerial decision making and the positive social and environmental contributions of the business firm.

MGMT 561 - BUSINESS-GOVERNMENT RELATIONS
Short Title: BUSINESS-GOVERNMENT RELATIONS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA OMBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Study of how public policy influences the private competitive environment of the firm. Examines the major political institutions and actors--Congress, the President, interest groups, the media, and administrative agencies--that shape U.S. public policy. Students analyze business political strategies and formulate several of their own.
MGMT 562 - CORPORATE SOCIAL RESPONSIBILITY
Short Title: CORP SOCIAL RESPONSIBILITY
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the O MBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: An exploration of the ethical and legal bases of managerial decision making and the social dimension of the business firm.

MGMT 570 - COMPETITIVE AND INDUSTRY ANALYSIS
Short Title: COMPETITIVE STRATEGY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or OMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Systematic examination of models and techniques used to analyze a competitive situation within an industry from a strategic perspective. Examines the roles of key players in competitive situations and the fundamentals of analytical and fact-oriented strategic reasoning. Examples of applied competitive and industry analysis are emphasized. Required for MBA.

MGMT 571 - STRATEGY FORMULATION AND IMPLEMENTATION
Short Title: STRATEGY FORMULATION
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or OMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course focuses on formulating and implementing effective organizational strategy, including competitive positioning, core competencies and competitive advantage, cooperative arrangements, and tools for implementation.

MGMT 574 - OPERATIONS MANAGEMENT
Short Title: OPERATIONS MANAGEMENT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or OMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Introduction to the design and integration of successful operations tactics both within the organization and across the supply chain. The course focuses on understanding, managing and improving processes and flows of products customers and information. Touching upon bottlenecks, inventory, quality management, and strategic issues in operations.

MGMT 580 - MARKETING
Short Title: MARKETING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA or OMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Introduction to the key concepts underlying the function of marketing and its interaction with other functions in a business enterprise. Explores marketing’s role in defining, creating, and communicating value to customers. Primarily case-based with capstone simulation exercise, providing a foundation for advanced course work in marketing. Required for MBA.

MGMT 591 - ACCOUNTING THEORY
Short Title: ACCOUNTING THEORY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Prerequisite(s): MGMT 601
Description: The aim of this seminar is to impart an understanding of the historical evolution of the literature on financial accounting theory and accounting principles, as well as emerging developments in accounting research. A companion objective is to come to understand the evolving dynamic of the standard-setting process for financial reporting in the United States and at the international level, including consideration of the “political” intrusions into this process. Readings will be drawn from the periodical literature, books and monographs, and reports. A term paper will be required. The prerequisite for undergraduates is BUSI 405, but the course will also be open also to a small number of other students who have taken just BUSI 305. MBA students: Prerequisite is MGMT 601. PhD students: no prerequisites. All students must obtain the prior permission of the instructor. Course may not be taken pass/fail and may not be audited. Enrollment will be limited. Mutually Exclusive: Cannot register for MGMT 591 if student has credit for BUSI 491/MACC 591.

MGMT 592 - STRATEGIC BUSINESS COMMUNICATIONS
Short Title: STRATEGIC BUSI COMMUNICATION
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA, O MBA or PMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Introduction to the strategy and practice of business presentations. Includes frequent oral presentations (both individual and team) and feedback.
MGMT 593 - DATA ANALYSIS
Short Title: DATA ANALYSIS
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course exposes the student to the most important ideas and methods relevant for data analysis in a business context. Emphasizing practical applications to real problems, the course covers the following topics: sampling, descriptive statistics, probability distributions, and regression analysis.

MGMT 594 - STRATEGIC BUSINESS COMMUNICATION I
Short Title: STRATEGIC BUSINESS COMMUNICATION I
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course exposes the student to the most important ideas and methods relevant for data analysis in a business context. Emphasizing practical applications to real problems, the course covers the following topics: sampling, descriptive statistics, probability distributions, and regression analysis. Required for MBA.

MGMT 595 - DATA ANALYSIS I
Short Title: DATA ANALYSIS I
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: The ever-increasing capacity of computers to analyze data and the explosion of the amount of data available have resulted in an increased role for data analysis as an aid to business decision-making. This course exposes the student to the most important ideas and methods relevant for data analysis in a business context. Emphasizing practical applications to real problems, the course covering the following topics: sampling, descriptive statistics, probability distributions, and regression analysis. Required for MBA.

MGMT 596 - STRATEGIC BUSINESS COMMUNICATION II
Short Title: STRATEGIC BUSINESS COMM II
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Continued instruction in the core strategic business communication skills that were introduced during Strategic Business Communication I. In addition to a mandatory writing workshop, students will have the opportunity to select other communication topics, based on individual needs and interest.

MGMT 597 - DATA ANALYSIS II
Short Title: DATA ANALYSIS II
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: The ever-increasing capacity of computers to analyze data and the explosion of the amount of data available have resulted in an increased role for data analysis as an aid to business decision-making. This course exposes the student to the most important ideas and methods relevant for data analysis in a business context. Emphasizing practical applications to real problems, the course covering the following topics: sampling, descriptive statistics, probability distributions, and regression analysis. Required for MBA.

MGMT 598 - CAPSTONE CONSULTING PROJECT
Short Title: CAPSTONE CONSULTING PROJECT
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course gives students the opportunity to apply the multi-functional (strategy, finance, marketing, organizational behavior, etc.) knowledge that they have gained in the program and their own professional experience to solve a complex, real-world managerial problem.

MGMT 599 - ACTION LEARNING PROJECT
Short Title: ACTION LEARNING PROJECT
Department: Management
Grade Mode: Standard Letter
Course Type: Intensive Learning Experience
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: The Action Learning Project (ALP) is a team-based, student consulting program where students will work with corporate and non-profit organizations across a variety of industries to tackle a robust real-world problem for them. Projects may include some combination of strategy, marketing, finance, operations & supply chain management, HR/ talent management, etc. The teams will work with their company and ALP faculty to perform research and assessments to develop their detailed recommendations and present them to senior leadership.
MGMT 600 - INTERNATIONAL ENERGY SIMULATION
Short Title: INTL ENERGY SIMULATION
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: The Jones Graduate School of Business International Energy Simulation is designed to create a real world environment in which multiple actors align and compete to achieve their distinct objectives. We will use a fictitious country that has a wide range of challenges and possible opportunities. You will be assigned to one of about 15 teams including government, energy companies, media, villagers, public policy institutions and others. Critical success factors include strategic thinking, the ability to build alliances, and a deep understanding of the perspectives of multiple stakeholders. Expect the unexpected.

MGMT 601 - FINANCIAL STATEMENT ANALYSIS
Short Title: FINANCIAL STATEMENT ANALYSIS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the following programs: EMBA MBA OMBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Study of how investors, financial analysts, creditors, and managers use financial statement information in evaluating firm performance and in valuing firms. Emphasizes industry and firm-level analysis of accounting information using financial accounting concepts and finance theory.

MGMT 603 - INCOME TAXATION AND BUSINESS DECISIONS
Short Title: INCOME TAX & BUS. DECISIONS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Course covers 1) the types of taxes and the history of the U.S. income tax; 2) tax policy in light of worldwide business taxation; 3) measurement of business income and deductions; 4) tax reporting and 5) the choice of entity among U.S. forms of business organization.

MGMT 604 - MINDFULNESS AND PERFORMANCE IN THE WORKPLACE
Short Title: MINDFULNESS & PERF AT WORK
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Throughout contemporary society and corporate America, we frequently hear people touting the value of “mindfulness.” What exactly is this concept – and how can it foster high performance in the workplace and improve the quality of workers’ lives? This course addresses these questions through cases and experiential-learning activities.

MGMT 605 - BUSINESS TAXATION II
Short Title: BUSINESS TAXATION II
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Prerequisite(s): MGMT 603 (may be taken concurrently)
Description: Fundamentals of income tax planning; taxation of property dispositions/mergers and acquisitions; individual tax planning and taxation of investment activity; international business tax considerations/U.S. foreign tax credit concept. MGMT 603 may be taken concurrently.

MGMT 606 - CORPORATE FINANCIAL REPORTING: US GAAP & IFRS PART I
Short Title: CORP FIN REP US GAAP & IFRS I
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Course covers aspects of interest to corporate finance officers and financial statement readers on a number of critical financial reporting issues, including those related to merchandise inventories, fixed and intangible assets, business combinations, intercorporate investments, consolidated financial statements and segment reporting, and the effects of changing prices on net income and rate of return. The strategic role of the newly restructured International Accounting Standards Board, especially as viewed by the Securities and Exchange Commission and the European Commission, will be explored. Students will be apprised of the sweeping and fundamental changes that are occurring today in the milieu of international financial reporting. Repeatable for Credit.
MGMT 607 - COMPETITIVE STRATEGIES AND EMERGING MARKETS
Short Title: COMP STRATEGY & EMERGING MKTS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Prerequisite(s): (MGMT 570 or MGMP 570 or MGMW 570 or EMBA 991) and (MGMT 571 or MGMP 571 or MGMW 571 or EMBA 993 (may be taken concurrently))
Description: Emerging markets in recent times have become important players in the global economy. Competitive dynamics in these markets affects almost every manager, even those who have no direct interest in these markets. We will examine how emerging markets differ from developed economies and what such differences mean for businesses. EMBA 993 may be taken concurrently with MGMT 607.

MGMT 608 - COMMERCIAL REAL ESTATE IN THE AMZN
Short Title: COMMERCIAL RE IN THE AMZN
Department: Management
Grade Mode: Standard Letter
Course Type: Intensive Learning Experience
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: With a seismic shift in commercial real estate due to technology-driven changes to distribution networks and the digitization of the economy, developers face challenging and evolving opportunities. How do you adapt and thrive when customer desires change at lightning speed and everyone competes against Amazon? Through simulations and a real-time case study, students learn to capture the rewards of customer-centric design using psychographics and quantitative methodologies.

MGMT 609 - MANAGING ENERGY TRANSITIONS
Short Title: MANAGING ENERGY TRANSITIONS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: “Managing in a Carbon-Constrained World” focuses on the business challenges and opportunities presented by the fast-changing dynamics of climate change and renewable/alternative sources of energy at the international, federal, and state levels. Consideration will be given to successes and failures of “first movers.” We will consider how to reconcile conflicts between the goal of a lower carbon future and the priorities of energy security and restoring a strong, sustainable, economy. The course will close with corporate responses to the challenge. The course is intended to benefit students who intend to pursue careers as leaders in industry, finance, government, diplomacy, international agencies, non-government organizations (NGO’s), media, or in academia. The course will challenge you to understand diverse points of view. A background in economics, finance, management, engineering, or public policy will provide a strong foundation, but other disciplines may also apply.

MGMT 610 - FUNDAMENTALS OF THE ENERGY INDUSTRY
Short Title: FUNDAMENTALS OF THE ENERGY IND
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: The course is based on the principle that one cannot understand commodity markets without a good grasp of the technology and physical infrastructure behind production, transportation, and distribution of energy commodities and linkages between different segments of the energy complex. The review of the industry infrastructure will be followed by discussion of the institutional framework of the energy markets in the US and other developed economies, including discussion of the different types of participating business entities, types of transactions and regulatory infrastructure. The course will be divided into three groups of lectures, covering the natural gas industry, power and coal business and oil / refined products markets, with an additional shorter lecture on regulatory issues.
MGMT 611 - GEOPOLITICS OF ENERGY
Short Title: GEOPOLITICS OF ENERGY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA OMBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.

Description: Geopolitics of Energy builds on critical thinking developed in core courses such as Strategy, Finance and Ethics. The modules deal with historical themes, access to resources, operational issues occurring during the life of an investment, and decisions at the end of investment life (at expected maturity or prematurely). Scenario Planning is used - not to predict the future but to consider the viability of strategies under alternate future directions. The course uses the case method to a significant extent and deals with diverse regions and levels of economic development. Class participation, individual and group exercises account for grading.

MGMT 612 - COMPETITION, CARBON AND ELECTRICITY POLICY
Short Title: COMP, CARBON & ELECT POLICY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA OMBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.

Course Level: Graduate
Description: MGMT 612 covers the changes that have occurred over the last twenty years in the electric power industry and the challenges and profit potential of efforts to reduce the industry’s emissions of carbon dioxide. The course will use original source materials to explore the impacts of policy choices on companies and consumers. We will cover economics, finance, engineering, and public policy, and a background in those disciplines will prove useful. Repeatable for Credit.

MGMT 613 - SYSTEMS THINKING IN INNOVATION AND ENTREPRENEURSHIP
Short Title: SYSTEMS THINKING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA OMBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.

Course Level: Graduate
Description: This course explores the human and social dynamics critical to the evolving world of technology innovation and entrepreneurship. Topics include: social systems; entrepreneurial mindset; the future of work and organizations; understanding new fields and data; the changing relationship between humans and technology; and questions in privacy, security, and regulation.

MGMT 615 - BARGAINING
Short Title: BARGAINING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA OMBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.

Course Level: Graduate
Description: This course will help you become a better negotiator by better understanding the values, motivations, and psychological biases that drive people’s behaviors in negotiations. To achieve this goal, we will discuss theory and research on bargaining, and we will play strategic games that illustrate important concepts of negotiation situations.

MGMT 616 - ENERGY MARKET ORGANIZATION
Short Title: ENERGY MARKET ORGANIZATION
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA OMBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.

Course Level: Graduate
Description: Repeatable for Credit.

MGMT 617 - THE INFORMATION ECONOMY: THEORY AND APPLICATIONS
Short Title: INFO ECONOMY: THEORY & APPL
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA OMBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.

Course Level: Graduate
Description: This course offers an advanced introduction into the Economics of Information with an emphasis on core business applications.

MGMT 618 - BESTSELLERS: THE SCIENCE AND WISDOM
Short Title: BESTSELLERS: SCIENCE & WISDOM
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA OMBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.

Course Level: Graduate
Description: There have been a lot of business books written over the years, making it difficult to navigate which ones contain wisdom grounded in sound science, and which ones make questionable claims and shaky promises. In this seminar, we’ll examine some bestselling books to help make us better people, leaders, and consumers of business advice.
MGMT 620 - THE ENTREPRENEURIAL TOOLKIT

Short Title: THE ENTREPRENEURIAL TOOLKIT

Department: Management

Grade Mode: Standard Letter

Course Type: Seminar

Credit Hours: 1.5

Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.

Course Level: Graduate

MGMT 621 - THE NEW ENTERPRISE

Short Title: THE NEW ENTERPRISE

Department: Management

Grade Mode: Standard Letter

Course Type: Seminar

Credit Hours: 3

Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA W MBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level student.s.

Course Level: Graduate

Description: Evaluating opportunities for a new innovation-based enterprise; conceptualizing and developing a venture plan through an iterative process; articulating venture assumptions; testing venture assumptions through experimentation. Intended for students who want to start their own venture, join an early-stage venture, be entrepreneurial within an existing organization, or want to understand entrepreneurs and how to think entrepreneurially.

MGMT 622 - FOUNDATIONS OF SUPPLY CHAIN MANAGEMENT

Short Title: FOUNDATIONS OF SUPPLY CHAIN

Department: Management

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hours: 1.5

Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA W MBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.

Course Level: Graduate

Description: This course explores strategic operations and supply chain management. It provides content and pragmatic executive perspectives on overall operations/supply chain strategies as well as delve into four major capabilities (supply & demand management, sourcing & procurement, manufacturing/service delivery, and performance improvement/quality). The concepts are applicable to manufacturing and service industries; and, they are applicable to large corporations and small businesses. Course activities provide the opportunity to build content knowledge, apply their expertise to operations and supply chain management situations, and explore cutting-edge topics in operations and supply chain management. They will benefit students who may be relatively new to operations and supply chain management, as well as students who may bring real-world experience. The course environment will be collegial, collaborative, and highly interactive with a mixture of team-based and individual activities. Class sessions include multiple activities and student preparation will be critical to maximize the value of the class to themselves, as well as their classmates. Repeatable for Credit.

MGMT 623 - EARLY DEVELOPMENT AND ENTREPRENEURSHIP IN A BIOTECH/MEDTECH STARTUP

Short Title: ENTREPRENEURSHIP IN BIOTECH

Department: Management

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hours: 0.75

Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA W MBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.

Course Level: Graduate

Description: Provides an insider's perspective on workings and challenges of early to mid-stage biotech (pharmaceutical) and medtech (medical device) startups. Live case studies highlight issues unique to this space including pre-clinical & clinical development, licensing & business development, the FDA, and intellectual property and patent strategies. Intended for students considering a career in an entrepreneurial life sciences company. Previous or contemporaneous coursework in entrepreneurship or healthcare is preferred.

MGMT 624 - REAL ESTATE

Short Title: REAL ESTATE

Department: Management

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hours: 1.5

Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or MBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.

Course Level: Graduate

Description: This course emphasizes the components and processes of real estate industry including identification and analysis of investment and development opportunities from an entrepreneurial standpoint. It utilizes Harvard Cases and requires a major field project. Guest lectures will constitute a portion of most sessions.

MGMT 625 - DESIGN THINKING

Short Title: DESIGN THINKING

Department: Management

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hours: 1.5

Restrictions: Enrollment limited to students in the following programs: EMBA MBA OMBA PMBA W MBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.

Course Level: Graduate

Description: Design Thinking is a problem-solving process that can be used to reduce risk when launching a new idea and increase your chances of developing an innovative solution that people want. Through our human-centered approach we will gain new insights into high-potential problem spaces and use an iterative experimentation process to ensure efficient resource utilization.
MGMT 626 - VENTURE CAPITAL
Short Title: VENTURE CAPITAL
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Overview of the venture capital industry; the organization and operation of venture capital funds; investment methodology; monitoring and portfolio liquidation; leveraged investing; and specialized investments.

MGMT 627 - ENTERPRISE ACQUISITION
Short Title: ENTERPRISE ACQUISITION
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA OMBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: The needs approach to buying and selling businesses; enterprise valuation; deal and contract structuring; mergers and acquisitions; leveraged buyouts; consolidating fragmented industries.

MGMT 629 - BUSINESS PLAN DEVELOPMENT
Short Title: BUSINESS PLAN DEVELOPMENT
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMB A XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course is based on reading, analyzing and discussing business plans of actual companies in motion. Class participation is important for this course. Reading the material, discussing the business plans, and interacting with company management will also make the course more enjoyable and meaningful. During the course, we will have entrepreneurs and founders as guest lecturers. SalvageSale, BizSupplies and SimDesk are examples of business plans we will discuss.

MGMT 630 - FINANCIAL MARKETS AND INSTRUMENTS
Short Title: FINANCIAL MARKETS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Prerequisite(s): (MGMT 543 or MGMP 543 or MGMW 543 or MGMT 843) and MGMT 648 (may be taken concurrently)
Description: The content of this course is a microeconomic focus on the functioning and structure of financial markets and financial institutions. By the end of the course students will be able to describe how information asymmetry problems affect financial transactions and market outcomes, analyze different financial market structures, and understand how no-arbitrage concepts apply to valuation tasks. We will study how firms raise external capital to fund investment in real assets and how markets and financial intermediaries assist in this. We will learn many of the details that are assumed away in other core courses, and this class will help you see how corporate finance and investments fit together as a cohesive whole.

MGMT 631 - HEALTH INSURANCE IN THE U.S.: THE ESSENTIALS
Short Title: HEALTH INSURANCE IN THE U.S.
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMB A XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: The basics that all executives, especially those working in the health care industry, need to know about health insurance programs, public and private markets, pricing, risk management and how insurance companies think about their business. After covering the basics, the course examines the rapid shifts occurring as a result of the Affordable Care Act and other environmental and legislative changes.

MGMT 632 - CONSUMER FINANCE
Short Title: CONSUMER FINANCE
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Introduction to household financial decision making and consumer financial products. We will use rational and behavioral models to understand how financial products serve consumers' needs with respect to managing risk, borrowing, investing, and moving funds. We will discuss how technology, data, and regulation are affecting the consumer finance sector.
MGMT 633 - ROLES OF PHYSICIANS, SCIENTISTS, ENGINEERS AND MBA'S IN HIGH-TECH STARTUPS
Short Title: LIFE SCIENCE ENTREPRENEURSHIP
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This pragmatic course combines core lectures on entrepreneurship with special guest presentations by notable life science entrepreneurs. It explores the roles that physicians, scientists, engineers, and MBA’s play in biotech, medical device, and healthcare companies, as well as major trends in Angel and Venture Capital Financings of Startups. Lectures on entrepreneurial team building, leadership and career planning are included. Cross-list: BIOE 633.

MGMT 634 - COMMERCIALIZING TECHNOLOGY IN DEVELOPING COUNTRIES
Short Title: TECH IN DEVELOPING COUNTRIES
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course provides a unique opportunity for students to 1) apply their business school knowledge, 2) learn about business in developing countries and 3) learn about entrepreneurship. The course includes lectures, cases, and discussions around needs, opportunities, challenges, delivery mechanisms, manufacturing, and selling in developing countries for both large and small companies and for start-ups. Students taking this course may also participate in a once-in-a-lifetime trip to Africa that tourism can never duplicate. All students will be on project teams and will participate in the development of business plans for commercializing new technologies. Repeatable for Credit.

MGMT 635 - EMERGING TECHNOLOGIES
Short Title: SOCIAL ENT. IN DEV. COUNTRIES
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course provides a unique opportunity for students to 1) apply their business school knowledge, 2) learn about business in developing countries, 3) learn about social entrepreneurship 4) and help the poor. The course includes lectures, cases, and discussions around needs, opportunities, and challenges of operating social enterprises (including both for-profits and non-profits) in developing countries. Students taking this course may also be able to participate in a once-in-a-lifetime trip to Africa that tourism can never duplicate. All students will be on project teams and will participate in the development of business plans for commercializing new technologies in developing countries. Repeatable for Credit.

MGMT 636 - MARKETING FOR SMALL BUSINESS
Short Title: MARKETING FOR SMALL BUSINESS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course is designed to help students develop and manage a creative and economical marketing strategy for a small business. We will use real world examples to learn how to effectively market through the use of web sites, search engine optimization (SEO), social media, online and local advertising. Students will experience a balance of theory and practical learning to apply these tools in harmony which will intensify awareness and profitability. Repeatable for Credit.

MGMT 637 - DILEMMAS IN FOUNDING NEW VENTURES
Short Title: DILEMMAS IN FOUNDING VENTURES
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Frameworks for making informed decisions about human capital when founding a new venture, including co-founders, early hires, advisors, board members, and investors.

MGMT 638 - QUANTITATIVE INVESTMENT STRATEGIES
Short Title: QUANTITATIVE INVESTMENT STRAT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Prerequisite(s): MGMT 645 (may be taken concurrently)
Description: This course introduces students to common strategies and techniques employed by quantitative money managers, focusing especially on equity management. The central questions are whether managers can generate alpha by selecting stocks based on quantitative characteristics and how to manage risks of portfolios created in that way. The prerequisite may be taken concurrently.
MGMT 639 - MARKETING OF PROFESSIONAL SERVICES IN THE GLOBAL ECONOMY
Short Title: MKTING OF PROF SERVICES
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This fast-paced, highly interactive and energetic course will explore the fundamental concepts, strategies and best practices of marketing professional services in today's global economy—and how this marketing differs from marketing tangible goods and non-professional services. Students will learn the importance of branding, public relations, crisis communications and Web 2.0 to promoting professional services today, and how to successfully integrate those vehicles with traditional marketing strategies. Repeatable for Credit.

MGMT 640 - INTRODUCTION TO PRIVATE BUSINESS VALUATION
Short Title: PRIVATE BUSINESS VALUATION
Department: Management
Grade Mode: Standard Letter
Course Type: Intensive Learning Experience
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course provides an opportunity to learn the framework for determining the market value of privately-owned business enterprises. The methods presented in this course are used by accredited business appraisers, investment bankers, and other valuation practitioners, often involved in the valuation of privately-owned businesses.

MGMT 641 - ENTREPRENEURIAL STRATEGY
Short Title: ENTREPRENEURIAL STRATEGY
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course provides an integrated strategy framework for entrepreneurs. The course is structured to provide a deep understanding of the core strategic challenges facing start-up innovators, and a synthetic framework for choosing and implementing entrepreneurial strategy in dynamic environments, as well as a general understanding of the financing options for early stage startups, including angel investment, accelerators, crowdfunding and the venture capital industry. A central theme of the course is that, to achieve competitive advantage, technology entrepreneurs must balance the process of experimentation and learning inherent to entrepreneurship with the selection and implementation of a strategy that establishes competitive advantage. The course identifies the types of choices that entrepreneurs must make to take advantage of a novel opportunity and the logic of particular strategic commitments and positions that allow entrepreneurs to establish competitive advantage. The course includes an in-depth overview of the organization, operation and economics of different funding sources; venture capital and angel investment term sheets and deal structures; startup investment methodology—deal sourcing, monitoring and liquidation; the role of VCs as key advisors and board members; and current issues in early stage financing as a result of a changing global and economic environment. The course combines interactive lectures, speakers and case analyses. The cases and assignments offer an opportunity to integrate and apply the principles taught in the course in a practical way, and draws from a diverse range of industries and settings.

MGMT 642 - FUTURES AND OPTIONS I
Short Title: FUTURES AND OPTIONS I
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA OMBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: An introduction to forward, futures, option, and swap contracts, including the basic valuation principles, the use of these contracts for hedging financial risk, and an analysis of option-like investment decisions. Recommended for finance students.
MGMT 643 - EQUITY PRACTICUM I - WRIGHT FUND
Short Title: EQUITY PRACTICUM I WRIGHT FUND
Department: Management
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 2
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Prerequisite(s): (MGMT 543 or MGMP 543 or MGMW 543 or MGMT 843) and (MGMT 648 (may be taken concurrently) or MGMT 848 (may be taken concurrently))
Description: Students will gain hands on exposure to many aspects of investment management by managing a 'live' stock portfolio (the M.A. Wright Fund) of endowment assets. The first semester's work (students must continue to MGMT 644) is predominately focused on stock analysis and valuation. Admission is by application and interview only. Instructor Permission Required.

MGMT 644 - EQUITY PRACTICUM II - WRIGHT FUND
Short Title: EQUITY PRACTICUM II WRIGHT FND
Department: Management
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 2
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Prerequisite(s): MGMT 643 and MGMT 645 (may be taken concurrently)
Description: Students will gain hands on exposure to many aspects of investment management by managing a 'live' stock portfolio (the M.A. Wright Fund) of endowment assets. The second semester's work is predominately focused on sector analysis and portfolio management. Admission is for students continuing from MGMT 643 only, who have been accepted by application and interview only. Instructor Permission Required.

MGMT 645 - PORTFOLIO MANAGEMENT
Short Title: PORTFOLIO MANAGEMENT
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA OMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Prerequisite(s): MGMT 543 or MGMP 543 or MGMW 543 or MGMT 843
Description: Review of classic investment theory, with emphasis on measuring and managing investment risk and return. Includes the development of modern portfolio theory and asset pricing models, an introduction to option and futures contracts, market efficiency, and stock valuation. Recommended for most finance students.

MGMT 646 - CORPORATE INVESTMENT POLICY
Short Title: CORPORATE INVESTMENT POLICY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA OMEA WMBA WMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course examines the investment decisions faced by corporate financial managers. We begin by developing a general framework for corporate valuation, and then we use this framework to review and expand on the capital budgeting issues developed in the core finance course. For example, we review the foundations of option valuation, and then apply these tools to value real options. We also cover new material on estimating the cost of capital and the effects of leverage. In this course, you will learn the state of the art in the analysis of corporate investment decisions. The course format is a mixture of theory, empirical evidence, and practical application. The theory provides the framework for our analysis. The empirical evidence provides a core of stylized facts to support our theoretical intuition. And, the practical applications put to use the theoretical foundations and empirical evidence in real world decision making.

MGMT 647 - CORPORATE FINANCIAL POLICY
Short Title: CORPORATE FINANCIAL POLICY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA OMEA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Examination of corporate investment and financing, with emphasis on valuation methods and how financial policy impacts corporate value. Includes the implications of agency costs, asymmetric information and signaling, taxes, mergers and acquisitions, corporate restructuring, real and embedded options, and financial risk management. Recommended for finance students.

MGMT 648 - APPLIED FINANCE
Short Title: APPLIED FINANCE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA OMEA WMBA WMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Prerequisite(s): MGMT 543 or MGMP 543 or MGMW 543 or MGMT 843
Description: Study of the theory and practice of the fundamental principles in finance emphasizing hands-on experience with a wide range of corporate finance and investments applications. The course provides extensive opportunity to implement finance theory at a practical level and to develop advanced analytical spreadsheet expertise.
MGMT 649 - DATA MINING FOR BUSINESS ANALYTICS
Short Title: DATA MINING FOR BUS ANALYTICS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate or Graduate Quadrimester level students.
Course Level: Graduate
Prerequisite(s): MGMT 595 or MGMP 595 or MGMW 595
Description: This course covers fundamental principles behind data mining applications, introduce popular data mining algorithms and techniques, examine how data mining technology can be used in decision making, work on real-world data "hands-on" with open-source software, explore Deep Learning and their impact. Repeatable for Credit.

MGMT 650 - FUTURES AND OPTIONS II
Short Title: FUTURES AND OPTIONS II
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadrimester level students.
Course Level: Graduate
Prerequisite(s): MGMT 642 (may be taken concurrently) and (MGMT 543 or MGMP 543 or MGMW 543 or MGMT 843)
Description: In-depth analysis of the theory and practice of derivative securities. Develops a general set of valuation, hedging, and risk management techniques which are then applied to the equity, interest rate, currency, and commodity markets. Prerequisite MGMT 642 may be taken concurrently.

MGMT 651 - FIXED INCOME MANAGEMENT
Short Title: FIXED INCOME MANAGEMENT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadrimester level students.
Course Level: Graduate
Description: Study of fixed income securities and markets in the U.S. and abroad, with an emphasis on the term structure of interest rates and the pricing of fixed income securities, derivatives, and portfolios. Include Treasury, Corporate Debt, and Mortgage-Backed Securities.

MGMT 652 - MERGERS AND ACQUISITIONS
Short Title: MERGERS & ACQUISITIONS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA OMBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadrimester level students.
Course Level: Graduate
Description: The course examines the merger and acquisition process from the perspectives of buyers and sellers. Attention is paid to the internal (make) versus external (buy) growth opportunities and their value consequences. The course also analyzes the M&A transaction process through the study of cases. An additional focus will be in the interaction of strategic planning, value planning, financial strategies, and investment decisions.

MGMT 653 - BLOCKCHAIN AS ECONOMIC INFRASTRUCTURE: THE INTERNET OF VALUE
Short Title: THE BLOCKCHAIN ECONOMY
Department: Management
Grade Mode: Standard Letter
Course Type: Intensive Learning Experience
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the following programs: EMBA MBA OMBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadrimester level students.
Course Level: Graduate
Description: Understand the design principles of the blockchain economy and its implementation challenges. Analyze the potential application of this "protocol of truth," beyond currency: to develop decentralized networks, to optimize logistics and trade; to record value and identity (smart contracts, birth certificates, insurance claims, art, land titles and even votes).

MGMT 654 - REAL ESTATE CAPITAL MARKETS: PUBLIC & PRIVATE
Short Title: RE CAP MARKETS: PUBLIC & PRIV
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadrimester level students.
Course Level: Graduate
Description: This course has two major objectives: First, to provide an overview of topics related to real estate capital markets. Specifically, this course will focus on how to raise capital for various uses. This course will devote time to understand the working of the Capital Markets. Second, to prepare students interested in Real Estate to learn concepts related to accessing capital from various sources. Finally, you will learn from various guest speakers who are highly recognized in the industry, what their experience has taught them and how to use it to make a team presentation "pitch" for capital.
MGMT 655 - DIGITAL DISRUPTION IN FINANCIAL SERVICES
Short Title: DIGITAL DISRUPTION IN FINANCE
Department: Management
Grade Mode: Standard Letter
Course Type: Intensive Learning Experience
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: We consider the financial services industry in an era of rapid disruption. We analyze how firms like Square, PayPal, Stripe, Lending Club, OnDeck or Robinhood are disrupting the value chain in financial services. We seek to understand what drives the development of disruptive platforms and why incumbents are missing out on these opportunities. We consider funding sources; competition from Asian fintech dragons as they redefine financial services through e-commerce and social payments; and the democratizing of access. Finally, we consider the next wave of technologies poised to accelerate the disruption including blockchain, cryptocurrencies, and robotics. After completing this course, you will understand how financial technology disruptors are capturing revenue pools of incumbent firms in payments, consumer and small business lending, wealth management, and advisory services.

MGMT 656 - ENERGY DERIVATIVES
Short Title: ENERGY DERIVATIVES
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This class covers analytical techniques related to pricing financial derivatives used extensively in the energy industry, including European, American, Asian, binary and spread options on forwards. In addition, the class will cover applications of financial derivatives in market and credit risk management in the energy industry.

MGMT 657 - INTERNATIONAL FINANCE
Short Title: INTERNATIONAL FINANCE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Exploration of special problems encountered by financial officers in international arenas. Includes the economics of the foreign exchange market, exchange rate risk management, international portfolio management, capital budgeting for international projects, and international financing strategies.

MGMT 658 - APPLIED RISK MANAGEMENT
Short Title: APPLIED RISK MANAGEMENT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Prerequisite(s): MGMT 642 (may be taken concurrently)
Description: This course focuses on applied risk management projects. The hands-on experience allows in-depth analysis and understanding of practical risk management issues and exposure to different risk management tools including Value at Risk. The course is a combination of lectures and application of skills.

MGMT 659 - REAL ESTATE FINANCE: ASSET VALUATION
Short Title: REAL ESTATE FINANCE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course focuses on applied risk management projects. The hands-on experience allows in-depth analysis and understanding of practical risk management issues and exposure to different risk management tools including Value at Risk. The course is a combination of lectures and application of skills.

MGMT 660 - REAL ESTATE CONTRACT NEGOTIATIONS FOR BUSINESS PROFESSIONALS
Short Title: REAL ESTATE CONTRACT NEG
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Legal risk pervades business dealings. This course explores legal risk by educating the student on legal theories, then how to identify, quantify, reduce and accept legal risk, in the context of real estate transactions. Effective interaction with legal counsel will be emphasized. Repeatable for Credit.
MGMT 661 - INTERNATIONAL BUSINESS LAW
Short Title: INTERNATIONAL BUSINESS LAW
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Description: Exploration of U.S. and foreign law relating to the law-business interface of transnational commercial ventures, including structuring operations and investments, addressing import-export problems and regulations, shipping issues, regular and internet-based financial transactions, and intellectual property. Emphasis is given to real cases demonstrating practical and cost-effective resolutions for international disputes.

MGMT 662 - ADVANCED OPERATIONS AND SUPPLY CHAIN
Short Title: ADV OPERATIONS & SUPPLY CHAIN
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: - Repeatable for Credit.

MGMT 663 - MANAGING SOCIO-POLITICAL RISK IN EMERGING MARKETS
Short Title: STAKEHOLDER ENGAGEMENT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course focuses on protecting and creating firm value by engaging external stakeholders (e.g., communities, NGOs, politicians) in challenging socio-political environments. Students learn how to: exercise due diligence to manage socio-political risk; engage stakeholders to earn a social license to operate; and integrate stakeholder-based initiatives into financial and operational management.

MGMT 664 - OPERATIONS LEADERSHIP LAB
Short Title: OPERATIONS LEADERSHIP LAB
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Laboratory
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Prerequisite(s): MGMT 670
Description: This course is designed to give students a close up and personal view of two private Houston companies whose owners have led successful change efforts in the operations of their businesses Repeatable for Credit.

MGMT 665 - GLOBAL SUPPLY CHAIN MANAGEMENT
Short Title: GLOBAL SUPPLY CHAIN MGMT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 668 - INTERNATIONAL TRADE AND BUSINESS STRATEGY
Short Title: INTL TRADE & BUSINESS STRATEGY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: An overview of the economic and political environment of international trade, foreign investment, and competitiveness, focusing on institutions that affect international commerce.

MGMT 669 - BUSINESS STRATEGY IN THE ENERGY INDUSTRY
Short Title: BUS STRATEGY IN THE ENERGY IND
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course is designed to examine business in the energy industry from a strategic standpoint, and provide students with a basic understanding of major business issues in the energy industry, including historical and current events. Emphasis will be on oil and gas, but may also touch on other energy subset such as utilities. Repeatable for Credit.

MGMT 670 - OPERATIONS STRATEGY
Short Title: OPERATIONS STRATEGY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Examines the key components that build an effective operations strategy for driving a 21st century company's competitive business strategy. Covers a range of industries and uses current events and cases to highlight the underlying theories and practices. Also looks at cutting-edge topics in operations and supply chain management.
MGMT 671 - CORPORATE CRISIS MANAGEMENT AND COMMUNICATION
Short Title: CORP CRISIS MGMT&COMMUNICATION
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Current methods of crisis management utilizing recent real-world cases. Research strategies and analyze each situation's processes and results. Class will enhance strategic thinking, determine pros and cons of courses of action, and provide an understanding of the decision making process. Class is interactive with individual and small group participation.

MGMT 672 - INTRODUCTION TO SUPPLY CHAIN MANAGEMENT
Short Title: INTRO TO SUPPLY CHAIN MGMT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 673 - COST ANALYSIS IN HEALTHCARE
Short Title: COST ANALYSIS IN HEALTHCARE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 674 - REAL ESTATE FINANCE: SECURITIES
Short Title: REAL ESTATE FINANCE:SECURITIES
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate

MGMT 675 - CORPORATE REAL ESTATE
Short Title: CORPORATE REAL ESTATE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate

MGMT 676 - SOCIAL ENTERPRISE
Short Title: SOCIAL ENTERPRISE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Management
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Laboratory, Lecture, Seminar, Lecture/Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate, Graduate Quadmester or Visiting Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.
MGMT 678 - BUSINESS OF HEALTHCARE
Short Title: BUSINESS OF HEALTHCARE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA OMBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Sequence of offerings that provides an introduction to the business of health care in the U.S. Topics include health care systems, health service organizations, and issues relating to the aging problem and the technology explosion in health care. Required elective for MD/MBA’s dual degree students. Repeatable for Credit.

MGMT 679 - COST AND QUALITY IN HEALTH CARE
Short Title: COST & QUALITY IN HEALTH CARE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Sequence of offerings that provides further analysis of the business of health care in the U.S. Topics include issues of cost and quality, health care financial management, and national and international solutions to the challenge of providing health care to a population. This class is designed to stand-alone, yet build upon MGMT 678. Required elective for MD/MBA dual degree students. Repeatable for Credit.

MGMT 680 - CUSTOMER LIFETIME VALUE
Short Title: CUSTOMER LIFETIME VALUE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMB A XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Customer Lifetime Value (CLV) is a metric of burgeoning interest for firms, venture capitalists, financial analysts, and marketers. In this course, we will learn how to build powerful and predictive CLV models using Microsoft Excel. Topics covered include valuation of a firm’s stock price using customer data, using RFM segmentation for direct marketing, customer acquisition and retention, and how to measure the impact of a loyalty program.

MGMT 681 - MANAGING CUSTOMER PERCEPTIONS
Short Title: MANAGING CUSTOMER PERCEPTIONS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA OMBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course is designed to offer you an overview of the major principles of persuasion. The emphasis will be on developing a marketing communications approach that will fit into a firms’ marketing program. The course will cover how to set effective communication objectives, decide what to communicate and how to develop a message execution approach.

MGMT 682 - PRICING STRATEGIES
Short Title: PRICING STRATEGIES
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA OMBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Study of the paradigm that success of a product lies not only in its acceptance by the end consumer but also in how it is priced and how it reaches the intended consumer, with emphasis on understanding and analyzing the issues, problems, and opportunities characteristic of the channel relationship and of the various faces of pricing. Repeatable for Credit.

MGMT 683 - GLOBAL BUSINESS TO BUSINESS MARKETING
Short Title: GLOBAL B2B MARKETING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 684 - BRAND STRATEGY
Short Title: BRAND STRATEGY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA OMBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: The Brand Strategy course is designed to build on your first-year MBA marketing course and will explore the elements of brand strategy to build capabilities on brand management and how brands drive business strategy and long-term value: what it is, what it is not, how to manage, execute, measure and value.
MGMT 685 - GO-TO-MARKET STRATEGY
Short Title: GO-TO-MARKET STRATEGY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: An effective “Go-to-Market” strategy is a critical component of commercial success and building customer preference. This course is designed to build capability in the design and management of route-to-market channels. Students will gain understanding of the importance of customer-focused channel design, how to build channel power (and use it responsibly), and create a performance-driven channel culture.

MGMT 686 - INTRODUCTION TO MARKETING RESEARCH
Short Title: INTRO TO MARKETING RESEARCH
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Students will learn the most common methods managers use to gain insight about customers and markets as well as the objectives/advantages/disadvantages associated with different research designs such as qualitative methods, surveys and experiments. Students will not learn specific analytic methods but rather how to design studies to yield valid results.

MGMT 687 - APPLIED MARKETING STRATEGY
Short Title: APPLIED MARKETING STRATEGY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: The course lays out a framework for marketing strategy and guides students through each step in the development process. While business challenges are inevitable, developing and following a well-structured marketing strategy, as laid out in this course, will help avoid many of the pitfalls that can lead businesses into trouble. Case studies, together with examples from the professor's lengthy business career, will be used to illustrate the principles and identify pathways out of trouble should it occur. Repeatable for Credit.

MGMT 688 - BUYER BEHAVIOR
Short Title: BUYER BEHAVIOR
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Drawing on established theoretical frameworks of cognitive and social psychology, this course examines three aspects of consumer behavior: (1) individual, social and cultural influences on consumers, (2) psychological mechanisms of pre- and post-consumption processes such as decision-making and attitude formation and change, and (3) methodological issues in consumer analysis. Implications for strategy as well as marketing program design, measurement and execution are discussed. These topics will be studied through discussion of academic articles, cases and projects.

MGMT 689 - DECISION MODELS
Short Title: DECISION MODELS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Successful management requires the ability to recognize a decision situation, understand its essential features, and make a choice. However, many of these situations - particularly those involving uncertainty and/or complex interactions - may be too difficult to grasp intuitively, and the stakes may be too high to learn by experience. This course introduces spreadsheet modeling, simulation, decision analysis and optimization to represent and analyze such complex problems. The skills learned in this course are applicable in almost all aspects of business and should be helpful in future courses. The course is divided into two parts. In the first part, we discuss the use of decision trees for structuring decision problems under uncertainty. In the second part of the course, we discuss Monte Carlo simulation, a technique for simulating complex, uncertain systems. Throughout the course, we will use Microsoft Excel as a modeling environment, using add-in programs as necessary. Familiarity with Excel is an important prerequisite for this course. Repeatable for Credit.
MGMT 690 - HEALTHCARE STRATEGY  
Short Title: HEALTHCARE STRATEGY  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 1.5  
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.  
Course Level: Graduate  
Description: The Healthcare sector, which includes areas such as health care delivery, payment, pharmaceuticals, medical equipment, etc., is an important part of any economy and society in all countries of the world including the US. This sector presents an exciting platform for upcoming business leaders in pursuit of a promising and transformational professional career. This elective course offer students interested in this sector the opportunity to study and review core strategy concepts, analytical techniques, and frameworks relevant to developing, evaluating, and implementing value-creating strategies for organizations operating in various sectors of the healthcare space. Instructor Permission Required.

MGMT 691 - BREAKTHROUGH NEGOTIATIONS IN A HEALTH CARE CONTEXT  
Short Title: BREAKTHROUGH NEGOTIATIONS  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 1.5  
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.  
Course Level: Graduate  
Description: This course is tailored for an audience interested in healthcare. We will talk about how the characteristics of the healthcare industry impinge on negotiations, and the exercises and simulations conducted are based in a healthcare context. Repeatable for Credit.

MGMT 692 - CUSTOMER RELATIONSHIP MANAGEMENT  
Short Title: CUSTOMER RELATIONSHIP MGMT  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 1.5  
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.  
Course Level: Graduate  
Description: Increasingly, firms want to enhance profitability by using strategies and tactics that fall under the broad domain of customer relationship management (CRM). In this course, students take a marketer’s perspective when assessing the strategic and operational impacts of CRM in a variety of industry/customer settings. Because CRM requires crossfunctional coordination, successful implementation often expands the role and impact of the marketing organization within the firm. Thus, students also will learn how customercentricity, as an organizational mindset, changes expectations chief marketing officers, as well as other senior marketing managers, as they attempt engage others in CRM strategy development and execution. Three perspectives serve as a foundation for learning about CRM in this course: (1) CRM as a strategy that prioritizes the allocation of organizational resources toward serving customers profitably, (2) CRM as an organizational capability to gather and use customer intelligence to create value for both customers and the firm and 3) CRM as a technology-enabled process that supports customer-centric goals and tactics. Thus, students will gain an appreciation for the critical roles that information management and technology play in supporting CRM strategies but content of the course will focus on strategic and operational issues related to CRM success. Repeatable for Credit.

MGMT 693 - NEW PRODUCTS  
Short Title: NEW PRODUCTS  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 1.5  
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.  
Course Level: Graduate  
Description: Exploration of the critical role of new products within the corporation and in small businesses, focusing on consumer products. Discusses the critical steps in new product development from ideal generation to business analysis and cross-functional team management to product launch into the marketplace. Students will work in groups to develop their own new products and to prepare the key elements of a new product introduction. Repeatable for Credit.
MGMT 694 - INTERPERSONAL COMMUNICATION IN HEALTHCARE

Short Title: INTERPERSL COMM IN HEALTHCARE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: How to listen well, converse productively, use body language, and communicate across different cultures – all these fundamentals are covered and customized to healthcare settings. The course integrates lecture, discussion, and in-class exercises every week, providing many opportunities to apply lessons and practice skills. Students often break into small teams to simulate typical healthcare interactions and receive feedback on what they are doing well and what can be improved. Repeatable for Credit.

MGMT 695 - STOCK ANALYSIS

Short Title: STOCK ANALYSIS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course brings together some of the topics from Accounting, Finance, Economics and Strategy to better make investment decisions in your personal or corporate portfolio, as an investment management professional or helping you analyze how equity markets view different management decisions. The course will consist of hands-on stock analysis and will touch upon various aspects of improving your odds in making good investment decisions through both quantitative and qualitative fundamental analysis. We will touch on analyzing a company’s franchise, assessing the quality of the management, formulating your own investment thesis, and will use various valuation methods to assess the attractiveness of different stocks. We will also review how different political/regulatory, economic, and or sector-specific macro factors may affect your investment decision. The course will make use of current and historical events including touching upon the aspects of how the emerging markets secular growth impacts different stocks. Various other topics may include how the following affect stock valuation and prices: cash flow, leverage, mergers & acquisitions, spinoffs, corporate governance issues, currency and country exposures, new share offerings, restructuring, and competitive pressures. Repeatable for Credit.

MGMT 696 - SECURITIES VALUATION

Short Title: SECURITIES VALUATION
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This new course will focus on valuing income streams from different types of securities. Below is a quick list of topics which build from very simple to increasingly complex variations on the theme.
(1)Review net present value calculation under conditions of perfect certainty with respect to all inputs. Review broad application to many types of income streams.
(2)Successively begin to relax assumptions: treasuries, agencies, corporates, and to be topical, sovereign debt.
(3)Brief detour into the world of credit default swaps somewhere along the line.
(4)Equity security valuation.
(5)Blended securities, implied options.
(6)Asset backed securities Repeatable for Credit.

MGMT 697 - STRATEGIC PROCESS MANAGEMENT IN HEALTHCARE

Short Title: STRATEGIC MGMT HEALTHCARE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This quantitative class will tie concepts presented in core classes and some available data to resolve real business issues. We will use various constrained optimization techniques to shed light on common operations issues such as the efficient frontier, production mix, facility locations, optimal scheduling, revenue management, and even some waiting in lines.
MGMT 699 - CAPITAL INVESTMENT IN HEALTHCARE
Short Title: CAPITAL INVESTMT IN HEALTHCARE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Course focuses on investment in the healthcare industry when the economic underpinnings have been challenged and are in transition. Students will gain an overview of the U.S. healthcare industry and the legislative and policy revisions impacting the economy of healthcare and will learn frameworks for evaluation capital investment decisions amid changes in policy and payment models.

MGMT 700 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Management
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1.5-3
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Independent study or directed reading on an approved project under faculty supervision. Contact MBA program office for application information. No more than 3 credit hours of independent study will count towards graduation unless approved by the Jones School Academic Standard Committee. Department Permission Required. Repeatable for Credit.

MGMT 701 - MARKETING EXPERIMENTATION
Short Title: MARKETING EXPERIMENTATION
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course will focus on gathering interpretable and actionable information from your customers via experiments and surveys. The first part of the course will focus on measurements: what you want versus what you can get. Then we will run actual surveys or online experiments and present the outcomes.

MGMT 702 - JONES EDGE INTERNATIONAL STUDY
Short Title: JONES EDGE INTERNATIONAL STUDY
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 703 - FIELD STUDY IN AMERICAN BUSINESS I
Short Title: FIELD STUDY - AMERICAN BUS I
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: The purpose of this course is to expose students to the American business enterprise. This exposure is accomplished through two primary means: (1) readings about the drivers of success in U.S. firms; and (2) a summer internship with a firm in the United States. The readings are meant to complement much of your course work in the first year of the MBA program. A final paper is due at end of summer to summarize experience. Instructor Permission Required.

MGMT 704 - FIELD STUDY IN AMERICAN BUSINESS II
Short Title: FIELD STUDY - AMERICAN BUS II
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: The purpose of this course is to expose students to the American business enterprise. This exposure is accomplished through two primary means: (1) readings about the drivers of success in U.S. firms; and (2) a fall internship with a firm in the United States. The readings are meant to complement much of your course work in the second year of the MBA program. Report due at end of term summarizing work experience.

MGMT 705 - FIELD STUDY IN AMERICAN BUSINESS III
Short Title: FIELD STUDY - AMERICAN BUS III
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: The purpose of this course is to expose students to the American business enterprise. This exposure is accomplished through two primary means: (1) readings about the drivers of success in U.S. firms; and (2) a spring internship with a firm in the United States. The readings are meant to complement much of your course work in the second year of the MBA program. Department Permission Required.
MGMT 706 - ANALYTICS IN HEALTHCARE
Short Title: ANALYTICS IN HEALTHCARE
Department: Management
Grade Mode: Standard Letter
Course Type: Intensive Learning Experience
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course introduces a data-driven culture in healthcare operations and patient care. Lectures cover fundamentals of data management, analytics maturity models, and using data to enhance collaboration and research. Invited speakers cover applications of machine learning and AI for healthcare automation. Overall goal is delivering value-based healthcare with enhanced safety.

MGMT 707 - ADVANCED MARKETING RESEARCH
Short Title: ADVANCED MARKETING RESEARCH
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: In this course, we focus on a state-of-the-art method called conjoint analysis for learning consumer preferences that enables new product design, market share simulations, segmentation, targeting, and positioning using a quantitative approach. The course is project-based and students will form teams that will design a set of new product concepts using conjoint analysis, analyze survey data based on these concepts, and present a marketing plan for their chosen concept that includes segmentation, targeting, and positioning decisions along with the 4Ps.

MGMT 708 - PRICING STRATEGIES: OIL & GAS INDUSTRY
Short Title: PRICING STRATEGIES-OIL&GAS IND
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: In rapidly changing business environments, with global competition and maturing markets, demonstrating in-market growth and competitive advantage is extremely important. This class explores how companies utilize existing information and custom data to create frameworks that facilitate strategic growth-oriented decisions. The class also focuses on new trends in digital transformation within O&G markets with Pricing and Sales effectiveness as the focus. Class sessions will emphasize experimental learning and will include a combination of case studies, real-time business examples and hands-on fieldwork where applicable.

MGMT 709 - MARKETING IN THE ENERGY INDUSTRY
Short Title: MARKETING IN THE ENERGY IND.
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 710 - LEADERSHIP ILE
Short Title: LEADERSHIP ILE
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Over two days, we will engage in an intensive learning experience. You will each get the chance to serve as the interim CEO of a sensor manufacturing company. Under your leadership, your management team will be responsible for strategy, marketing, financing, operations, research, and development. While keeping a company profitable (or even out of bankruptcy) will be a challenge itself, you will face some difficult situations throughout the simulation. These will test some of the skills you’ve learned during MGMT 510 as well as some communication skills necessary for good leadership. Accordingly, I will be assisted by members of the communications faculty during parts of the class.

MGMT 711 - NEGOTIATIONS ILE
Short Title: NEGOTIATIONS ILE
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Course provides opportunities for students to experience different phases of two-party, multi-party, and team negotiations. Its interactive format facilitates development of analytical and behavioral skills for effective negotiation. Topics include diagnosing conflict, decision making, adversarial vs. cooperative strategies, ethical and cultural factors, and third-party intervention.
MGMT 712 - PROCESS MANAGEMENT AND QUALITY IMPROVEMENT
Short Title: PROCESS MGMT & QUALITY IMPROV
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs:
EMBA MBA OMBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course provides students with tools, techniques, and frameworks for recognizing and analyzing operating performance opportunities along with a process-centric lens with respect to commercial competitiveness. The course provides a team project opportunity to identify business performance issues and take action by diagnosing and addressing relevant process components.

MGMT 713 - STRATEGIC ISSUES FOR GLOBAL BUSINESS
Short Title: STRAT ISSUES FOR GLOBAL BUS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs:
EMBA MBA OMBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Seeks to provide students with the skills, knowledge and sensitivity required to attain and maintain sustainable competitive advantage within a global environment. Emphasizes a strategic perspective and highlights topics such as global environment analysis, global strategy, global strategic alliances, and the important role of organizational structure and strategic control.

MGMT 714 - CAREER STRATEGY
Short Title: CAREER STRATEGY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs:
EMBA MBA OMBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: You will deploy business strategy principles to develop your own career strategy: determine your long-term aspirations, set a long-term plan of initiatives to build the strengths and presence needed to realize those aspirations, prepare to find opportunities to execute that plan in the short-term, and decide which opportunity to accept. Instructor Permission Required.

MGMT 715 - STRATEGIC INNOVATION AND COMPETITIVE ADVANTAGE
Short Title: STRATEGIC INNOV & COMP ADV
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs:
EMBA MBA OMBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course will help students apply the key strategic management frameworks and concepts into the innovation management context in technology industries and help them understand that innovation is an essential and integral part of strategic management. Within this strategic perspective, this course draws upon strategic management, organization theory, product innovation, and technology management for analytical tools to address important challenges faced by managers in technology-based firms. Repeatable for Credit.

MGMT 717 - PROJECT MANAGEMENT
Short Title: PROJECT MANAGEMENT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs:
EMBA MBA OMBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course focuses on the fundamentals of project management. Students will have the opportunity in this course to apply many of the subjects discussed in the MBA program in practical ways through case studies and consulting with company project managers.

MGMT 718 - MARKETING BASED PROJECT ANALYSIS
Short Title: MARKETING BASED PROJ ANALYSIS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course provides an overview of the role of market research in real estate development. Students will learn the steps used to conduct a market study, the role of economic data in evaluating a market, the use of comparable properties in preparing financial projections for a real estate project and the importance of public/private financing options in making a project feasible. This course would be useful to students interested in pursuing a career in real estate development. Students interested in real estate investments may also benefit from this course. While the principals learned in the course are applicable to all real estate development, the examples used in the course will focus on hotel development. Repeatable for Credit.
MGMT 719 - SUPPLY CHAIN MANAGEMENT
Short Title: SUPPLY CHAIN MANAGEMENT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Developing strategies to optimize the integrated planning and execution of processes that facilitate the flow of materials, information and financial capital. Topics explored include Materials Demand Planning, Procurement Systems, Inventory Management, Strategic Sourcing, Supplier Relationship Management, Logistics and Asset Management.

MGMT 720 - STRATEGY AND MANAGING INTERNATIONAL STRATEGIC ALLIANCES
Short Title: STR & MNG INTL STRAT ALLIANCES
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course seeks to provide students with the skills, knowledge, and sensitivity required to structure and manage strategic alliances/joint ventures within a global environment. This course will discuss the following topics: motivations for joining strategic alliances/joint ventures, partner selection, structuring strategic alliances/joint ventures to meet firms’ strategic objectives, control and management of alliances/joint ventures, evaluation of performance of alliances/joint ventures, and exiting alliances/joint ventures. Case studies will also be used to develop students’ capacity to identify issues, to reason carefully through various options and improve students’ ability to manage the organizational process by which alliances/joint ventures get formed and executed. We will also read and discuss recent articles from the business press and academic journals.

MGMT 721 - BUSINESS LAW
Short Title: BUSINESS LAW
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course examines the broad subject of law as it relates to business and is designed to help the student develop “legal astuteness.” That is, the ability to communicate effectively with counsel and to work together with counsel to solve complex problems and/or to protect and leverage the firm’s resources. It is designed to be a guide to understanding how the law impacts daily management decisions and business strategies, to spotting legal issues before they become legal problems, and to using laws and legal tools to marshal resources and manage risk.

MGMT 722 - SUPPLY CHAIN MANAGEMENT: MAINTAINING AND OPTIMIZING VALUE
Short Title: SUPPLY CHAIN: OPTIMIZING VALUE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Executing sourcing strategies for materials or services that sustain value, drives performance, encourages innovation and ethical behaviors. Topics explored include Operations to Commercial Translation, Contract Negotiation, Contracting, Performance Management, Risk Assessment, Risk Mitigation, Supplier Relationships, Stakeholder Engagement and Communication.

MGMT 723 - PROFESSIONAL SERVICE FIRMS
Short Title: PROFESSIONAL SERVICE FIRMS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Professional service firms – consulting, money management, private equity, venture capital, advertising, medical service, and law firms – are confronted with significant challenges as they experience increased competition from boutique firms as well as global and international competitors. Clients are more demanding, and there are significant, strategic and organizational challenges which require different approaches from traditional approaches. One observer noted that this competition has moved from gentlemanly competition to a “blood sport”. Interestingly, the service sector in the US furnishes 68 percent of the GDP and this is growing in emerging economies; for example, the service sector in India contributed 56 percent to the GDP during 2008-09. Additionally, many of these firms’ leaders are overwhelmed by the expectation of a dual role where they are not only managers but also high profile producers. As such, it is important for a course to examine the strategy and leadership challenges these firms face and likewise to expose students to the challenges they will face as professionals in one of these organizations, and ultimately as leaders in such professional service firms. The course will also include visits from managers associated with professional service firms. Repeatable for Credit.
MGMT 724 - SOCIAL ENTREPRENEURSHIP – PRACTICAL BUSINESS PLANNING
Short Title: SOCIAL ENTREPRENEURSHIP
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMB A XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This practical course will study social entrepreneurship and its ability to create social change by applying business principles and earned income strategies. Light on Powerpoint slides and theory, and heavy on real-world leadership and discussions, students will consider social enterprise solutions to real social needs, and write a business plan utilizing knowledge gained throughout their MBA program.

MGMT 725 - INTELLECTUAL PROPERTY STRATEGY FOR ENTREPRENEURS: LEGAL AND STRATEGIC ASPECTS
Short Title: IP FOR ENTREPRENEURS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMB A XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course examines: theory and logic of alliances in value creation, alliance evolution in various industries, the spectrum of alliance types from a low level of interdependence to a high. The course is discussion-based, focusing on reading material, case studies and problem sets. Repeatable for Credit.

MGMT 726 - FIXED INCOME PRACTICUM I - RICE FI FUND
Short Title: FIXED INCOME PRACTICUM I
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMB A XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Prerequisite(s): MGMT 648 and MGMT 726 and MGMT 645 (may be taken concurrently)
Description: In this course, students gain hands-on experience in the challenges and excitement of managing a real short-term fixed income portfolio—$2.5 million Rice University endowment bond portfolio (Rice Fi Fund of FI Fund)—and a simulated long-term portfolio. Admission is for students continuing from MGMT 726 only, who have been accepted by application only. Instructor Permission Required.

MGMT 727 - FIXED INCOME PRACTICUM II - RICE FI FUND
Short Title: FIXED INCOME - PRACTICUM II
Department: Management
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMB A XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Prerequisite(s): MGMT 648 and MGMT 726 and MGMT 645 (may be taken concurrently)
Description: In this course, students gain hands-on experience in the challenges and excitement of managing a real short-term fixed income portfolio—$2.5 million Rice University endowment bond portfolio (Rice Fi Fund of FI Fund)—and a simulated long-term portfolio. Admission is for students continuing from MGMT 726 only, who have been accepted by application only. Instructor Permission Required.

MGMT 728 - REAL ESTATE DEVELOPMENT
Short Title: REAL ESTATE DEVELOPMENT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMB A XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: The Real Estate Development course follows the development process from an entrepreneurial and ‘deal making’ point-of-view. Course topics include market analysis, site selection, project budgeting/financial analysis, land acquisition, marketing and leasing, joint ventures, financing, design and construction management, and dispositions.

MGMT 729 - MANAGEMENT OF INNOVATION AND TECHNOLOGY
Short Title: MGMT OF INNOVATION AND TECH
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMB A XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Companies that successfully select, adopt, and exploit IT will sooner or later open up large competitive gaps that are difficult to close. Business leaders, executives, strategists, innovators and line managers are the principal determinants of a company’s success with IT. But, as we shall see in this course, they don’t need to become technologists in order to get involved; they just need to master a set of concepts, frameworks, and models about IT’s impact. There are no technical prerequisites for this course. (You will complete an online course that will give you a sufficient introduction to the technology.) In the classroom, our focus will be on cases in which business leaders have tried to use IT to create enhance organizational development and support competitive strategy. Some succeeded and others failed. From our analysis of their experiences and ideas and principles I will present, we will develop some general guidelines for businesses seeking to exploit IT. Because we have only a short time to consider a number of complex matters, I will concentrate on industries in which IT has great potential to promote outcomes that are of interest to general managers.

2019-2020 General Announcements
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MGMT 730 - LEGAL ASPECTS OF ENTREPRENEURSHIP

Short Title: LEGAL ASPECTS OF ENT.
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.

Course Level: Graduate
Description: This course focuses on the legal dimensions of entrepreneurship and is designed to help students develop the managerial capability to work effectively with legal counsel to solve complex problems and to protect and leverage firm resources. Like information technology, the legal dimensions of business should not be treated as an after-thought or add-on to the business strategy development process. Corporate leaders with an understanding of American law have a unique capacity to protect and enhance shareholder wealth. Conversely, managers who lack the ability to integrate law into the development of strategy can place the firm at a competitive disadvantage and imperil its economic viability. The overarching purpose of Legal Aspects of Entrepreneurship is to prepare students to meet the legal and regulatory challenges and opportunities they can expect to encounter as entrepreneurs, venture capitalists, and managers of private and public businesses. The course provides a conceptual framework for understanding both the societal context within which businesses are organized and operate, as well as the various legal tools available to managers engaged in evaluating and pursuing opportunities. Legal Aspects of Entrepreneurship will offer strategies and tactics for working with counsel to use the law as a positive force to increase realizable value while managing the attendant risks and keeping the legal costs under control. The objective is not to teach business students how to think like lawyers, but rather to teach students how to become more legally astute so they can handle with confidence the legal aspects of entrepreneurship and management. This includes developing legal literacy and learning what to look for when selecting an attorney and knowing when to call one. Repeatable for Credit.

MGMT 731 - SCANDALS AND REPUTATION MANAGEMENT

Short Title: SCANDALS & REPUTATION MGMT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.

Course Level: Graduate
Description: Companies with strong reputations gain competitive advantage. However, reputation is not a tangible attribute of a firm, but rather an intangible asset held in the minds of the firm’s constituents. The goal of this course is to provide students with analytical tools to assess how an organization can build, damage, and repair its reputation.

MGMT 732 - ANTITRUST FOR BUSINESS MANAGERS

Short Title: ANTITRUST - BUSINESS MANAGERS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.

Course Level: Graduate
Description: Repeatable for Credit.

MGMT 733 - STRATEGIES FOR GROWTH

Short Title: STRATEGIES FOR GROWTH
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.

Course Level: Graduate
Prerequisite(s): (MGMW 570 or MGMP 570 or MGMT 570 or EMBA 991) and (MGMW 571 or MGMP 571 or MGMT 571 or EMBA 993)
Description: This course focuses on examining various strategies that companies can adopt to achieve sustainable and profitable growth. The course will use a variety of real-life cases of companies and supplement them with relevant readings, lectures, or other exercises, as necessary.

MGMT 734 - TECHNOLOGY ENTREPRENEURSHIP

Short Title: TECH ENTREPRENEURSHIP
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.

Course Level: Graduate
Description: The goal of this course is to provide the student with exposure to early stage technology entrepreneurship. Evaluation of opportunities, business model, capitalization, and early operations are covered. The focus is on the parts of entrepreneurship that are unique to dealing with the commercialization of research discoveries. A significant amount of time will be spent on university to business transitions and in thinking about how to take research discoveries and create a business. Repeatable for Credit.
MGMT 735 - MARKETING LAB
Short Title: MARKETING LAB
Department: Management
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 1.5-3
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Prerequisite(s): MGMT 580 or MGMP 580 or MGMW 580 or MGMT 880
Description: This course affords students the opportunity to apply their academic marketing knowledge to a real-world project, in a consultative role with a firm that serves as the client/project sponsor. Clients represent a variety of industries and challenge their student-managed teams to address a focused and strategically important marketing-related problem. In addition to core marketing, students must have taken at least one marketing elective. Instructor Permission Required. Repeatable for Credit.

MGMT 736 - STRATEGIC AND MORAL LEADERSHIP
Short Title: STRATEGIC & MORAL LEADERSHIP
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This elective course examines strategies of effective leaders, with emphasis on the roles of strategy and ethics in leadership effectiveness. The course emphasizes group discussion of cases, examples, and readings. Repeatable for Credit.

MGMT 737 - INVESTOR RELATIONS
Short Title: INVESTOR RELATIONS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Students learn theory and practice of investor relations, with emphasis on the role of investor relations/financial communications. Subjects covered include: history of the stock market, formation of the SEC, evolution of SEC regulations, dynamics of the equity markets, flow of investor information, planning and implementing an investor relations program, fitting investor relations into a corporation's communications program. Students will be mentored by local investor relations practitioners who will serve as real world guides for course assignments. Students will learn specifics about filing with the SEC, the creation of annual reports, road shows, stockholder meetings, preparing financials, and more. Investor relations managers, analysts, and CEOs will serve as guest lecturers to talk about their challenges in today's workplace.

MGMT 738 - CUSTOMER FOCUS IN HEALTH CARE AND SERVICE INDUSTRIES: A STRATEGIC APPROACH
Short Title: CUSTOMER FOCUS IN HEALTH CARE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Prerequisite(s): MGMT 683

MGMT 739 - CAPITAL FORMATION IN ENERGY AND INFRASTRUCTURE
Short Title: CAPITAL FORMATION IN ENERGY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: A capstone course for second year MBAs. Students form a private startup exploration and production company that grows to become a mid-cap ($10 billion) and then suffers a severe contraction. Students learn the various forms of capital available depending on the size of the company and state of the capital and commodity markets.

MGMT 740 - STUDENT VENTURE FUND: EVALUATING STARTUP INVESTMENT OPPORTUNITIES
Short Title: STUDENT VENTURE FUND
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Prerequisite(s): MGMP 626
Description: Students will identify, screen, and evaluate start-ups for investment by the Rice venture capital fund. Through this highly experiential course, students will learn tools for rigorously evaluating startup ventures for investment, valuing early stage companies, and structuring investments. Students will present their investment recommendations to an advisory committee. Instructor Permission Required. Graduate/Undergraduate Equivalency: BUSI 465. Mutually Exclusive: Cannot register for MGMT 740 if student has credit for BUSI 465.
MGMT 741 - MANAGING GROWTH
Short Title: MANAGING GROWTH
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Description: Companies are either thought of as small start-ups or large, mature businesses. The small start-up is considered to be the domain of the entrepreneur, where by force of personality, spark of creativity, or bold opportunism, a business is formed ex nihilo. On the other extreme, the large business is considered to be the domain of the manager, where by force of scale and scope, imposition of process, and careful analysis, an empire is sustained and expanded. In summary, the focus of the course will be how to create wealth by buying a small business, putting systems and processes in place to create a foundation for future growth, driving growth both internally and externally, and, finally, selling the business. Students will learn to apply those skills to small businesses with growth potential.

MGMT 742 - INTERNATIONAL PRIVATE EQUITY REAL ESTATE
Short Title: INTL PRIVATE EQTY REAL ESTATE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Description: Course covers general concepts in international RE investments, market selection, private equity funding structures, along with the perspectives of LPs and GPs/Managers. An analysis of risks and rewards associated with developments vs acquisitions, management/operations and exit in less developed markets, with a focus on the institutional asset class.

MGMT 743 - MANAGING INNOVATION IN ENERGY TECHNOLOGIES
Short Title: INNOVATION IN ENERGY TECH
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WIMBA or XMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Description: Innovation is critical to the survival of the energy industry, both for traditional carbon-based energy and for renewable and ‘green’ energy. Management of innovation requires a special set of skills beyond those of typical management. We will discuss the issues faced by energy managers in addressing innovation, and look at cases where these issues played a central role.

MGMT 744 - SERVICES OPERATIONS
Short Title: SERVICES OPERATIONS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Description: This course examines how energy companies construct portfolios of international assets. The first half of the course focuses on the life cycle of international energy projects, from the point at which a company decides it wishes to acquire an international project to the point at which the company divests that interest. These initial classes will discuss the business development processes companies employ to identify, analyze and acquire overseas assets; the typical commercial structures and contracts used to acquire rights and obligations in different types of energy projects; how companies build and manage relationships with host governments, including cultural difference, negotiation and corruption; issues related to joint ventures and joint operations with other companies; threats to international project cash flow such as renegotiation, expropriation and force majeure; and how companies structure exits and divestments from international energy projects. The course concludes with students being divided into teams or “companies” and then engaging in a dynamic bid round and petroleum exploration exercise, whereby students compete with one another to acquire acreage and then create (or destroy) net present value.

MGMT 745 - INTERNATIONAL ENERGY DEVELOPMENT
Short Title: INTL ENERGY DEVELOPMENT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Description: This course aims to provide students with a theoretical and practical understanding of current operational challenges faced by service organizations. It explores both quantitative and qualitative tools and methods for the effective planning, design, marketing, management, and improvement of service operations.

MGMT 746 - REAL PROPERTY
Short Title: REAL PROPERTY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Description: Survey course providing a short but intensive overview of real estate and the real estate industry.
MGMT 747 - REGULATORY ENVIRONMENT OF BUSINESS
Short Title: REG ENVIRONMENT OF BUSINESS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course examines the broad subject of government regulation of business and financial markets and is designed to help the student develop what the authors of the text term “legal astuteness.” That is, the ability to exercise informed judgment based on context-specific knowledge of the law and the regulatory environment. To achieve this, we will apply the methodology of neoclassical economic analysis to understand the role and function of government and governmental decision-making; explore the intersection between economics and the law; and learn to spot legal issues before they become grounds for termination, lawsuits, or criminal indictments. Emphasis is placed on high impact regulatory programs, such as antitrust, security regulation, civil rights, and environmental laws. Repeatable for Credit.

MGMT 748 - INTERNATIONAL BUSINESS BRIEFING - AFRICA
Short Title: INTL BUS BRIEFING - AFRICA
Department: Management
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course provides a unique opportunity for students to travel to Africa during fall break and 1) apply their business school knowledge, 2) learn about business in developing countries, 3) learn about entrepreneurship 4) learn about social enterprise, and 5) help the poor. Students taking this course will also have a once-in-a-lifetime trip to Africa that tourism can never duplicate. The travel to Africa includes extensive on the ground field work and also includes visits with leaders in business, government, non-profits, and various social enterprises. All students will be on project teams and will participate in the development of business plans for commercializing new technologies in developing countries and preparing a written and oral public presentation to some faculty, students, potential donors and investors, and others. Instructor Permission Required. Repeatable for Credit.

MGMT 750 - STRATEGIC CONSIDERATIONS IN HEALTH INFORMATICS
Short Title: HEALTH INFORMATICS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 751 - ECONOMICS OF HEALTH CARE SECTORS
Short Title: ECON OF HEALTH CARE SECTORS
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 752 - SUPPLY CHAIN MANAGEMENT LAB
Short Title: SUPPLY CHAIN MANAGEMENT LAB
Department: Management
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 1.5-3
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This operations lab provides students with an opportunity to build their operations and supply chain management skills and experiences by either (1) applying their coursework to a hands-on, real-world project with a company, or (2) performing an in-depth research project on a cutting-edge topic in operations and supply chain management. Students in this course can work with any industry and may involve the full spectrum of operations and supply chain topics. This is a project-centric course with a customized schedule to the specific project. Instructor Permission Required.

MGMT 753 - OPERATIONS LAB: HEALTH CARE
Short Title: OPERATIONS LAB: HEALTH CARE
Department: Management
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Prerequisite(s): MGMT 712
Description: This course provides the needed skills, along with the experience of leading and facilitating change in a live, healthcare environment with actual processes, staff and business value on the line. Students are paired, given a real business problem in a major Houston healthcare system and guided to deliver the solution, implementation plan and control plan. Instructor Permission Required.

MGMT 754 - REAL ESTATE: ULI LAB
Short Title: REAL ESTATE: ULI LAB
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
MGMT 755 - HOSPITAL MANAGEMENT - THE BUILDING BLOCKS
Short Title: HOSPITAL MGMT BUILDING BLOCKS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 756 - MANAGEMENT OF HEALTHCARE ORGANIZATIONS
Short Title: MGMT OF HEALTHCARE ORGS.
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 757 - REAL ESTATE LAB: DEVELOP, DESIGN AND CONSTRUCTION
Short Title: RE LAB: DEVELOP DESIGN CONSTR.
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Cross-list: ARCH 691. Repeatable for Credit.

MGMT 758 - NON-MARKET STRATEGY
Short Title: NON-MARKET STRATEGY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Through case discussions, student presentations, and speakers' shared experiences, students will gain analytical tools to assess a firm's environment beyond competitive markets and make decisions that are beneficial for the firm and for society.

MGMT 759 - DIGITAL BUSINESS EXCELLENCE
Short Title: DIGITAL BUSINESS EXCELLENCE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Organizational dysfunctions remain the norm despite decades of management attention. Year after year, management gurus take passionate positions that are mutually exclusive, contrast "IT doesn't matter" with "IT savvy is critical." Clever executives see opportunity amid this controversy. This course steps directly into the controversy. It is designed to equip future business leaders with knowledge needed to position their firms among the 30% that do succeed. This is a business class that will focus on the use of information technology to achieve business goals. While specific technologies are discussed, as are hot technology trends, the objective is always to clarify the underlying business principles that business and IT executives require for success. Repeatable for Credit.

MGMT 760 - E-LAB: VENTURE CAPITAL
Short Title: E-LAB: VENTURE CAPITAL
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Laboratory
Credit Hours: 1.5-3
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Prerequisite(s): MGMP 626 (may be taken concurrently) or MGMT 626 (may be taken concurrently)
Description: Students learn by working with early stage investors including angel and venture capital organizations. Students learn through hands on support and are expected to be at the sponsoring organizations office 8 - 10 hours per week and attend investor pitches. The Venture Capital E-Lab is not a standard class and requires meeting off campus. It is also not affiliated in anyway with the Venture Capital class. Instructor Permission Required. Repeatable for Credit.

MGMT 761 - E-LAB: ENTERPRISE ACQUISITION
Short Title: E-LAB: ENTERPRISE ACQUISITION
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 1.5-3
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Prerequisite(s): MGMT 627 (may be taken concurrently)
Description: Students follow the processes learned in MGMT 627 to acquire an existing business or start a search fund. Students develop selection criteria, network to connect with sellers, conduct preliminary due diligence, perform a business valuation, develop potential deal structures and have the opportunity to move forward on any potential opportunities on their own after graduation. Students attend a check-in class every other week to present updates and receive feedback from faculty, students and alumni mentors. Instructor Permission Required. Repeatable for Credit.
MGMT 762 - E-LAB: NEW ENTERPRISE
Short Title: E-LAB: NEW ENTERPRISE
Department: Management
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 1.5-3
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMB Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Prerequisite(s): MGMT 621 or MGMT 927
Description: Students working on their own startup have the opportunity to apply the processes learned in the New Enterprise course to their startup. Students attend a check-in class every other week to present updates and receive feedback from faculty, students and alumni mentors. Department Permission Required. Repeatable for Credit.

MGMT 763 - E-LAB: TECHNOLOGY
Short Title: E-LAB: TECHNOLOGY
Department: Management
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 1.5-3
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 764 - E-LAB: DEAL EVALUATION
Short Title: E-LAB: DEAL EVALUATION
Department: Management
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 1.5-3
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Students will learn the processes and frameworks for evaluating incoming deal flow for early stage and private equity investments and gain hands on experience by applying the processes to applications for the Jones School Veteran Business Battle competition, the Rice Angel Network and other Rice affiliated competitions. Instructor Permission Required. Repeatable for Credit.

MGMT 765 - IGNITE ENTREPRENEURSHIP
Short Title: IGNITE ILE
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: The Ignite Trek provides entrepreneurial students the opportunity to meet successful and up-and-coming entrepreneurs in Silicon Valley. Students hear the personal stories of entrepreneurs working to build their companies and learn from the successes (and failures) of the best-and-brightest that Silicon Valley has to offer. Students also have the opportunity to visit startups first-hand and see their innovative work spaces. This is an intense immersion experience with company visits and entrepreneurial speakers throughout the trek. Department Permission Required.

MGMT 766 - HEALTHCARE INNOVATION AND ENTREPRENEURSHIP LAB
Short Title: HEALTHCARE INNOV & ENTREP LAB
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5-3
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Students work with nascent medical device startups created out of the Healthcare Innovation and Entrepreneurship course. Students work 10 hours per week on various aspects of a business plan and preparation for business plan competitions.

MGMT 767 - QUANTITATIVE FINANCE LAB
Short Title: QUANTITATIVE FINANCE LAB
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Prerequisite(s): MGMT 642 and MGMT 648
Description: Class focuses on fixed income, securitization, pricing and hedging of derivatives, banking regulation, and reserve requirements pre- and post-crisis. We consider issues of risk from perspectives across the capital structure, rigorously considering financial risk management and capital markets. The format of the class combines theory, case study and quantitative applications. Repeatable for Credit.
MGMT 768 - THE NEW FOOD ECONOMY
Short Title: THE NEW FOOD ECONOMY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is a survey course of contemporary topics in the new food economy. We pay particular attention to social justice issues surrounding the production, distribution, marketing and sales, and consumption of food. A sample of covered topics may include: access to capital for non-traditional agriculture, organic & GMO, new technologies and production and distribution, food waste, food insecurity, food marketing, food assistance policies, and other public policies.

MGMT 769 - WASTE MANAGEMENT INTERNSHIP
Short Title: WASTE MANAGEMENT INTERNSHIP
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Waste Management (WM) has established a formal internship program with the Jones Graduate School of Management (JGSM) at Rice University in order to give students more exposure to the emerging field of sustainable solutions. Students will gain valuable experience in the launch of new enterprises within WM and associated deal analysis. Instructor Permission Required. Repeatable for Credit.

MGMT 770 - CONSULTATIVE SELLING
Short Title: CONSULTATIVE SELLING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course introduces students to the communication skills and behaviors required for success in the field of consultative selling, including effective questioning, active listening, assessing client communication style, and delivering persuasive presentations.

MGMT 771 - DIGITAL MARKETING
Short Title: DIGITAL MARKETING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Course provides an introduction to digital marketing and examines ways it should be implemented. In addition to learning fundamental constructs and principles, students will focus on tools and skills needed for setting goals, implementing campaigns, and measuring success. Guest speakers and in-class exercises are used to provide insights and relevancy to this swiftly expanding area of marketing.

MGMT 772 - RICE ALLIANCE INTERNSHIP
Short Title: RICE ALLIANCE INTERNSHIP
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 773 - SURGE INTERNSHIP
Short Title: SURGE INTERNSHIP
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 774 - LEADERSHIP AND TEAM COACHING
Short Title: LEADERSHIP AND TEAM COACHING
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: The best leaders understand the importance of developing the next generation - ensuring they have prepared successors and effective teams. This course will examine models and frameworks for coaching and development and is intended for those interested in practicing coaching as a manager or peer. Department Permission Required. Repeatable for Credit.
MGMT 775 - SUPPLY CHAIN ILE
Short Title: SUPPLY CHAIN ILE
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: The Supply Chain for most companies is a very vital ingredient in their success, maybe even survival. Whether you are a company such as Apple, where your core competency is the design/styling of products, or your company designs, manufactures and distributes all of your products, the supply chain’s has to perform at a high level. In the face of increasing customer expectations and global competitions, companies have to become more efficient in controlling the flow of materials throughout the supply chain. This ILE is designed to provide an introduction to the major components important in the Supply Chain. Topics discussed will include: Strategies for the Supply Chain, Procurement & Global Financial Decisions Processes such as Sales and Operations Planning (S&OP), Negotiation, Supplier Selection Systems for Manufacturing Planning & Control, & MRP/ERP Management of Suppliers using Performance Assessments, Developing Capabilities Decisions affecting Inventory, and Logistics Jobs in the Supply Chain Corporate Social Responsibility in the Supply Chain The course will be a combination of lectures and some thought-provoking activities and discussions of current events from the Supply Chain affecting companies will be part of the class, and participants are encouraged to bring in relevant examples from their previous work experience to share. Repeatable for Credit.

MGMT 776 - INTRODUCTION TO REAL ESTATE INDUSTRY
Short Title: INTRO TO REAL ESTATE INDUSTRY
Department: Management
Grade Mode: Standard Letter
Course Type: Intensive Learning Experience
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: An introductory survey course intended to provide a foundational understanding of the real estate industry. This course aims to be useful to students interested in pursuing a career in the real estate industry who have no or limited experience in real estate. This course is open to MBA students in each program. Outside graduate students can enroll with instructor permission provided space is available. Repeatable for Credit.

MGMT 777 - INVESTMENT BANKING AND MARKETS ILE
Short Title: INVESTMENT BANKING & MARKETS
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 778 - CUSTOMER EXPERIENCE MANAGEMENT
Short Title: CUSTOMER EXPERIENCE MANAGEMENT
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course examines the key issues in managing customer experience in customer-focused service organizations. Its learning objectives are to understand the customer decision journey framework, diagnose and solve problems with journey mapping, design a transformative customer experience, measure experience, and manage unforeseen mishaps and setbacks.

MGMT 779 - BUSINESS AND URBAN ANALYTICS
Short Title: BUSINESS & URBAN ANALYTICS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: The project based class offers the unique opportunity for students from distinct fields of business and engineering to solve a real world data driven problem in a collaborative way. The data and the problem statement will come from the Rice University’s Administrative Center for Sustainability and Energy Management (ACSEM) at the start of the semester. Instructor Permission Required. Cross-list: ENGI 779.

MGMT 780 - WHEN YOUR BUSINESS IS SUED
Short Title: WHEN YOUR BUSINESS IS SUED
Department: Management
Grade Mode: Standard Letter
Course Type: Intensive Learning Experience
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course provides an understanding of a lawsuit from the viewpoint of business leadership. Lectures cover causes of action, procedure, evidence, case evaluation and resolution. Practical exercises provide insight into the importance of discovery and depositions. Classic business litigation cases will be presented. The course ends with a mini-trial based on class materials.
MGMT 781 - TEAMS AND TEAMWORK  
Short Title: TEAMS AND TEAMWORK  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 1.5  
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.  
Course Level: Graduate  
Prerequisite(s): MGMT 510 or MGMP 510 or MGMW 510 or EMBA 992  
Description: In the modern workplace, work is primarily completed as a part of a team. Thus, it is essential that managers learn how to effectively lead and work within teams. This course will teach students the psychology of teams and effective practices for managing teams in the workplace.

MGMT 782 - TEAM DYNAMICS II  
Short Title: TEAM DYNAMICS II  
Department: Management  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Laboratory  
Credit Hours: 0.5  
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.  
Course Level: Graduate  

MGMT 783 - SQL FOR MANAGERS  
Short Title: SQL FOR MANAGERS  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Intensive Learning Experience  
Credit Hours: 0.75  
Restrictions: Students who are registered in the following programs may not enroll: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.  
Course Level: Graduate  
Description: This course teaches students relational database fundamentals and SQL programming skills in the context of complex business problems and the communication with users and technical resources. Topics covered include relational database architecture, database fit and design, requirements gathering, formatting deliverables, and simple query skills. Upon completion, participants will understand SQL functions, join techniques, database schemas, and will be able to write useful SQL statements.

MGMT 784 - POWER AND INFLUENCE IN ORGANIZATIONS  
Short Title: POWER & INFLUENCE IN ORGS  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 1.5  
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.  
Course Level: Graduate  
Prerequisite(s): MGMT 510 or MGMP 510 or MGMW 510 or EMBA 992  
Description: A manager’s primary purpose is to use power to influence subordinates and create an effective organization. This course will teach students how to build power, how to influence people, and the proper use of power in the modern organization through lecture, discussion, and experiential activities.

MGMT 785 - CORPORATE REAL ESTATE: CASE STUDIES IN ENERGY AND HEALTHCARE  
Short Title: CORP REAL ESTATE - ENERGY & HC  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 0.75  
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.  
Course Level: Graduate  
Description: World real estate accounts for 60% (US$225 trillion) of all mainstream assets. Every organization has a real estate footprint. This course helps business leaders understand how corporate real estate should support its organization's strategic business objectives. We will use lectures, case studies, and practical exercises to help solve common organizational problems.

MGMT 786 - GLOBAL BUSINESS OFFSITE  
Short Title: GLOBAL BUSINESS OFFSITE  
Department: Management  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Seminar  
Credit Hours: 0.75-1.5  
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.  
Course Level: Graduate  
Description: This course, led by Rice Business faculty, takes place in an international business setting and consists of a combination of lectures by local university faculty and business leaders and site visits to companies in the region. Students have the opportunity to meet with corporate executives, investors, and scholars to discuss opportunities and challenges of doing business in the country. The objectives of the course are to further an appreciation of the opportunities and obstacles of doing business in different parts of the world, increase sensitivity to cross-cultural issues, and broaden perspectives on issues dealing with global business. Department Permission Required. Repeatable for Credit.

MGMT 787 - FINANCIAL CRISIS  
Short Title: FINANCIAL CRISSES  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 1.5  
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.  
Course Level: Graduate  
Prerequisite(s): MGMT 840 or ((MGMT 540 or MGMP 540 or MGMW 540) and (MGMT 541 or MGMP 541 or MGMW 541))  
Description: This course examines financial crises both domestic and global through time. The focus is on financial market structures, economic incentives and policies leading up, during, and after different crises. Case studies, lectures, academic articles and documentaries may be used.
MGMT 788 - CORPORATE RIVALRY
Short Title: CORPORATE RIVALRY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MGMT 540 or MGMP 540 or MGMW 540 or MGMT 840
Description: This course is about learning to think like a game theorist and developing a systematic way to evaluate strategic problems. Emphasis is on real-world applications and in-class business exercises.

MGMT 789 - GLOBAL FIELD EXPERIENCE
Short Title: GLOBAL FIELD EXPERIENCE
Department: Management
Grade Mode: Standard Letter
Course Type: Intensive Learning Experience
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or OMBA programs. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This unique experiential learning opportunity requires students to apply what was learned in the first year of the program through consulting projects on the ground in a designated country. The course fosters a global mindset and further develops the ability to tackle business challenges in dynamic, diverse, and complex environments. Department Permission Required.

MGMT 790 - LEADERSHIP DEVELOPMENT
Short Title: LEADERSHIP DEVELOPMENT
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Laboratory
Credit Hours: 0.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course provides an understanding of how to build and lead a data driven business. Lectures cover fundamentals of data management, analytics maturity models, the role of "Big Data," application of artificial intelligence, machine learning, and cognitive computing technologies for predictive and adaptive analytics, and creating value-based business analytics strategies.

MGMT 791 - ORGANIZATIONAL CHANGE INTENSIVE
Short Title: ORG CHANGE INTENSIVE
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 0.5
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: An intensive one day course on leading change. This class builds on the core MGMT 512 (Leading Change) class and is taught primarily using a team-based simulation. You will learn a very versatile process model of change and how to apply it to a variety of organizational-level changes.

MGMT 792 - INVESTMENTS / PORTFOLIO MANAGEMENT
Short Title: INVESTMENTS / PORTFOLIO MGMT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course examines the determinants and behavior of asset prices and provides a framework for portfolio management. We rely on both financial theory and analytical tools. Topics covered will include asset pricing models, market efficiency, asset allocation, portfolio management, and performance evaluation. The course is designed to provide a conceptual understanding of investment returns and portfolio management processes coupled with a strong quantitative focus that develops analytical tools and spreadsheet modeling techniques.

MGMT 793 - CREATING THE DATA DRIVEN BUSINESS
Short Title: CREATING DATA DRIVEN BUSINESS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course provides an understanding of how to build and lead a data driven business. Lectures cover fundamentals of data management, analytics maturity models, the role of "Big Data," application of artificial intelligence, machine learning, and cognitive computing technologies for predictive and adaptive analytics, and creating value-based business analytics strategies.

MGMT 794 - PROFESSIONAL SEMINAR
Short Title: PROFESSIONAL SEMINAR
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the W MBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course explores current business challenges through engagement with business leaders. Guest instructors lead students through challenges in their functional areas and through state-of-the-art applications of emerging technologies. Students engage with executives, rising middle managers, and subject matter experts. Repeatable for Credit.
MGMT 795 - DEAN'S LEADERSHIP SEMINAR
Short Title: DEAN'S LEADERSHIP SEMINAR
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs:
EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course examines leadership challenges as they apply to contemporary issues in business and organizational change through engagement with C-suite executives, entrepreneurs and other leaders of complex organizations.

MGMT 796 - LEADERSHIP DEVELOPMENT II
Short Title: LEADERSHIP DEVELOPMENT II
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate

MGMT 797 - EDGE INTERSESSION ABROAD - SOUTH AMERICA
Short Title: JONES EDGE - SOUTH AMERICA
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 798 - PSYCHOLOGICAL FOUNDATIONS OF PROFESSIONAL LIVES
Short Title: PSYCH FOUNDATIONS OF PROF LIFE
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs:
EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Course draws from psychology and management research, exploring complexity of professional lives and identity dynamics, underlying career decisions, compromises, and regrets. Through exercises, cases, and discussions, students develop an understanding of the type of professional path they want and why, and how to get it and overcome setbacks and successes.

MGMT 799 - HEALTHCARE INNOVATION AND ENTREPRENEURSHIP
Short Title: HEALTHCARE INNOV & ENTREP
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course is designed for healthcare entrepreneurs who want to build innovative medical technologies. Students work in interdisciplinary teams comprised of engineering, business, and medical students. Key concepts include: how to validate and scope clinical needs, ideate solutions, draft a business model, and determine regulatory and reimbursement strategies. Instructor Permission Required.

MGMT 800 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Management
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1.5-3
Restrictions: Enrollment limited to students in the EMBA program.
Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Independent study or directed reading on an approved project under faculty supervision. Contact MBA program office for application information. No more than 3 credit hours of independent study will count towards graduation unless approved by the Jones School Academic Standard Committee. Department Permission Required. Repeatable for Credit.

MGMT 801 - FINANCIAL ACCOUNTING
Short Title: FINANCIAL ACCOUNTING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the EMBA program.
Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Introduction to the preparation, analysis, and use of corporate financial reports. Covers the basic techniques of financial reporting and analysis from the perspective of managers as well as external users of information such as investors. Repeatable for Credit.

MGMT 802 - MANAGERIAL ACCOUNTING
Short Title: MANAGERIAL ACCOUNTING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Provides general managers with an understanding of the design and function of a firm's management accounting system to enable them to become active consumers of accounting information. The course describes how accounting information can assist managers in making decisions about products, services, and customers; improving existing processes; and aligning organizational activities toward long-term strategic objectives.
MGMT 804 - CREATING THE DATA DRIVEN BUSINESS
Short Title: CREATING DATA DRIVEN BUSINESS
Department: Management
Grade Mode: Standard Letter
Course Type: Intensive Learning Experience
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the OMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Description: This course provides an understanding of how to build and lead a data driven business. Lectures cover fundamentals of data management, analytics maturity models, the role of “Big Data,” application of artificial intelligence, machine learning, and cognitive computing technologies for predictive and adaptive analytics, and creating value-based business analytics strategies.

MGMT 806 - EXECUTIVE 2ND YEAR CAPSTONE
Short Title: EXEC 2ND YEAR CAPSTONE
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: The second-year capstone is an applied management course in the program's core curriculum, where student teams learn how to work through an end-to-end strategic assessment and planning effort on a current real-life strategic challenge faced by a Houston-based, socially-oriented community organization. It provides students the opportunity to apply their multi-functional (strategy, finance, marketing, organizational behavior, etc.) knowledge from the program and their own professional experience, as well as provides background on management of non-profit organizations. Repeatable for Credit.

MGMT 807 - LEADERSHIP
Short Title: LEADERSHIP
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course covers key elements of sound leadership theory and practice in various organizational settings. Emphasis is on readings concerning leadership skill development and cases concerning effective versus ineffective leadership practices. Applications range from team settings to business units to executive suites. Course emphasizes strategic, moral, and organizational dimensions of leadership.

MGMT 809 - ORGANIZATIONAL BEHAVIOR
Short Title: ORGANIZATIONAL BEHAVIOR
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: The purpose of this course is to help students become better decision makers, motivators, and leaders. Topics include perception, attribution, decision making, motivation, influence, leadership, culture, and innovation. Special attention is paid to the importance of managing based on evidence (evidence-based management).

MGMT 813 - LEADING FOR CREATIVITY AND INNOVATION
Short Title: LEADING FOR CREATIVITY & INNOV
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Study of the nature of creativity, creative thinking skills and ways to encourage, promote, and effectively manage creativity and innovation in complex organizations.

MGMT 815 - BARGAINING
Short Title: BARGAINING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 817 - DECISION STRATEGIES
Short Title: DECISION STRATEGIES
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMB A XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Making good decisions is core to success in business and in life. Decision analysis is the discipline that helps people choose wisely under conditions of uncertainty and often competing objectives. In this course students learn the decision analysis process and tools to make great decisions.
MGMT 820 - COMPLEXITIES OF PEOPLE AND ORGANIZATIONS
Short Title: COMPLEXITIES OF PEOPLE & ORGS
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Course Level: Graduate
Description: A seminar focused on contemporary issues in organizational behavior.

MGMT 821 - OPTIMIZING THE WORKFORCE OF THE FUTURE
Short Title: OPTIMIZING THE WORKFORCE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMB MBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Students consider optimal ways to plan for, encourage, and manage diversity in organizations. We explore the data and analyze the business case for diversity and evaluate strategies to recruit and retain diverse talent. This active-learning course relies on the latest empirical research and provides practical skills for managing tomorrow’s workforce.

MGMT 830 - STRATEGIC IT
Short Title: STRATEGIC IT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment limited to students in the EMBA program.
Course Level: Graduate
Description: Today, businesses spend several trillion dollars annually on information technology (IT). To gain the greatest benefit from this investment, managers need to understand the interaction of this technology with ways of working. Our focus will be on cases in which business leaders have tried to use IT to enhance organizational development and support competitive strategy. From our analysis of their experiences, we will develop some management guidelines for businesses seeking to exploit IT.

MGMT 833 - STRATEGY IN TECHNOLOGY ECOSYSTEMS
Short Title: STRATEGY IN TECH ECOSYSTEMS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMB MBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: The course deals with strategic management topics of interest to ventures that operate in technological ecosystems. Topics covered include platforms, network effects, coping with disruptive innovation, and how technology can create new markets and revolutionize existing ones.

MGMT 840 - ECONOMICS FOR BUSINESS
Short Title: ECONOMICS FOR BUSINESS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the EMBA program.
Course Level: Graduate

MGMT 841 - ECONOMIC ENVIRONMENT OF BUSINESS
Short Title: ECONOMIC ENVIR OF BUSINESS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Course Level: Graduate
Description: Examination of the global economic environment that serves as a backdrop for business decision making, with emphasis on the key macroeconomic policy goals and tools and how they affect exchange rates, interest rates, business cycles, and long-term economic growth.

MGMT 843 - CORPORATE FINANCIAL MANAGEMENT
Short Title: CORPORATE FINANCIAL MANAGEMENT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the EMBA program.
Course Level: Graduate
Description: This course emphasizes concepts and skills related to valuation tasks in a corporate setting. Topics include financial market structure and efficiency, time value of money, net present value, internal rate of return, capital budgeting, risk and return, capital asset pricing model, cost of capital, capital structure, payout policy, and real options analysis.

MGMT 845 - CORPORATE FINANCIAL STRATEGY FOR EXECUTIVES
Short Title: CORP FIN STRATEGY FOR EXECS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Course Level: Graduate
Description: This is a case study course based on current corporate finance transactions and topics. The intent is to expose Executive MBA candidates to some of the practical challenges and opportunities when tackling financial decisions governed by Corporate Financial policies (Capital Structure, Financial Risk Management, Liquidity, Funding/Financing, and Payout Policy).
MGMT 848 - APPLIED FINANCE
Short Title: APPLIED FINANCE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate

MGMT 860 - BUSINESS ETHICS
Short Title: BUSINESS ETHICS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course addresses moral obligations of firms and managers. The focus is on preparing for moral leadership and professionalism. Emphasis is on readings concerning best business practices and cases concerning effective versus ineffective handling of ethical analysis and moral issues. Topics include relationship of business ethics and laws, corporate social responsibility, sustainability, and human rights.

MGMT 861 - BUSINESS-GOVERNMENT RELATIONS
Short Title: BUSINESS-GOVERNMENT RELATIONS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: The course exposes students to the governmental institutions that surround the business environment. Strategies for influencing and responding to governmental factors are explored as well as other issues related to business-government relations.

MGMT 865 - GLOBALIZATION OF BUSINESS
Short Title: GLOBALIZATION OF BUSINESS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course examines the increasing importance of trade and foreign direct investment and the global political-economy to U.S. business. We first study the historical roots of globalization and move forward to consider the impact on business of the global trade rules promulgated by the World Trade Organization. We also consider U.S. policies towards trade and foreign direct investment.

MGMT 866 - PUBLIC POLICY MANAGEMENT AND ADVOCACY
Short Title: PUBLIC POLICY MGMT & ADVOCACY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course demonstrates how organizations, especially corporations, set up processes for identifying and managing public policy issues. Then, to help achieve their public policy objectives, it discusses how corporations use best practices in engaging with stakeholders--governments, media, communities and non-profit NGOs. The course covers both good and bad practices in communications with these stakeholders, including in crisis situations. Finally, it illustrates how corporations can use social responsibility activities to enhance their reputation and help achieve success in the public policy arena.

MGMT 870 - COMPETITIVE STRATEGY
Short Title: STRATEGY THEORY & ACTION
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Systematic examination of models and techniques used to analyze a competitive situation within an industry from a strategic perspective. Examines the role of key players in competitive situations and the fundamentals of analytical and fact oriented strategic reasoning. Examples of applied competitive and industry analysis are emphasized.

MGMT 872 - STRATEGY THEORY AND ACTION II
Short Title: STRATEGY THEORY & ACTION II
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate

MGMT 874 - OPERATIONS MANAGEMENT
Short Title: OPERATIONS MANAGEMENT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Introduction to the design and integration of successful operations tactics both within the organization and across the supply chain. The course focuses on understanding, managing and improving processes and flows of products, customers, and information. Touching upon bottlenecks, inventory, quality management, and strategic issues in operations.
MGMT 880 - STRATEGIC MARKETING
Short Title: STRATEGIC MARKETING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Introduction to the key concepts and perspectives underlying the function of marketing in a business enterprise. Emphasis is placed on strategic marketing issues and the formulation of marketing strategies. Includes value proposition; customer & market analysis; segmentation & targeting; product strategy; branding; pricing strategy; marketing channels; marketing communication and selling. Lectures and extensive analysis of marketing management case studies.

MGMT 881 - CONSULTATIVE SELLING
Short Title: CONSULTATIVE SELLING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course introduces students to the knowledge, skills, and behaviors required for success in the field of consultative selling. Topics include effective questioning, active listening, client learning style and personality assessment, principles of influence, effective sales call planning and execution, and delivering persuasive presentations.

MGMT 885 - MARKETING CHANNELS
Short Title: MARKETING CHANNELS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 886 - DECISION MODELS
Short Title: DECISION MODELS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Successful management requires the ability to recognize a decision situation, understand its essential features, and make a choice. However, many of these situations - particularly those involving uncertainty and/or complex interactions - may be too difficult to grasp intuitively, and the stakes may be too high to learn by experience. This course introduces spreadsheet modeling, simulation, decision analysis and optimization to represent and analyze such complex problems. The skills learned in this course are applicable in almost all aspects of business and should be helpful in future courses. The course is divided into two parts. In the first part, we discuss the use of decision trees for structuring decision problems under uncertainty. In the second part of the course, we discuss Monte Carlo simulation, a technique for simulating complex, uncertain systems. Throughout the course, we will use Microsoft Excel as a modeling environment, using add-in programs as necessary. Familiarity with Excel is an important prerequisite for this course.

MGMT 892 - CUSTOMER RELATIONSHIP MANAGEMENT STRATEGY
Short Title: CUSTOMER REL MGMT STRATEGY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 895 - BUSINESS ANALYTICS
Short Title: BUSINESS ANALYTICS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: The ever-increasing capacity of computers to analyze data, and the explosion of the amount of data available, has resulted in an increased role for data analysis as an aid to business decision-making. This course exposes the student to the most important ideas and methods relevant for data analysis in a business context. Emphasizing practical applications to real problems, the course covers the following topics: Sampling, Descriptive Statistics, Probability Distributions, and Regression Analysis. Students are strongly encouraged to bring data from work; projects from previous years have returned significant monetary value to students’ current employers and examples of these projects will be provided in class. Repeatable for Credit.

2019-2020 General Announcements
PDF Generated 1/29/2020
MGMT 896 - LEADERSHIP COMMUNICATION I
Short Title: LEADERSHIP COMMUNICATION I
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course is an introduction to corporate communication strategy, internal corporate communications, and interpersonal communications including listening and feedback. A separate, optional track allows students to practice and develop public speaking and writing skills.

MGMT 897 - LEADERSHIP COMMUNICATIONS II
Short Title: LEADERSHIP COMMUNICATIONS II
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course focuses on advanced communication topics including crisis communications, intercultural communications, and mastering difficult conversations. A separate, optional track allows students to continue practicing and developing public speaking and writing skills.

MGMT 899 - APPLIED DATA SCIENCE: AN INQUIRY BASED LEARNING APPROACH
Short Title: APPLIED DATA SCIENCE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBB XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Course Level: Graduate
Description: This course is open to MBA students who can bring data for use in the course – especially data from real or developing businesses. One can anticipate applying several of the following: 1) Sampling; 2) 1-Way, 2-Way, 3-Way Anova; 3) Simple and Multiple Regression; 4) Factor Analysis; 5) The General Linear model; 6) Binary and multinomial Logit; and 7) Cluster Analysis. Instructor Permission Required.

MGMT 901 - FINANCIAL STATEMENT ANALYSIS
Short Title: FINANCIAL STATEMENT ANALYSIS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Description: This course covers how strategic planning and control systems can give managers the timely quantitative and qualitative information they need to "drive into the future" with confidence and success. Firms use performance measurement and control systems to support dynamic decision making to keep in step with changing business and market conditions, and with advances in product and process technologies? Is innovation being fostered in a way consistent with overall business strategy. Through a series of case and discussions, we will examine the properties of performance measurement and control systems that address these issues.

MGMT 902 - FINANCIAL STATEMENT ANALYSIS II
Short Title: FINANCIAL STATEMENT ANALYSIS II
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Description: Repeatable for Credit.

MGMT 903 - TAXES AND MULTINATIONAL BUSINESS STRATEGY
Short Title: TAXES/MULTINATIONAL BUS STRAT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Description: Repeatable for Credit.

MGMT 904 - MANAGEMENT CONTROL SYSTEMS
Short Title: MANAGEMENT CONTROL SYSTEMS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Description: This course covers how strategic planning and control systems can give managers the timely quantitative and qualitative information they need to "drive into the future" with confidence and success. Firms use performance measurement and control systems to promote effective and efficient utilization of organizational resources, and to ensure success of their business strategies. Are products and services being offered in the least costly manner? Is quality being maintained? Are businesses processes running efficiently? Are systems supporting dynamic decision making to keep in step with changing business and market conditions, and with advances in product and process technologies? Is innovation being fostered in a way consistent with overall business strategy. Through a series of case and discussions, we will examine the properties of performance measurement and control systems that address these issues.

MGMT 906 - VALUATION APPLICATIONS IN ACCOUNTING
Short Title: VALUATION
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.

MGMT 908 - NEGOTIATION AND CONFLICT RESOLUTION II
Short Title: NEGOTIATIONS II
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
MGMT 909 - NEGOTIATION AND CONFLICT RESOLUTION  
Short Title: NEGOTIATION & CONFLICT RESOLUTION  
Department: Management  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Lecture  
Credit Hours: 0  
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.  
Description: Development of analytical and behavioral skills for resolving conflict and negotiating successfully in a business context. Topics include analysis of your negotiation counterpart, adversarial versus cooperative bargaining, influence tactics, and ethics.

MGMT 919 - CORPORATE GOVERNANCE  
Short Title: CORPORATE GOVERNANCE  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 1.5  
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.  
Description: Repeatable for Credit.

MGMT 928 - ENTERPRISE EXCHANGE  
Short Title: ENTERPRISE EXCHANGE  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 2  
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.  
Description: The needs approach to buying and selling businesses; enterprise valuation; deal and contract structuring; mergers and acquisitions; leveraged buyouts; consolidating fragmented industries.

MGMT 930 - FINANCIAL MARKETS  
Short Title: FINANCIAL MARKETS  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 1.5  
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.  
Description: Repeatable for Credit.

MGMT 932 - CORPORATE GOVERNANCE AND FINANCIAL REPORTING  
Short Title: CORP GOV & FINANCIAL REPORTING  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 2  
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.  
Description: Repeatable for Credit.

MGMT 954 - CORPORATE FINANCIAL RESTRUCTURING  
Short Title: CORP FINANCIAL RESTRUCTURING  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 1.5  
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.  
Description: Repeatable for Credit.

Houstonians know every boom inevitably leads to a bust. From Enron to Lyondell to American Airlines, discover how to create value through corporate restructuring. Learn why companies fail, distressed M&A bidding strategies, insolvency versus illiquidity, diamond-in-the-rough versus fool's gold, fraudulent transfer risks, distressed valuation, credit default swaps, and much more.

Rice University
MGMT 955 - ADVANCED FINANCIAL RESTRUCTURING
Short Title: ADV FINANCIAL RESTRUCTURING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Prerequisite(s): MGMT 954 (may be taken concurrently)
Description: After mastering MGMT 954 terms and frameworks, gain a deeper understanding of issues and tactics for complex reorganizations, international insolvencies, energy bankruptcies, long/short investing in distressed debt, and hedging and alpha investing with credit default swaps. Discover long-term macroeconomic themes impacting corporate restructuring. Author case study in teams of 2-3.

MGMT 957 - INTERNATIONAL FINANCE
Short Title: INTERNATIONAL FINANCE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Description: Exploration of issues encountered in international financial arenas, including foreign exchange rate risk management, capital budgeting for international projects, and international financing strategies.

MGMT 959 - STRATEGY AND MANAGING INTERNATIONAL STRATEGIC ALLIANCES
Short Title: STRAT & MANAGING INTL STRAT.
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.

MGMT 960 - STRATEGIC INNOVATION MANAGEMENT
Short Title: STRATEGIC INNOVATION MGMT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Description: Innovation is critical for firms to achieve better performance and sustainable competitive advantage. However, the management of innovation is inherently difficult and risky because customer demand and preferences change quickly and technological changes are highly unpredictable and thus most new products and technologies are not a commercial success. This course is designed to help executives apply the key strategic management frameworks and concepts to address important challenges they face in innovation management: How to manage market uncertainty, technological uncertainty and competitive volatility? What are the enemies of innovation in both new ventures and successful established firms? How to build strategic alliances for technology/product innovation? And how to manage innovation in the global market?

MGMT 961 - BUSINESS LAW
Short Title: BUSINESS LAW
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Description: An overview of the legal system and survey of legal standards applicable to companies, including laws impacting corporate formation and governance, contracts, tort liability, employment law and unfair competition. The course is designed to help executives understand how to manage risk in light of applicable standards.

MGMT 962 - APPLIED CONTRACT LAW
Short Title: APPLIED CONTRACT LAW
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.

MGMT 970 - OPERATIONS STRATEGY
Short Title: OPERATIONS STRATEGY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Description: Examination of strategic planning approaches and methods for managing 21st Century organizations. Emphasizes design and implementation of planning systems that are highly responsive to the dynamic, competitive, stakeholder-influenced planning contexts facing modern organizations.

MGMT 973 - OPERATIONS LEADERSHIP
Short Title: OPERATIONS LEADERSHIP
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Description: This course is designed to be interactive, thought provoking and / or validate current methods of operating or managing within the supply chain. This course will explore the many working aspects and functions in plant and multi-plant system operations. Discussions and course content will delve into executive and managerial roles in maintaining efficient and effective plant and system wide operations. The course will also discuss the importance of establishing a system of early warning signs that identify and use critical success measures to be proactive towards emergent problems. Selected readings and exercises coupled with group presentations and discussions will examine functions in operations with a focus on manufacturing in the areas of: Strategy, Leadership, Execution, Operations Maintenance/Process Support systems for control, and General Discussions – Lessons Learned.
MGMT 985 - GLOBAL LEADERSHIP
Short Title: GLOBAL LEADERSHIP
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate or Graduate Quadmester level students.
Description: Leadership challenges, skills and strategies in the global context. Cross-cultural differences in characteristics of followership, values, information-processing styles, interpersonal relationships, group dynamics and many other areas. Implications of these differences for employee attitudes and behavior, and for leadership effectiveness in the workplace. Scientifically-proven course material and dynamic, interactive teaching style.

MGMT 995 - ADVANCED BUSINESS ANALYTICS
Short Title: ADVANCED BUSINESS ANALYTICS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBBA Enrollment is limited to Graduate or Graduate Quadmester level students.
Description: The main purpose of this course is to expose students to the interactive process of analyzing and exploring enterprise data to find insights that can be leveraged for competitive advantage. We will apply analytical tools to data in order to learn how to discover patterns and associations in business data that would otherwise be ignored. We will understand the difference between supervised and unsupervised learning, and learn how to select the correct tools for descriptive and predictive analytics.

Managerial Studies (MANA)

MANA 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Managerial Studies
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

MANA 404 - MANAGEMENT COMMUNICATIONS IN A CONSULTING SIMULATION
Short Title: MANAGEMENT COMMUNICATIONS
Department: Managerial Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Managerial Studies. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The capstone course for the MANA curriculum, students work on professional-level skills in communication sub-disciplines involving business strategy, writing in business and management contexts, intercultural communication challenges, and the presentation of business analysis. The class format combines elements of a workshop along with a lecture/discussion-oriented teaching environment. Students apply knowledge gained in Managerial Studies' previous courses - including economics, psychology, statistics, accounting, policy studies, and finance - to cases that require complex communications for multiple audiences. Recommended Prerequisite(s): Completion of eight Managerial Studies required courses.

MANA 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Managerial Studies
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

MANA 498 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Managerial Studies
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Managerial Studies. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Independent research project with a Faculty member in the Jones Graduate School of Management. Only for students in the Honors Program of Managerial Studies. Must have the approval of the Director of Managerial Studies and the participating Jones School Faculty Member. Instructor Permission Required.
MANA 499 - LEGAL THEMES IN ENGINEERING AND MANAGING PRACTICE
Short Title: LEGAL THEMES IN ENGI PRACTICES
Department: Managerial Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Introduction to fundamental legal concepts of the American legal system for upper level undergraduate students, primarily aimed at what engineers, scientists and other professionals could expect to encounter in their professional careers. The primary focus is to provide students with the basic tools to understand and interact with lawyers. Cross-list: MECH 456.

MACC 500 - INTERNSHIP IN ACCOUNTING
Short Title: INTERNSHIP IN ACCOUNTING
Department: Management
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 6
Restrictions: Enrollment limited to students in the MACC program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Supervised off-campus, non-group instruction, including field experiences, practica, or internships in applied accounting. Written and oral critique of activity required. Internship plan must be approved in advance by the MAcc Program Director. Instructor Permission Required.

MACC 501 - ACCOUNTING ETHICS AND PROFESSIONALISM
Short Title: ETHICS IN ACCOUNTING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MACC program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The purpose of the course is to prepare the future CPA for ethical judgement. Course materials emphasize ethical reasoning and giving voice to values; principles of integrity, objectivity, independence (in fact and appearance) and avoidance of intentional misrepresentation of facts; the role of core values in a dynamically changing global economy; and professional and ethical issues in accounting practice.

MACC 502 - BUSINESS LAW FOR ACCOUNTANTS
Short Title: BUSINESS LAW FOR ACCOUNTANTS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MACC program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines the broad subject of law as it relates to business and is designed to help the accounting student develop 'legal astuteness.' The course provides an initial exposure to contracts and crucial concepts of tort, crime, agency, and business organization, as well as federal legal and regulatory schemes.

MACC 503 - ACCOUNTING AND AUDITING REGULATION
Short Title: ACCTING & AUDITING REGULATION
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MACC program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students will engage in an intensive 5-day learning program held partially or fully off-campus. An accounting faculty member will oversee the course, and various officials involved in public policy will lead many presentations and discussions. The grade for this course will be 100% based on accounting and business writing.

MACC 504 - FINANCIAL FUTURES AND OPTIONS
Short Title: FINANCIAL FUTURES & OPTIONS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MACC program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An introduction to forward, futures, option, and swap contracts, including the basic valuation, principles, the use of these contracts for hedging financial risk, and an analysis of option-like investment decisions.

MACC 505 - ECONOMIC ENVIRONMENT OF BUSINESS
Short Title: ECONOMIC ENVIRONMT OF BUSINESS
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MACC program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: EEB stresses an understanding of the major macroeconomic forces affecting business in today's global economy. Fluency in major macroeconomic concepts and forces enhances business decision-making in the globally competitive product, financial, and labor markets that characterize the modern business environment.

MACC 506 - JUDGMENT AND DECISION MAKING FOR ACCOUNTANTS
Short Title: JUDGMENT/DECISION MAKING-ACCTS
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MACC program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Decisions in the workforce are often made under conditions of bias, conflict of interest, and missing information. In this course, accountants will learn how to identify and overcome common judgment and decision making errors through lecture, discussion, and experiential activities.
MACC 511 - ISSUES IN FINANCIAL REPORTING II

Short Title: ISSUES IN FIN REPORTING II
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the following programs: EMBA MACC MBA PMBA WMBA XMB
Enrollment is limited to Graduate level students.
Course Level: Graduate

Description: Topics include: accounting for dilutive securities and stock-based compensation; recognition and de-recognition of investments, leases, deferred taxes, and pension and other postretirement obligations; advanced topics on inter-corporate investment accounting. Codification research will be integrated throughout course. Comparison of U.S. GAAP and IFRS.

MACC 512 - FINANCIAL STATEMENT ANALYSIS AND VALUATION

Short Title: FINANCIAL STATEMENT ANALYSIS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MACC program.
Enrollment is limited to Graduate level students.
Course Level: Graduate

Description: The first half of the course focuses on documenting and understanding a firm's profitability relative to past performance and comparable firms. The second half of the course covers: 1) forecasting financial statements and 2) deriving firm value under a variety of approaches, including DCF and residual income valuation (RIV).

MACC 513 - ISSUES IN FINANCIAL REPORTING III

Short Title: ISSUES IN FIN REPORTING III
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MACC program.
Enrollment is limited to Graduate level students.
Course Level: Graduate

Description: This course covers the advanced financial accounting topics of: preparation of consolidated statements, partnership accounting and reporting, accounting for bankruptcy and reorganization, segment disclosures, and interim reporting, and the role of the SEC in financial reporting for publicly traded companies.

MACC 514 - FAIR VALUE ACCOUNTING

Short Title: FAIR VALUE ACCOUNTING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MACC MBA PMBA WMBA XMB
Enrollment is limited to Graduate level students.
Course Level: Graduate

Description: This course examines: fair value accounting, as outlined in Accounting Standard Codification section 820 and other U.S. accounting standards; use of 3rd party pricing services, credit risk considerations, and recent accounting updates impacting the valuation of various financial instruments, such as loans, equities, department securities, alternative investments, real estate investments and liabilities.

MACC 530 - INTRODUCTION TO MANAGERIAL ACCOUNTING

Short Title: INTRO TO MGMT ACCOUNTING
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 0.5
Restrictions: Enrollment limited to students in the MACC program.
Enrollment is limited to Graduate level students.
Course Level: Graduate

Description: Course introduces the vocabulary and mechanics of cost accounting. Basic managerial accounting topics will be covered, including cost-volume analysis, cost behavior, relevant costs, and the use of cost information for decision making.

MACC 531 - ADVANCED MGMT ACCOUNTING

Short Title: ADVANCED MGMT ACCOUNTING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MACC program.
Enrollment is limited to Graduate level students.
Course Level: Graduate

Description: The use of management accounting information to serve management decision-making; review of cost accounting concepts; use of standards and variances; relevance and decision making; role of cost allocations; different costs for different purposes; product costing systems; and managing customers.

MACC 533 - ACCOUNTING CONTROL SYSTEMS

Short Title: ACCOUNTING CONTROL SYSTEMS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MACC MBA PMBA WMBA XMB
Enrollment is limited to Graduate level students.
Course Level: Graduate

Description: Examines the concepts of the integrated audit of internal control over financial reporting in accordance with PCAOB Audit Standard 5. Also covers fundamental procedures used in financial statement audits, specifically in the client acceptance and continuance, planning and risk assessment, and audit comfort cycle phases of the engagement.

MACC 542 - ADVANCED AUDITING

Short Title: ADVANCED AUDITING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MACC MBA PMBA WMBA XMB
Graduate level students may not enroll.
Course Level: Graduate
Prerequisite(s): BUSI 440

Description: This course provides students with an in-depth understanding of professional standards, the audit process, advanced auditing techniques, and the auditor's role. This course will use case studies to explore audit topics not extensively covered in a typical intro-auditing course, including planning/risk assessment, design and execution of procedures, testing techniques, and software tools.
MACC 561 - ACCOUNTING INFORMATION SYSTEMS  
Short Title: ACCOUNTING INFORMATION SYSTEMS  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment limited to Graduate level students.  
Course Level: Graduate  
Description: A study of automated systems of processing data for accounting information. The accounting system is discussed from the perspective of developing and maintaining systems capable of producing information for internal decision-making and external reporting. Hands-on experience may include general ledger, ERP, flowcharting software and other relevant computer technology.  

MACC 562 - ACCOUNTING AND DATA ANALYTICS  
Short Title: ACCOUNTING & DATA ANALYTICS  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 1.5  
Restrictions: Enrollment limited to students in the following programs: EMBA MACC MBA PMBA WMBA XMBA Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course applies accounting and critical thinking skills to real-world data analytics examples from auditing and forensics. The focus is on (1) the methodologies of transforming raw and unstructured data into workable data sets, (2) how to interpret data sets, and (3) the presentation of data to decision makers.  

MACC 571 - FEDERAL TAXATION I  
Short Title: FEDERAL TAXATION I  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment limited to students in the MACC program. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Introduction to federal income tax principles. Emphasis on general skills in identifying and resolving tax issues, understanding the administrative and public policy and reasoning underlying tax law choices and integrating the tax laws into business and personal decisions and planning. Coverage of taxation of C-corporations, S-corporations, and partnership.  

MACC 572 - FEDERAL TAXATION II  
Short Title: FEDERAL TAXATION II  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 1.5  
Restrictions: Enrollment limited to students in the MACC program. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): MACC 571  
Description: Building on the subject matter covered in MACC 571, this course provides further knowledge of the federal tax structure and fundamental skills for decision-making regarding tax compliance and tax planning.  

MACC 581 - GOVERNMENT AND NOT-FOR-PROFIT ACCOUNTING  
Short Title: GOVT AND NFP ACCOUNTING  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 1.5  
Restrictions: Enrollment limited to students in the following programs: EMBA MACC MBA PMBA WMBA XMBA Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Financial reporting, managerial, auditing, taxation, and information systems issues in governmental and nonprofit entities; ethics and professional standards; fund accounting concepts and practices, as well as government-wide financial reporting similar to private business consolidated reporting and the relationships between the two; not-for-profit budgeting, accounting, and reporting standards.  

MACC 591 - ACCOUNTING THEORY  
Short Title: ACCOUNTING THEORY  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment limited to students in the MACC program. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: The aim of this seminar is to impart an understanding of the historical evolution of the literature on financial accounting theory and accounting principles, as well as emerging developments in accounting research. A companion objective is to come to understand the evolving dynamic of the standard-setting process for financial reporting in the United States and at the international level, including consideration of the “political” intrusions into this process. Readings will be drawn from the periodical literature, books and monographs, and reports. A term paper will be required. Mutually Exclusive: Cannot register for MACC 591 if student has credit for BUSI 491/MGMT 591.  

MACC 599 - INDEPENDENT STUDY  
Short Title: INDEPENDENT STUDY  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Independent Study  
Credit Hours: 1-3  
Restrictions: Enrollment limited to students in the MACC program. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Specialized aspect or topic in an area directly related to public accounting that is chosen by student and an appropriate faculty member. Department Permission Required. Repeatable for Credit.  

MACC 677 - SPECIAL TOPICS  
Short Title: SPECIAL TOPICS  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Internship/Practicum, Lecture, Laboratory, Seminar  
Credit Hours: 1-4  
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.  
Course Level: Graduate  
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.


**Materials Science & NanoEng (MSNE)**

**MSNE 201 - INTRODUCTION TO NANOENGINEERING**
*Short Title:* INTRO TO NANOENGINEERING  
*Department:* Materials Science & NanoEng  
*Grade Mode:* Standard Letter  
*Course Type:* Lecture  
*Distribution Group:* Distribution Group III  
*Credit Hours:* 3  
*Restrictions:* Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Graduate level students.  
*Course Level:* Undergraduate Lower-Level  
*Description:* Introduction to the fundamental properties of nanomaterials and their applications in engineering, technology, chemistry, energy, biology, and medicine. General discussion of nanotechnology, from multidisciplinary research to consumer products, suitable for all levels and specializations. Students will develop the understanding needed to separate the hype from the real in one of the most dynamic and prolific areas of research in the last ten years. Includes demonstrations, student-lead projects, and lab tours. Required for MSNE majors.

**MSNE 210 - WILD TOPICS IN CHEMISTRY AND NANOTECHNOLOGY**
*Short Title:* WILD TOPICS CHEM AND NANOtech  
*Department:* Materials Science & NanoEng  
*Grade Mode:* Standard Letter  
*Course Type:* Lecture  
*Credit Hour:* 1  
*Restrictions:* Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
*Course Level:* Undergraduate Lower-Level  
*Description:* A variety of topics related to chemistry and nanotechnology will be discussed. Some topics are classical while others are current. Topics may include nanocars, molecular electronics, how to form a startup company. Grades will be based upon attendance and quizzes. Cross-list: CEVE 210, CHEM 210. Repeatable for Credit.

**MSNE 238 - SPECIAL TOPICS**
*Short Title:* SPECIAL TOPICS  
*Department:* Materials Science & NanoEng  
*Grade Mode:* Standard Letter  
*Course Type:* Internship/Practicum, Lecture, Seminar, Laboratory  
*Credit Hours:* 1-4  
*Restrictions:* Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
*Course Level:* Undergraduate Lower-Level  
*Description:* Topics and credit hours may vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

**MSNE 301 - MATERIALS SCIENCE FOR ENGINEERS**
*Short Title:* MATERIALS SCIENCE FOR ENGRS  
*Department:* Materials Science & NanoEng  
*Grade Mode:* Standard Letter  
*Course Type:* Lecture  
*Distribution Group:* Distribution Group III  
*Credit Hours:* 3  
*Restrictions:* Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
*Course Level:* Undergraduate Upper-Level  
*Description:* Introduction to the science of solid materials. Includes metals, ceramics, plastics, and semiconductors, as well as the properties of solid materials from atomic and macroscopic points of view. Required for materials science and engineering majors.

**MSNE 302 - MATERIALS PROCESSING AND NANOMANUFACTURING**
*Short Title:* MATERIALS PROCESSING  
*Department:* Materials Science & NanoEng  
*Grade Mode:* Standard Letter  
*Course Type:* Lecture  
*Credit Hours:* 3  
*Restrictions:* Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
*Course Level:* Undergraduate Upper-Level  
*Prerequisite(s):* MATH 211 and MATH 212  
*Description:* An overview of mass, momentum, and heat transport with applications in materials processing and nanomanufacturing. Emphasis is on analytical modeling of processing techniques with a view towards improving their efficiency and yield.

**MSNE 304 - MATERIALS SCIENCE JUNIOR LAB**
*Short Title:* MATERIALS SCIENCE JUNIOR LAB  
*Department:* Materials Science & NanoEng  
*Grade Mode:* Standard Letter  
*Course Type:* Lecture/Laboratory  
*Credit Hours:* 3  
*Restrictions:* Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
*Course Level:* Undergraduate Upper-Level  
*Prerequisite(s):* MSNE 301 (may be taken concurrently)  
*Description:* Through this course, you will be able to independently operate various types of common material testing and metallography equipment. The labs provide a path of self-discovery about the depth of your knowledge and your intuitive insight into the quality of experimental data. You will learn, acquire and demonstrate Materials Laboratory fundamentals. Open only to junior materials science and engineering majors. Required for materials science and engineering majors. Instructor Permission Required. Mutually Exclusive: Cannot register for MSNE 304 if student has credit for MSNE 303.

**MSNE 311 - MATERIALS SELECTION AND DESIGN**
*Short Title:* MATERIALS SELECTION & DESIGN  
*Department:* Materials Science & NanoEng  
*Grade Mode:* Standard Letter  
*Course Type:* Lecture  
*Credit Hours:* 4  
*Restrictions:* Enrollment is limited to students with a major in Materials Science & NanoEng. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
*Course Level:* Undergraduate Upper-Level  
*Prerequisite(s):* MSNE 301  
*Description:* Polymers, metals, ceramics, glass, and composite materials are considered for various applications such as containers, refractories, medical devices, electronics, machine components, etc. Based on their many divers and useful material properties. For non-majors with permission of instructor. Required for Materials Science and NanoEngineering.
MSNE 365 - NANOMATERIALS FOR ENERGY
Short Title: NANOMATERIALS FOR ENERGY
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will introduce students to the fundamental science of nanomaterials. Many of the concepts will be explained by drawing from applications in sustainability (photovoltaics, solar-to-fuel conversion thermionic, thermoelectric, fuel cells). Students will design a lab demo from scratch using amongst others the infrastructure provided by the photonics measurement lab. Cross-list: ELEC 365.

MSNE 401 - THERMODYNAMICS IN MATERIALS SCIENCE
Short Title: THERMODYNAMICS IN MAT SCIENCE
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (CHEM 112 or CHEM 122) and MATH 212
Description: Unified presentation of the kinetics and thermodynamics of mass and energy transport. Includes heterogeneous equilibrium, diffusion in solids, and heat transfer, as well as their application to engineering design. Required for materials science and engineering majors. Graduate/Undergraduate Equivalency: MSNE 503. Mutually Exclusive: Cannot register for MSNE 401 if student has credit for MSNE 503.

MSNE 402 - MECH PROPERTIES OF MATERIALS
Short Title: MECH PROPERTIES OF MATERIALS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 211 and MSNE 301
Description: Survey of the mechanical properties of solid materials. Includes basic mechanics, elasticity, plasticity, fracture, fatigue, creep, hardening mechanisms, mechanical testing, and structure-property relationships. Required for materials science and engineering majors. Graduate/Undergraduate Equivalency: MSNE 502. Mutually Exclusive: Cannot register for MSNE 402 if student has credit for MSNE 502.

MSNE 406 - PHYSICAL PROPERTIES OF SOLIDS
Short Title: PHYSICAL PROPERTIES OF SOLIDS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 211
Description: Survey of the electrical, magnetic, and optical properties of metals, semiconductors, and dielectrics based upon elementary band theory concepts. Required for materials science and engineering majors. Graduate/Undergraduate Equivalency: MSNE 506. Mutually Exclusive: Cannot register for MSNE 406 if student has credit for MSNE 506.

MSNE 407 - CAPSTONE DESIGN PROJECT I
Short Title: CAPSTONE DESIGN PROJECT I
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MSNE 303 and MSNE 311
Description: An interdisciplinary capstone design experience in materials science and nanotechnology. This course provides an opportunity for students to apply knowledge and skills acquired in previous courses to the solution of a realistic engineering problem. Teams of students will specify, design, and build an engineering system/device to meet a prescribed set of requirements. Must complete MSNE 408 to receive credit for MSNE 407 and both courses must be taken the same academic year. Required for MSNE majors in B.S. program. Instructor Permission Required.

MSNE 408 - CAPSTONE DESIGN PROJECT II
Short Title: CAPSTONE DESIGN PROJECT II
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An interdisciplinary capstone design experience in materials science and nanotechnology. This course provides an opportunity for students to apply knowledge and skills acquired in previous courses to the solution of a realistic engineering problem. Teams of students will specify, design, and build an engineering system/device to meet a prescribed set of requirements. Must complete MSNE 407 to receive credit for MSNE 408 and both courses must be taken the same academic year. Required for MSNE majors in B.S. program. Instructor Permission Required.
MSNE 409 - PHYSICAL METALLURGY
Short Title: PHYSICAL METALLURGY
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Professional or Visiting Undergraduate level students.
Description: Fundamentals of metallic materials, with a focus on defect engineering, microstructure design, and alloy design. The course will provide students with the understanding needed to develop alloys with specific desirable properties. Examples will be drawn from the processing of both ferrous and non-ferrous (e.g., Cu, Al, and Ti based) alloys. Graduate/Undergraduate Equivalency: MSNE 509. Recommended Prerequisite(s): MSNE 435 and MSNE 411. Mutually Exclusive: Cannot register for MSNE 409 if student has credit for MSNE 509.

MSNE 411 - METALLOGRAPHY AND PHASE RELATIONS
Short Title: METALLOGRAPHY & PHASE RELATION
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MSCE 301 or MSNE 301
Description: Study of microstructures which occur in metal, the types of processing which produce those microstructures, and how failures result from improper microstructure. The main areas of focus are sample preparation, visible light microscopy, scanning electron microscopy, x-ray microanalysis, and non-equilibrium processing. Required for the BS-MSNE. Graduate/Undergraduate Equivalency: MSNE 511.

MSNE 415 - CERAMICS AND GLASSES
Short Title: CERAMICS AND GLASSES
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MSCE 301 or MSNE 301
Description: Fundamentals of ceramic and glassy materials, including phase relations, theoretical properties, structure, bonding, and design.

MSNE 416 - STRUCTURE AND PROPERTIES OF POLYMERS AND SOFT MATERIALS
Short Title: PROPERTIES OF SOFT MATERIALS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MSNE 301 and MSNE 302 (may be taken concurrently) and MSNE 401 (may be taken concurrently) and MSNE 402 (may be taken concurrently) and MSNE 406 (may be taken concurrently)
Description: This course addresses the fundamental structures and properties of polymers and other forms of soft matter (gels, colloids, nanoparticles, etc.) and their many roles as technologically important materials. The electrical, optical, transport, acoustic and mechanical properties are presented with respect to the underlying physics and engineering. Prereqs are concurrent except for MSNE 301. Cross-list: CHBE 416. Graduate/Undergraduate Equivalency: MSNE 516. Mutually Exclusive: Cannot register for MSNE 416 if student has credit for MSNE 516.

MSNE 417 - ELECTRONIC, OPTICAL AND MAGNETIC PROPERTIES OF POLYMERS
Short Title: POLYMER ELECTRONICS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHEM 211 or MSNE 301
Description: Covers physical and material concepts and engineering applications of electronic polymers. Examines the structural origins of the diverse electronic, optoelectronic, photonic and magnetic properties of conjugated polymers. Topics include synthesis, electronic structure, physico-chemical characterization, applications in LEDs, solar cells, transistors, spintronics, and bioelectronics. Graduate/Undergraduate Equivalency: MSNE 517. Mutually Exclusive: Cannot register for MSNE 417 if student has credit for MSNE 517.

MSNE 433 - COMPUTATIONAL MATERIALS MODELING
Short Title: COMPUTATIONAL MATERIALS MODEL
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Physico-chemical principles augmented by ever-advancing computation technology have become a tool for explaining rich materials properties, designing nano-structures and their possible functionality. This course overviews basic quantum principles of materials structure, and a hierarchy of approximations broadly used in computational models. This includes classical multi-body potentials, tight-binding approximations, electronic density functional theory methods, etc. Graduate/Undergraduate Equivalency: MSNE 533. Mutually Exclusive: Cannot register for MSNE 433 if student has credit for MSNE 533.
MSNE 435 - CRYSTALLOGRAPHY & DIFFRACTION
Short Title: CRYSTALLOGRAPHY & DIFFRACTION
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MSNE 301 or MSCI 301
Description: Study of crystals by diffraction techniques, focusing on x-ray, with an overview of electron and neutron diffraction as well as complementary techniques. Provides mathematical foundations and nomenclature for diffraction and related phenomena. Includes basics of crystallographic analysis and surface/point/group symmetry, experiment design (sources, geometry, detectors), and data analysis and interpretation. Required for undergraduate MSNE major. Meets with MSNE 535 (less course work for the undergraduate class). Graduate/Undergraduate Equivalency: MSNE 535. Mutually Exclusive: Cannot register for MSNE 435 if student has credit for MSNE 535.

MSNE 437 - CRYSTALLOGRAPHY & DIFFRACT LAB
Short Title: CRYSTALLOGRAPHY & DIFFRACT LAB
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MSNE 435 (may be taken concurrently)
Description: Selected laboratory experiments in materials science, focusing on lattice symmetry, crystallography, phase identification, and metallurgy. Required for undergraduate MSNE major. Prerequisite MSNE 435 may be taken concurrently. Instructor Permission Required.
Graduate/Undergraduate Equivalency: MSNE 537. Mutually Exclusive: Cannot register for MSNE 437 if student has credit for MSNE 537.

MSNE 450 - MATERIALS SCIENCE SEMINAR
Short Title: MATERIALS SCIENCE SEMINAR
Department: Materials Science & NanoEng
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 0
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A series of seminars on selected topics in Materials Science. Recommended for Materials Science and NanoEngineering majors.

MSNE 451 - MATERIALS SCIENCE SEMINAR
Short Title: MATERIALS SCIENCE SEMINAR
Department: Materials Science & NanoEng
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A series of seminars on selected topics in Materials Science. Recommended for Materials Science and NanoEngineering majors.

MSNE 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

MSNE 490 - MATERIALS SCIENCE RESEARCH PROJECTS
Short Title: MATERIALS SCIENCE RESEARCH PROJ
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (MATH 101 or MATH 105) and (MATH 102 or MATH 106)
Description: Supervised research, reports and/or final reports required. Sponsorship by faculty member required. Instructor Permission Required. Repeatable for Credit.

MSNE 491 - SUPERVISED RESEARCH
Short Title: SUPERVISED RESEARCH
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (MATH 101 or MATH 105) and (MATH 102 or MATH 106)
Description: Supervised research, reports and/or final reports required. Sponsorship by faculty member required. Instructor Permission Required. Repeatable for Credit.

MSNE 499 - CURRENT TOPICS
Short Title: CURRENT TOPICS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-9
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Designed for undergraduate materials science students. Topics vary from term to term. Please consult with the department for additional information.

MSNE 500 - MATERIALS SCIENCE SEMINAR
Short Title: MATERIALS SCIENCE SEMINAR
Department: Materials Science & NanoEng
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A series of seminars on selected topics in Materials Science. Required for Materials Science and Engineering majors. Repeatable for Credit.
MSNE 501 - GRADUATE STUDENT SEMINAR
Short Title: GRADUATE STUDENT SEMINAR
Department: Materials Science & NanoEng
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Two graduate students will present every week, except for 1st year graduate students who will present 3 per class. Every week, students will be encouraged to fill out peer evaluation forms and include anonymous comments/suggestions for improving the presentation. The results of these comments will not be shared, but given to the presenter for their reference. Repeatable for Credit.

MSNE 502 - MECH PROPERTIES OF MATERIALS
Short Title: MECH PROPERTIES OF MATERIALS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Survey of the mechanical properties of solids. Includes basic mechanics, elasticity, plasticity, fracture, fatigue, creep, hardening mechanisms, mechanical testing, and structure-property relationships. Required for Materials Science and Engineering majors.

MSNE 503 - THERMODYNAMICS IN MATERIALS SCIENCE
Short Title: THERMODYNAMICS IN MAT SCIENCE
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Unified presentation of the kinetics and thermodynamics of mass and energy transport. Includes heterogeneous equilibrium, diffusion in solids, and heat transfer, as well as their application to engineering design. Required for Materials Science and Engineering majors. Graduate/Undergraduate Equivalency: MSNE 401. Mutually Exclusive: Cannot register for MSNE 503 if student has credit for MSNE 401.

MSNE 504 - PHYSICAL PROPERTIES OF SOLIDS
Short Title: PHYSICAL PROPERTIES OF SOLIDS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Survey of the electrical, magnetic, and optical properties of metals, semiconductors, and dielectrics based upon elementary band theory concepts. Required for Materials Science and Engineering majors. Graduate/Undergraduate Equivalency: MSNE 406. Mutually Exclusive: Cannot register for MSNE 504 if student has credit for MSNE 406.

MSNE 505 - PHYSICAL METALLURGY
Short Title: PHYSICAL METALLURGY
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Fundamentals of metallic materials, with a focus on defect engineering, microstructure design, and alloy design. The course will provide students with the understanding needed to develop alloys with specific desirable properties. Examples will be drawn from the processing of both ferrous and non-ferrous (e.g., Cu-, Al-, and Ti based) alloys. Graduate/Undergraduate Equivalency: MSNE 409. Recommended Prerequisite(s): MSNE 435 and MSNE 411. Mutually Exclusive: Cannot register for MSNE 505 if student has credit for MSNE 409.

MSNE 506 - PHYSICAL PROPERTIES OF SOLIDS
Short Title: PHYSICAL PROPERTIES OF SOLIDS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Survey of the electrical, magnetic, and optical properties of metals, semiconductors, and dielectrics based upon elementary band theory concepts. Required for Materials Science and Engineering majors. Graduate/Undergraduate Equivalency: MSNE 406. Mutually Exclusive: Cannot register for MSNE 506 if student has credit for MSNE 406.

MSNE 510 - SCALING CONCEPTS IN 2D MATERIALS AND POLYMER PHYSICS
Short Title: SCALING CONCEPTS IN MATERIALS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course is an introduction to symmetry breaking, scaling and universality in low dimensional materials and polymers. Using simple models as examples, the course addresses 2D crystals and melting, surface roughening, scaling properties of polymers, phase transitions and the mean field approach. It then goes over to explain how renormalization works in condensed matter, and how it gives rise to universality. Recommended Prerequisite(s): MSNE 401

MSNE 511 - METALLOGRAPHY AND PHASE RELATIONS
Short Title: METALLOGRAPHY, PHASE RELATIONS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of microstructures which occur in metal, the types of processing which produce those microstructures, and how failures result from improper microstructure. The main areas of focus are sample preparation, visible light microscopy, scanning electron microscopy, x-ray microanalysis, and nonequilibrium processing. Instructor Permission Required. Graduate/Undergraduate Equivalency: MSNE 411.
MSNE 512 - QUANTUM MATERIALS ENGINEERING
Short Title: QUANTUM MATERIALS ENGINEERING
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: Introduction to the fundamentals of quantum materials and the experimental techniques to engineer solid-state quantum phenomena. Students must have completed quantum mechanics and physical properties of solids (or equivalent) before enrollment. Recommended Prerequisite(s): Quantum Mechanics and Physical properties of solids (or solid state physics)

MSNE 516 - STRUCTURE AND PROPERTIES OF POLYMERS AND SOFT MATERIALS
Short Title: PROPERTIES OF SOFT MATERIALS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: This graduate level course addresses the fundamental structures and properties of polymers and other forms of soft matter (gels, colloids, nanoparticles, etc.) and their many roles as technologically important materials. The electrical, optical, transport, acoustic and mechanical properties are presented with respect to the underlying physics and engineering. Cross-list: CHBE 516. Graduate/Undergraduate Equivalency: MSNE 416. Mutually Exclusive: Cannot register for MSNE 516 if student has credit for MSNE 416.

MSNE 517 - ELECTRONIC, OPTICAL AND MAGNETIC PROPERTIES OF POLYMERS
Short Title: POLYMER ELECTRONICS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: Covers physical and material concepts and engineering applications of electronic polymers. Examines the structural origins of the diverse electronic, optoelectronic, photonic and magnetic properties of conjugated polymers. Topics include synthesis, electronic structure, physico-chemical characterization, applications in LEDs, solar cells, transistors, spintronics, and bioelectronics. Graduate/Undergraduate Equivalency: MSNE 417. Mutually Exclusive: Cannot register for MSNE 517 if student has credit for MSNE 417.

MSNE 523 - PROPERTIES, SYNTHESIS AND DESIGN OF COMPOSITE MATERIALS
Short Title: DESIGN OF COMPOSITE MATERIALS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: Study of the science of interfaces and the properties that govern their use in composite materials. Not offered every year. The study of composite processing and methods for synthesis polymer, metal and ceramic matrix composition.

MSNE 533 - COMPUTATIONAL MATERIALS MODELING
Short Title: COMPUTATIONAL MATERIALS MODEL
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: Physico-chemical principles augmented by ever-advancing computation technology have become a tool for explaining rich materials properties, designing nano-structures and their possible functionality. This course overviews basic quantum principles of materials structure, and a hierarchy of approximations broadly used in computational models. This includes classical multi-body potentials, tight-binding approximations, electronic density functional theory methods, etc. MSNE 533 requires additional work. Graduate/Undergraduate Equivalency: MSNE 433. Mutually Exclusive: Cannot register for MSNE 533 if student has credit for MSNE 433.

MSNE 534 - NANOSCIENCE AND NANOTECHNOLOGY I
Short Title: NANOSCIENCE & NANOTECHNOLOGY
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: Enrollment is open to all students. Undergraduate enrollment requires instructor permission via special registration form. An introduction to the basic principles of nanoscience and nanotechnology. Size dependent physical properties of nanoscopic solids will be described using solid state physics and molecular orbital theory as a foundation. Wet chemical techniques that produce nanoscale materials (e.g. carbon nanotubes, semiconductor and metallic nanocrystals, dendrimers...) will be introduced in the second half of the semester. Expected to be taught Spring 2019. Cross-list: CEVE 533, CHEM 533.
**MSNE 535 - CRYSTALLOGRAPHY & DIFFRACTION**

**Short Title:** CRYSTALLOGRAPHY & DIFFRACTION  
**Department:** Materials Science & NanoEng  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Study of crystals by diffraction techniques, focusing on x-ray, with an overview of electron and neutron diffraction as well as complementary techniques. Provides mathematical foundations and nomenclature for diffraction and related phenomena. Includes basics of crystallographic analysis and surface/point/group symmetry, experiment design (sources, geometry, detectors), and data analysis and interpretation. Required for undergraduate MSNE major. Meets with MSNE 435 (additional work for the graduate version). Cross-list: PHYS 535. Graduate/Undergraduate Equivalency: MSNE 435. Mutually Exclusive: Cannot register for MSNE 535 if student has credit for MSNE 435.

**MSNE 537 - CRYSTALLOGRAPHY & DIFFRAC LAB**

**Short Title:** CRYSTALLOGRAPHY & DIFFRAC LAB  
**Department:** Materials Science & NanoEng  
**Grade Mode:** Standard Letter  
**Course Type:** Laboratory  
**Credit Hour:** 1  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Selected laboratory experiments in materials science, focusing on lattice symmetry, crystallography, phase identification, and metallurgy. Required for undergraduate MSNE major. Credit may be given for only one, MSNE 537 or MSNE 437. Instructor Permission Required. Graduate/Undergraduate Equivalency: MSNE 437. Mutually Exclusive: Cannot register for MSNE 537 if student has credit for MSNE 437.

**MSNE 538 - COMPUTATIONAL NANOSCIENCE FOR GREEN INFRASTRUCTURE**

**Short Title:** COMPUTATIONAL NANOSCIENCE  
**Department:** Materials Science & NanoEng  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Computational methods such as first principles, kinetic Monte Carlo (KMC), classical MC (in Canonical, Grand Canonical, and isobaric-isothermal ensembles), and classic MD in predicting materials formation and properties. Case studies include cementitious materials, metals, and thermoelectric materials. Other case studies are possible depending on the student’s background and instructor’s approval. Cross-list: CEVE 538.

**MSNE 545 - THIN FILMS**

**Short Title:** THIN FILMS  
**Department:** Materials Science & NanoEng  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Deposition methods, structure, properties, performance and failure mechanisms of thin solid films for various applications. Deposition methods include sputtering, plating, evaporation and chemical vapor deposition. Material types include crystalline and amorphous metals as well as semiconductors and insulators. Applications are primarily in microelectronics; data storage; micro-electro-mechanical systems, wear and corrosion prevention and thermal barriers. NOTE: Not offered every year. Cross-list: ELEC 545.

**MSNE 555 - MATERIALS IN NATURE AND BIO-MIMETIC STRATEGIES**

**Short Title:** BIO-MIMETIC STRATEGIES  
**Department:** Materials Science & NanoEng  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This graduate level course will discuss the origin of several materials that exists in nature from a technology perspective and strategies to replicate them using synthetic materials processing protocols. Silicates, carbon based materials, abalone shell, bone etc. will be used to discuss the fascinating architecture developed by nature. Similarly several functional structures designed by nature such as Gecko tape and IR sensors will be discussed for designing bio-medic structure and devices. NOTE: Not offered every year.

**MSNE 560 - COLLOIDAL AND INTERFACIAL PHENOMENA**

**Short Title:** COLLOIDAL & INTERFACIAL PHENOM  
**Department:** Materials Science & NanoEng  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** The course will provide knowledge into the fundamentals of colloidal interactions (e.g., stabilisation, adsorption, self-assembly) and the techniques currently apply used for their assessment. Apart from the theoretical background, the course will also provide applicable knowledge by covering current and emerging applications involving these phenomena. Interfacial tension, wetting and spreading, contact angle hysteresis, interaction between colloid particles, stability of interfaces, flow and transport near interfaces will be covered. NOTE: Offered in alternative year with MSNE 594/CHBE 594. Cross-list: CHBE 560.
MSNE 569 - SCIENCE AND APPLICATIONS OF CORROSION SCIENCE AND ENGINEERING  
Short Title: CORROSION SCIENCE & ENGINEERING  
Department: Materials Science & NanoEng  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): MSC 301 or MSNE 301  
Description: Students will learn basics of corrosion science of metals and alloys exposed to different classes of conditions, prevalent forms of corrosion, consequences of corrosion and corrosion mitigation approaches in a range of industries. Discussion of nano science aspects related to corrosion control in industry will be included.

MSNE 570 - SENIOR DESIGN THESIS PROJECT  
Short Title: SENIOR DESIGN THESIS PROJECT  
Department: Materials Science & NanoEng  
Grade Mode: Standard Letter  
Course Type: Independent Study  
Credit Hours: 2  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: A design project in the materials science field will be undertaken by the student in close collaboration with at least one materials science faculty member.

MSNE 571 - SENIOR DESIGN THESIS PROJECT  
Short Title: SENIOR DESIGN THESIS PROJECT  
Department: Materials Science & NanoEng  
Grade Mode: Standard Letter  
Course Type: Independent Study  
Credit Hours: 2  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: A design project in the materials science field will be undertaken by the student in close collaboration with at least one materials science faculty member. Instructor Permission Required.

MSNE 572 - ELECTRON MICROSCOPY CENTER LAB  
Short Title: ELECTRON MICROSCOPY CENTER LAB  
Department: Materials Science & NanoEng  
Grade Mode: Standard Letter  
Course Type: Laboratory  
Credit Hour: 1  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Corequisite: MSNE 580  
Description: Hands-on laboratory using the instruments in the electron microscopy center. The students will gain the knowledge necessary to operate the instruments and analyze data independently. Must be taken concurrently with MSNE 580. Instructor Permission Required. Cross-list: CHEM 582.

MSNE 580 - MICROSCOPY METHODS IN MATERIALS SCIENCE  
Short Title: MICROSCOPY METHODS  
Department: Materials Science & NanoEng  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course covers theory and applications of electron microscopy techniques with an emphasis on transmission and scanning transmission electron microscopy (TEM, STEM). Topics include modern instrumentation and hardware, electron diffraction, imaging modes, tomography, and spectroscopy (energy dispersive x-ray spectroscopy (EDS), electron-energy loss spectroscopy (EELS), cathodoluminescence (CL)). Previous experience with electron microscopes recommended. Can be taken alone or concurrently with lab course MSNE 582. Instructor Permission Required. Cross-list: CHEM 580.

MSNE 581 - MICRO AND NANO HEAT TRANSPORT METHODOLOGIES AND DESIGN  
Short Title: MICRO & NANO HEAT TRANSPORT  
Department: Materials Science & NanoEng  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to students with a major in Mechanical Engineering or Materials Science & NanoEng. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): MECH 481  

MSNE 582 - MICRO & NANO HEAT TRANSPORT METHODOLOGIES AND DESIGN  
Short Title: MICRO & NANO HEAT TRANSPORT  
Department: Materials Science & NanoEng  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Corequisite: MSNE 580  
Description: Hands-on laboratory using the instruments in the electron microscopy center. The students will gain the knowledge necessary to operate the instruments and analyze data independently. Must be taken concurrently with MSNE 580. Instructor Permission Required. Cross-list: CHEM 582.

MSNE 593 - INTRODUCTION TO POLYMER PHYSICS AND ENGINEERING  
Short Title: POLYMER PHYSICS  
Department: Materials Science & NanoEng  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): CHEM 211 and CHEM 212  
Description: The course focuses on demonstrating how the physical properties of polymers can be understood from simple models. Students will be introduced to the terminology and mathematics involved in the physical understanding of polymer systems. The course is intended for students who would like to gain an understanding of modern approaches to polymer physics. NOTE: Not offered every year. Cross-list: CHBE 593.
MSNE 594 - PROPERTIES OF POLYMERS
Short Title: PROPERTIES OF POLYMERS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (CHEM 211 or CHEM 251) and (MATH 211 or MATH 221)
Description: The course will introduce basic concepts in polymer science including the synthesis and chemical modification of polymers as well as physical properties of polymers. Topics include approaches to polymer synthesis, processing and characterization of polymer materials, and an introduction to mathematical models applied to describe the structure and dynamics of polymeric materials. NOTE: Offered in alternative year with MSNE 560/CHBE 560. Cross-list: CHBE 594. Repeatable for Credit.

MSNE 599 - LAB ROTATIONS AND ADVISOR SELECTION
Short Title: LAB ROTATION ADVISOR SELECTION
Department: Materials Science & NanoEng
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Laboratory
Credit Hour: 1
Course Level: Graduate
Description: Open to first year doctoral students. Students will rotate through three research groups to familiarize themselves with the research projects and environment offered by each group, and complete the advisor selection form at the end of the rotations. Department Permission Required.

MSNE 609 - RISK ASSESSMENT AND ASSET INTEGRITY IN OIL AND GAS PRODUCTION AND REFINING OPERATIONS I
Short Title: OIL AND GAS ASSET INTEGRITY I
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course integrates risk assessment and mitigation, asset integrity management, corrosion control and materials selection across the oil and gas value chain, from production to refining and retail. The full course covers 2 semesters. Session 'I,' to be delivered in the Spring 2017 semester. Session 'II' will be delivered in the Fall 2017 semester. Instructor Permission Required. Cross-list: CHBE 609.

MSNE 614 - SPECIAL TOPICS II
Short Title: SPECIAL TOPICS II
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-9
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course covers a wide spectrum of the chemistry and physics of nanomaterials and nanostructures with emphasis on principles, synthesis, properties, characterization and applications. Students will learn to evaluate nanoparticles size and shape distributions, predict their stability and tune their size-dependent optical, thermal, mechanical and magnetic properties for applications in the design of optoelectronics, catalysts, energy storage devices and multifunctional materials for medical and environmental applications. This will be a 3-credit hour course Repeatable for Credit.

MSNE 615 - SPECIAL TOPICS III
Short Title: SPECIAL TOPICS III
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-9
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This graduate level course is an advanced lecture on the use and the exploitation of various linear and non-linear optical spectroscopy techniques such as resonant Raman scattering, Rayleigh scattering, two-photon and time resolved transient absorptions, for the characterization of semiconductor and metallic nanomaterials & nanostructures. This will be a 1 credit hour course. Repeatable for Credit.

MSNE 616 - AUTOMOTIVE ENGINEERING: MATERIALS AND DYNAMICS
Short Title: AUTOMOTIVE ENGINEERING
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Discussion of the engineering and materials technology that is involved in modern automotive design. Topics include: chassis design and construction; composite design and fabrication; aerodynamics and ground effects; suspension dynamics; performance technology. External expert speakers will provide a real-world perspective. Course will only be offered with sufficient demand. Check with the instructor. Instructor Permission Required. Repeatable for Credit.

MSNE 617 - AUTOMOTIVE ENGINEERING: LAB
Short Title: AUTOMOTIVE ENGINEERING: LAB
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Laboratory application of engineering skills towards the materials technology and dynamics of chassis design, composite design, and fabrication, aerodynamics, and performance technology. Not offered every year. Instructor Permission Required. Recommended Prerequisite(s): MSCI 616 or MSNE 616. Repeatable for Credit.
MSNE 618 - RISK ASSESSMENT AND ASSET INTEGRITY IN OIL AND GAS PRODUCTION AND REFINING OPERATIONS II
Short Title: OIL AND GAS ASSET INTEGRITY II
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course integrates risk assessment and mitigation, asset integrity management, corrosion control and materials selection across the oil and gas value chain, from production to refining and retail. The full course covers 2 semesters. Session 'I' to be delivered in the Spring 2017 semester. Session 'II' will be delivered in the Fall 2017 semester. Instructor Permission Required. Cross-list: CHBE 618.

MSNE 621 - M.M.S. RESEARCH PROJECT I
Short Title: M.M.S. RESEARCH PROJECT I
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is the first part of the M.M.E. research project course. The faculty advisor, taking into account the background and research interests of the student as well as the research interests of the faculty advisor, will determine the contents. Course requirements will include a final report. Instructor Permission Required.

MSNE 622 - M.M.S. RESEARCH PROJECT II
Short Title: M.M.S. RESEARCH PROJECT II
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is the second part of the M.M.E. research project and continuation of MSNE 621. Course requirements will include a final report. Instructor Permission Required. Repeatable for Credit.

MSNE 650 - NANOMATERIALS AND NANOMECHANICS
Short Title: NANOMATERIALS & NANOMECHANICS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The primary goal of this course is to introduce important current developments in the field of nanomaterials and nanomechanics. The course will discuss synthesis and characterization of nanomaterials, the behaviors especially mechanical behaviors in the broad sense of such materials, and their technological applications. The basic physics and fundamental mechanisms responsible for nanoscale induced changes in properties will be stressed.

MSNE 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

MSNE 800 - RESEARCH AND THESIS
Short Title: RESEARCH AND THESIS
Department: Materials Science & NanoEng
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-12
Restrictions: Enrollment is limited to students with a major in Materials Science & NanoEng. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

Mathematics (MATH)

MATH 101 - SINGLE VARIABLE CALCULUS I
Short Title: SINGLE VARIABLE CALCULUS I
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Limits, continuity, differentiation, integration, and the Fundamental Theorem of Calculus. Mutually Exclusive courses may only be taken with instructor permission. May substitute MATH 111-112 or take MATH 101 after completing MATH 111. Should not be taken if student already has credit for MATH 102, MATH 211, MATH 212, or MATH 221, without permission. Mutually Exclusive: Cannot register for MATH 101 if student has credit for MATH 105/MATH 112.
Course URL: math.rice.edu (http://math.rice.edu)

MATH 102 - SINGLE VARIABLE CALCULUS II
Short Title: SINGLE VARIABLE CALCULUS II
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Continuation of MATH 101. Includes further techniques of integration, as well as infinite sequences and series, Taylor polynomials and Taylor series, parametric equations, arc length, polar coordinates, complex numbers, and Fourier polynomials. Should not be taken if student already has credit for MATH 211, MATH 212, or MATH 221, without permission. Mutually Exclusive: Cannot register for MATH 102 if student has credit for MATH 106.
Course URL: math.rice.edu (http://math.rice.edu)
MATH 105 - AP/OTH CREDIT IN CALCULUS I

Short Title: AP/OTH CREDIT IN CALCULUS I

Department: Mathematics

Grade Mode: Transfer Courses

Course Type: Transfer

Credit Hours: 3

Course Level: Undergraduate Lower-Level

Description: Provides transfer credit based on student performance on approved examinations in calculus, such as the AB Calculus Advanced Placement exam or the International Baccalaureate higher-level calculus exams. This credit counts toward the total credit hours required for graduation, and satisfies major requirements in lieu of MATH 101, but does not count for distribution. Mutually Exclusive: Cannot register for MATH 105 if student has credit for MATH 101/MATH 111/MATH 112.

MATH 106 - AP/OTH CREDIT IN CALCULUS II

Short Title: AP/OTH CREDIT IN CALCULUS II

Department: Mathematics

Grade Mode: Transfer Courses

Course Type: Transfer

Credit Hours: 3

Course Level: Undergraduate Lower-Level

Description: Provides transfer credit based on student performance on approved examinations in calculus, such as the BC Calculus Advanced Placement exam or the International Baccalaureate higher-level calculus exams. This credit counts toward the total credit hours required for graduation, and satisfies major requirements in lieu of MATH 102, but does not count for distribution. Mutually Exclusive: Cannot register for MATH 106 if student has credit for MATH 102.

MATH 111 - CALCULUS: DIFFERENTIATION AND ITS APPLICATIONS

Short Title: CALCULUS: DIFFERENTIATION

Department: Mathematics

Grade Mode: Standard Letter

Course Type: Lecture

Distribution Group: Distribution Group III

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Lower-Level

Description: Study of calculus, forming with MATH 112 a version of MATH 101/102 that does not cover infinite series. MATH 111 covers functions, limits, continuity, and derivatives and their applications. Mutually Exclusive courses may only be taken with instructor permission. Should not be taken if student already has credit for MATH 101, MATH 102, MATH 112, MATH 211, MATH 212, or MATH 221 without permission. Mutually Exclusive: Cannot register for MATH 111 if student has credit for MATH 105.

Course URL: math.rice.edu

MATH 112 - CALCULUS: INTEGRATION AND ITS APPLICATIONS

Short Title: CALCULUS: INTEGRATION + APPS

Department: Mathematics

Grade Mode: Standard Letter

Course Type: Lecture

Distribution Group: Distribution Group III

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Lower-Level

Description: Continuation of the study of calculus from MATH 111. Integration, the Fundamental Theorem of Calculus, techniques of integration and applications. Should not be taken if student already has credit for MATH 102, MATH 211, MATH 212, MATH 221, without permission. Mutually Exclusive: Cannot register for MATH 112 if student has credit for MATH 101/MATH 105.

Course URL: math.rice.edu

MATH 211 - ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA

Short Title: ORD DIFFERENTIAL EQUATIONS

Department: Mathematics

Grade Mode: Standard Letter

Course Type: Lecture

Distribution Group: Distribution Group III

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Lower-Level

Description: Study of ordinary differential equations (e.g., solutions to separable and linear first-order equations and to higher-order linear equations with constant coefficients, the properties of solutions to differential equations, and numerical solution methods) and linear algebra (e.g., vector spaces and solutions to algebraic linear equations, dimension, eigenvalues, and eigenvectors of a matrix), as well as the application of linear algebra to first-order systems of differential equations and the qualitative theory of nonlinear systems and phase portraits. Mutually Exclusive: Cannot register for MATH 211 if student has credit for MATH 220.

MATH 212 - MULTIVARIABLE CALCULUS

Short Title: MULTIVARIABLE CALCULUS

Department: Mathematics

Grade Mode: Standard Letter

Course Type: Lecture

Distribution Group: Distribution Group III

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Lower-Level

Description: Calculus of multiple variables. Vectors, partial derivatives and gradients, double and triple integrals, vector fields, line and surface integrals, Green’s theorem, Stokes’s theorem, and Gauss’s theorem. May substitute Math 221 and 222. Mutually Exclusive: Cannot register for MATH 212 if student has credit for MATH 222.

Course URL: math.rice.edu
MATH 220 - HONORS ORDINARY DIFFERENTIAL EQUATIONS  
**Short Title:** HONORS ORD DIFFERENTIAL EQNS  
**Department:** Mathematics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** A rigorous introduction to the study of ordinary differential equations, including results about the existence, uniqueness and stability of solutions. Some concepts from multi-variable calculus and linear algebra will be introduced along the way. This course will introduce students to the understanding and writing of proofs. Mutually Exclusive: Cannot register for MATH 220 if student has credit for MATH 211.

MATH 221 - HONORS CALCULUS III  
**Short Title:** HONORS CALCULUS III  
**Department:** Mathematics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group III  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** This course and MATH 222 include the material of MATH 212 and much more. Topology of Rn, calculus for functions of several variables, linear and multilinear algebra, theory of determinants, inner product spaces, integration on manifolds.

MATH 222 - HONORS CALCULUS IV  
**Short Title:** HONORS CALCULUS IV  
**Department:** Mathematics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group III  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** See MATH 221. A student may not receive credit for both MATH 222 and MATH 212. Mutually Exclusive: Cannot register for MATH 222 if student has credit for MATH 212.

MATH 238 - SPECIAL TOPICS  
**Short Title:** SPECIAL TOPICS  
**Department:** Mathematics  
**Grade Mode:** Standard Letter  
**Course Type:** Internship/Practicum, Lecture, Laboratory, Seminar  
**Credit Hours:** 1-4  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** Topics and credit hours may vary each semester. Contact Department for current semester’s topic(s). Repeatable for Credit.

MATH 300 - TOPICS IN UNDERGRADUATE MATH  
**Short Title:** TOPICS IN UNDERGRADUATE MATH  
**Department:** Mathematics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Treatment of topics in undergraduate mathematics. Topics vary by year. May be repeated for credit with permission of department. Instructor Permission Required. Repeatable for Credit.  
**Course URL:** [math.rice.edu](http://math.rice.edu)

MATH 302 - ELEMENTS OF ANALYSIS  
**Short Title:** ELEMENTS OF ANALYSIS  
**Department:** Mathematics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group III  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** MATH 102 or MATH 106  
**Description:** Introductory treatment of topics in analysis and topology, with the real line as a central example. Techniques include connected and compact sets, sequences and subsequences, continuity, and uniform approximation. Clear, cogent, and complete mathematical arguments are emphasized.  
**Course URL:** [math.rice.edu](http://math.rice.edu)

MATH 304 - ELEMENTS OF KNOT THEORY  
**Short Title:** ELEMENTS OF KNOT THEORY  
**Department:** Mathematics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group III  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** MATH 221 or MATH 354 or MATH 355  
**Description:** Introduction to the mathematical theory of knots. Techniques to distinguish knots from one another, Reidemeister moves, mod-p colorings, knot determinants, knot polynomials, Seifert surfaces, Euler characteristic, knot groups, and untying knots in four dimensions. We will also discuss open problems in knot theory.  
**Course URL:** [math.rice.edu](http://math.rice.edu)
MATH 306 - ELEMENTS OF ABSTRACT ALGEBRA
Short Title: ELEMENTS OF ABSTRACT ALGEBRA
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (MATH 354 or MATH 355) and (MATH 302 or MATH 354 or MATH 220 or MATH 221)
Description: Introductory treatment of the basic structures of abstract algebra: groups, rings, and fields. Clear, cogent, and complete mathematical arguments are emphasized. A student may not receive credit for both MATH 306 and MATH 356. Mutually Exclusive: Cannot register for MATH 306 if student has credit for MATH 356.
Course URL: math.rice.edu (http://math.rice.edu)

MATH 321 - INTRODUCTION TO ANALYSIS I
Short Title: INTRODUCTION TO ANALYSIS I
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 220 or MATH 221 or MATH 354 or MATH 302
Description: A thorough treatment of the foundations of real analysis such as metric spaces, compactness, sequences and series of functions, differentiation, Riemann integration. Mutually Exclusive: Cannot register for MATH 321 if student has credit for MATH 331.
Course URL: math.rice.edu (http://math.rice.edu)

MATH 322 - INTRODUCTION TO ANALYSIS II
Short Title: INTRODUCTION TO ANALYSIS II
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 321 or MATH 331
Description: Further study in real analysis. Possible topics include analysis in higher dimensions, Hilbert spaces, Fourier series, Sturm-Liouville theory. Repeatable for Credit.
Course URL: math.rice.edu (http://math.rice.edu)

MATH 322 - INTRODUCTION TO ANALYSIS II
Short Title: INTRODUCTION TO ANALYSIS II
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 321 or MATH 331
Description: Further study in real analysis. Possible topics include analysis in higher dimensions, Hilbert spaces, Fourier series, Sturm-Liouville theory. Repeatable for Credit.
Course URL: math.rice.edu (http://math.rice.edu)

MATH 322 - INTRODUCTION TO ANALYSIS II
Short Title: INTRODUCTION TO ANALYSIS II
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 321 or MATH 331
Description: Further study in real analysis. Possible topics include analysis in higher dimensions, Hilbert spaces, Fourier series, Sturm-Liouville theory. Repeatable for Credit.
Course URL: math.rice.edu (http://math.rice.edu)

MATH 331 - HONORS ANALYSIS
Short Title: HONORS ANALYSIS
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 220 or MATH 221 or MATH 302 or MATH 354
Description: A careful treatment of basic topics in real analysis, including metric spaces and their topology, sequences and series, continuity, and differentiation. The content of this course is similar to that of MATH 321, but the intensity and conceptual level will be higher. Mutually Exclusive: Cannot register for MATH 331 if student has credit for MATH 321.
Course URL: math.rice.edu (http://math.rice.edu)

MATH 354 - HONORS LINEAR ALGEBRA
Short Title: HONORS LINEAR ALGEBRA
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Vector spaces, linear transformations and matrices, theory of systems of linear equations, determinants, eigenvalues and diagonalizability, inner product spaces; and optional material chosen from: dual vector spaces, spectral theorem for self-adjoint operators, Jordan canonical form. Content is similar to that of MATH 355, but with more emphasis on theory. The course will include instruction on how to construct mathematical proofs. This course is appropriate for potential Mathematics majors and others interested in learning how to construct rigorous mathematical arguments. Recommended Prerequisite(s): A 200-level math class. Mutually Exclusive: Cannot register for MATH 354 if student has credit for MATH 355.

MATH 355 - LINEAR ALGEBRA
Short Title: LINEAR ALGEBRA
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Linear transformations and matrices, solution of linear equations, inner products, eigenvalues and eigenvectors, the spectral theorem for real symmetric matrices, applications of Jordan canonical form. Mutually Exclusive: Cannot register for MATH 355 if student has credit for MATH 354.
MATH 356 - ABSTRACT ALGEBRA I
Short Title: ABSTRACT ALGEBRA I
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Prerequisite(s): (MATH 354 or MATH 355) and (MATH 302 or MATH 354 or MATH 220 or MATH 221)
Description: Group theory: normal subgroups, factor groups, Abelian groups, permutations, matrix groups, and group action. Mutually Exclusive: Cannot register for MATH 356 if student has credit for MATH 306.
Course URL: math.rice.edu

MATH 365 - NUMBER THEORY
Short Title: NUMBER THEORY
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Prerequisite(s): MATH 220 or MATH 221 or MATH 302 or MATH 354 or COMP 182
Description: Prime numbers and factorization, modular arithmetic, Diophantine equations, quadratic reciprocity, and other topics such as cryptography or continued fractions.
Course URL: math.rice.edu

MATH 366 - GEOMETRY
Short Title: GEOMETRY
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 306 or MATH 356
Description: Topics chosen from Euclidean, spherical, hyperbolic, and projective geometry, with emphasis on the similarities and differences found in various geometries. Isometries and other transformations are studied and used throughout. The history of the development of geometric ideas is discussed. This course is strongly recommended for prospective high school teachers.

MATH 368 - TOPICS IN COMBINATORICS
Short Title: TOPICS IN COMBINATORICS
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Description: Study of combinatorics and discrete mathematics. Topics that may be covered include graph theory, Ramsey theory, finite geometries, combinatorial enumeration, combinatorial games.
Course URL: math.rice.edu

MATH 370 - CALCULUS ON MANIFOLDS
Short Title: CALCULUS ON MANIFOLDS
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Prerequisite(s): (MATH 302 or MATH 321 or MATH 331) and (MATH 354 or MATH 355)
Description: Differentiation and integration on manifolds: calculus on Rn, exterior differentiation, differentiation forms, vector fields, Stokes' theorem.
Course URL: math.rice.edu

MATH 371 - LIE THEORY
Short Title: LIE THEORY
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Prerequisite(s): MATH 306 or MATH 356
Description: Study of classical groups as symmetries of Euclidean spaces. Geometry of complex numbers and quaternions, rotations and reflections of Rn, the orthogonal, unitary and sympletic groups. Tangent spaces to matrix groups, Lie algebras and the exponential map. If time permits: the structure of Lie algebras and the matrix logarithm. Recommended Prerequisite(s): MATH 354 or MATH 355 (may be taken the same semester).
Course URL: math.rice.edu
MATH 373 - ELLIPTIC CURVES
Short Title: ELLIPTIC CURVES
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 306 or MATH 356
Description: Elliptic curves are central to modern number theory and instrumental in the proof of Fermat’s Last Theorem. Topics will include: The addition law, solutions over the rational numbers, explicit computations, applications to factorization and cryptography; if time permits, infinite series attached to elliptic curves and the Birch-Swinnerton-Dyer conjecture. Recommended Prerequisite(s): 200 Level Math Course
Course URL: math.rice.edu (http://math.rice.edu)

MATH 374 - INTRODUCTION TO REPRESENTATION THEORY
Short Title: INTRO TO REPRESENTATION THEORY
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 306 or MATH 356
Description: First course in representation theory, with an emphasis on concrete examples, especially the symmetric group. Topics include representations of finite groups, characters, classification, symmetric functions, Young symmetrizers, and Schur-Weyl duality. Prior experience with proofs is necessary; some familiarity with linear or abstract algebra would be helpful, but can be acquired along the way. Recommended Prerequisite(s): Linear Algebra (MATH 221, MATH 354, or MATH 355) and MATH 356.
Course URL: math.rice.edu (http://math.rice.edu)

MATH 376 - ALGEBRAIC GEOMETRY
Short Title: ALGEBRAIC GEOMETRY
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (MATH 354 or MATH 355) and (MATH 306 or MATH 356)
Description: An introduction to algebraic geometry, with an emphasis on algorithms. Topics include: polynomial rings and ideals, Groebner bases and elimination theory, affine varieties, Hilbert’s Nullstellensatz, and the Algebra-Geometry correspondence. Projective varieties; Bezout’s Theorem.

MATH 381 - INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS
Short Title: INTRO PARTIAL DIFF EQUATIONS
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Laplace transform: inverse transform, applications to constant coefficient differential equations. Boundary value problems: Fourier series, Bessel functions, Legendre polynomials. Recommended Prerequisite(s): MATH 211.

MATH 382 - COMPUTATIONAL COMPLEX ANALYSIS
Short Title: COMPUTATIONAL COMPLEX ANALYSIS
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of the Cauchy integral theorem, Taylor series, residues, as well as the evaluation of integrals by means of residues, conformal mapping, and application to two-dimensional fluid flow. Recommended Prerequisite(s): MATH 212 OR 221. Mutually Exclusive: Cannot register for MATH 382 if student has credit for MATH 427/MATH 517.
Course URL: math.rice.edu (http://math.rice.edu)

MATH 390 - UNDERGRADUATE COLLOQUIUM
Short Title: UNDERGRADUATE COLLOQUIUM
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Lectures by undergraduate students on mathematical topics not usually covered in other courses. Presentation of one lecture and attendance at all sessions required. Distribution Credit for MATH 390 no longer eligible beginning Fall 2019. Repeatable for Credit.

MATH 401 - DIFFERENTIAL GEOMETRY OF CURVES AND SURFACES
Short Title: DIFF GEOM OF CURVES/SURFACES
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of the differential geometry of curves and surfaces in R3. Includes an introduction to the concept of curvature and thorough treatment of the Gauss-Bonnet theorem. Recommended Prerequisite(s): MATH 211 or MATH 220 or familiarity with ODEs
Course URL: math.rice.edu (http://math.rice.edu)
MATH 402 - DIFFERENTIAL GEOMETRY
Short Title: DIFFERENTIAL GEOMETRY
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 321 or MATH 331
Description: Introduction to Riemannian geometry. Content varies from year to year. Graduate: MATH 500. Recommended Prerequisite(s): MATH 401 and MATH 321 or MATH 443. Mutually Exclusive: Cannot register for MATH 402 if student has credit for MATH 500.
Course URL: math.rice.edu (http://math.rice.edu)

MATH 410 - CALCULUS OF VARIATIONS
Short Title: CALCULUS OF VARIATIONS
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (MATH 101 or MATH 105) and (MATH 102 or MATH 106) and (MATH 211 or MATH 212 or MATH 221 or MATH 222)
Description: Study of classical and modern theories about functions having some integral expression which is maximal, minimal, or critical. Geodesics, brachistochrone problem, minimal surfaces, and numerous applications to physics. Euler-Lagrange equations, 1st and 2nd variations, Hamilton's Principle.

MATH 423 - PARTIAL DIFFERENTIAL EQUATIONS I
Short Title: PARTIAL DIFFERENTIAL EQNS I
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level

MATH 424 - TOPICS IN PARTIAL DIFFERENTIAL EQUATIONS
Short Title: TOPICS IN PARTIAL DIFF EQNS
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 423
Course URL: math.rice.edu (http://math.rice.edu)

MATH 425 - INTEGRATION THEORY
Short Title: INTEGRATION THEORY
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 321 or MATH 331
Description: Lebesgue theory of measure and integration. Graduate/Undergraduate Equivalency: MATH 515. Mutually Exclusive: Cannot register for MATH 425 if student has credit for MATH 515.
Course URL: math.rice.edu (http://math.rice.edu)

MATH 426 - TOPICS IN REAL ANALYSIS
Short Title: TOPICS IN REAL ANALYSIS
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 425
Description: Content varies from year to year. May include Fourier series, harmonic analysis, probability theory, advanced topics in measure theory, ergodic theory, and elliptic integrals. Graduate/Undergraduate Equivalency: MATH 516. Mutually Exclusive: Cannot register for MATH 426 if student has credit for MATH 516. Repeatable for Credit.
MATH 427 - COMPLEX ANALYSIS
Short Title: COMPLEX ANALYSIS
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 354 or MATH 222 or MATH 302
Description: Study of the Cauchy-Riemann equation, power series, Cauchy’s integral formula, residue calculus, and conformal mappings. Emphasis on the theory. Graduate/Undergraduate Equivalency: MATH 517. Recommended Prerequisite(s): MATH 321 or MATH 331. Mutually Exclusive: Cannot register for MATH 427 if student has credit for MATH 382/MATH 517.
Course URL: math.rice.edu (http://math.rice.edu)

MATH 428 - TOPICS IN COMPLEX ANALYSIS
Short Title: TOPICS IN COMPLEX ANALYSIS
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 382 or MATH 427
Description: Special topics include Riemann mapping theorem, Runge’s Theorem, elliptic function theory, prime number theorem, Riemann surfaces, et al. Graduate/Undergraduate Equivalency: MATH 518. Mutually Exclusive: Cannot register for MATH 428 if student has credit for MATH 518. Repeatable for Credit.
Course URL: math.rice.edu (http://math.rice.edu)

MATH 435 - DYNAMICAL SYSTEMS
Short Title: DYNAMICAL SYSTEMS
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Existence and uniqueness for solutions of ordinary differential equations and difference equations, linear systems, nonlinear systems, stability, periodic solutions, bifurcation theory. Theory and theoretical examples are complemented by computational, model driven examples from biological and physical sciences. Cross-list: CAAM 435. Recommended Prerequisite(s): (MATH 212 or MATH 221) and (CAAM 335 or MATH 355 or MATH 354) and (MATH 302 or MATH 321 or MATH 331)
Course URL: math.rice.edu (http://math.rice.edu)

MATH 443 - GENERAL TOPOLOGY
Short Title: GENERAL TOPOLOGY
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 321 or MATH 331
Description: Study of basic point set topology. Includes a treatment of cardinality and well ordering, as well as metrization. Graduate/Undergraduate Equivalency: MATH 538. Mutually Exclusive: Cannot register for MATH 443 if student has credit for MATH 538.
Course URL: math.rice.edu (http://math.rice.edu)

MATH 444 - GEOMETRIC TOPOLOGY
Short Title: GEOMETRIC TOPOLOGY
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 356 and MATH 443 and (MATH 322 or MATH 370 or MATH 401)

MATH 445 - ALGEBRAIC TOPOLOGY
Short Title: ALGEBRAIC TOPOLOGY
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 443 if student has credit for MATH 539. Mutually Exclusive: Cannot register for MATH 445 if student has credit for MATH 540.

MATH 446 - TOPOLOGY AND GEOMETRY
Short Title: TOPOLOGY AND GEOMETRY
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 321 or MATH 331
Description: Introduction to topology and geometry. Elementary concepts of general topology. Differentiable Manifolds and smooth maps. Cross-listing: CAAM 446. Graduate/Undergraduate Equivalency: MATH 539. Mutually Exclusive: Cannot register for MATH 446 if student has credit for MATH 539.
MATH 448 - CONCRETE MATHEMATICS
Short Title: CONCRETE MATHEMATICS
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 182
Description: Concrete mathematics is a blend of continuous and discrete mathematics. Major topics include sums, recurrences, integer functions, elementary number theory, binomial coefficients, generating functions, discrete probability and asymptotic methods. Cross-list: COMP 448.

MATH 463 - ABSTRACT ALGEBRA II
Short Title: ABSTRACT ALGEBRA II
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 356

MATH 464 - ABSTRACT ALGEBRA III
Short Title: ABSTRACT ALGEBRA III
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 463
Description: Continuation of MATH 463. Tensor and exterior algebra, introductory commutative algebra, structure of modules, and elements of homological algebra. Additional advanced topics may include representations of finite groups and affine algebraic geometry. Graduate/Undergraduate Equivalency: MATH 564. Mutually Exclusive: Cannot register for MATH 464 if student has credit for MATH 564.

MATH 465 - TOPICS IN ALGEBRA: INTRODUCTION TO ALGEBRAIC GEOMETRY
Short Title: TOPICS IN ALGEBRA
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Varieties as solution sets of systems of polynomial equations, varieties in projective space, rational and regular functions, maps of varieties, local properties and singularities. Graduate/Undergraduate Equivalency: MATH 565. Mutually Exclusive: Cannot register for MATH 465 if student has credit for MATH 565. Repeatable for Credit.

MATH 466 - TOPICS IN ALGEBRA II
Short Title: TOPICS IN ALGEBRA II
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Content varies from year to year. Graduate/Undergraduate Equivalency: MATH 566. Mutually Exclusive: Cannot register for MATH 466 if student has credit for MATH 566.

MATH 468 - POTPOURRI
Short Title: POTPOURRI
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course deals with miscellaneous special topics not covered in other courses. Repeatable for Credit.

MATH 471 - MATHEMATICS OF APERIODIC ORDER
Short Title: MATHEMATICS OF APERIODIC ORDER
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 321 or MATH 354 or MATH 355
Description: Mathematical models of quasicrystals, whose discovery in the early 1980's led to a paradigm shift in materials science. Topics include: classical theory of ordered structures (i.e., lattices modeling crystals), Delone subsets and tilings of Euclidean space, aperiodically ordered structures generated by inflation or cut-and-project schemes. Graduate/Undergraduate Equivalency: MATH 571. Recommended
Prerequisite(s): MATH 356. Mutually Exclusive: Cannot register for MATH 471 if student has credit for MATH 571.
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<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
</tr>
<tr>
<td>MATH 490</td>
<td>SUPERVISED READING</td>
<td>MATH 490 - SUPERVISED READING</td>
<td>Mathematics</td>
<td>Standard Letter</td>
<td>Independent Study</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
</tr>
<tr>
<td>MATH 498</td>
<td>RESEARCH THEMES IN THE MATHEMATICAL SCIENCES</td>
<td>MATH 498 - RESEARCH THEMES IN THE MATHEMATICAL SCIENCES</td>
<td>Mathematics</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
</tr>
<tr>
<td>MATH 500</td>
<td>DIFFERENTIAL GEOMETRY</td>
<td>MATH 500 - DIFFERENTIAL GEOMETRY</td>
<td>Mathematics</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>Enrollment is limited to Graduate level students.</td>
</tr>
<tr>
<td>MATH 501</td>
<td>TOPICS IN DIFFERENTIAL GEOMETRY</td>
<td>MATH 501 - TOPICS IN DIFFERENTIAL GEOMETRY</td>
<td>Mathematics</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>Enrollment is limited to Graduate level students.</td>
</tr>
<tr>
<td>MATH 502</td>
<td>TOPICS IN DIFFERENTIAL GEOMETRY</td>
<td>MATH 502 - TOPICS IN DIFFERENTIAL GEOMETRY</td>
<td>Mathematics</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>Enrollment is limited to Graduate level students.</td>
</tr>
<tr>
<td>MATH 513</td>
<td>PARTIAL DIFFERENTIAL EQUATIONS I</td>
<td>MATH 513 - PARTIAL DIFFERENTIAL EQUATIONS I</td>
<td>Mathematics</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>Enrollment is limited to Graduate level students.</td>
</tr>
<tr>
<td>MATH 521</td>
<td>MATHEMATICAL SCIENCES VIGRE SEMINAR</td>
<td>MATH 521 - MATHEMATICAL SCIENCES VIGRE SEMINAR</td>
<td>Mathematics</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
</tr>
</tbody>
</table>

For more information, visit [math.rice.edu](http://math.rice.edu).
MATH 514 - TOPICS IN PARTIAL DIFFERENTIAL EQUATIONS  
Short Title: TOPICS IN PARTIAL DIFF EQNS  
Department: Mathematics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): MATH 513 or MATH 423  
Course URL: math.rice.edu (http://math.rice.edu)

MATH 515 - INTEGRATION THEORY  
Short Title: INTEGRATION THEORY  
Department: Mathematics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Graduate/Undergraduate Equivalency: MATH 425. Mutually Exclusive: Cannot register for MATH 515 if student has credit for MATH 425.

MATH 516 - TOPICS IN REAL ANALYSIS  
Short Title: TOPICS IN REAL ANALYSIS  
Department: Mathematics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): MATH 425  
Description: Graduate/Undergraduate Equivalency: MATH 426. Mutually Exclusive: Cannot register for MATH 516 if student has credit for MATH 426. Repeatable for Credit.

MATH 517 - COMPLEX ANALYSIS  
Short Title: COMPLEX ANALYSIS  
Department: Mathematics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Banach spaces: review of L^p spaces, linear operators, dual space, Hahn-Banach theorem, weak topologies, Banach-Alaoglu theorem, compact and bounded operators, closed graph theorem; Hilbert spaces: self-adjoint and unitary operators (including spectral theorem), symmetric operators and self-adjoint extensions; if time allows, distributions and Sobolev spaces. Repeatable for Credit.

MATH 518 - TOPICS IN COMPLEX ANALYSIS  
Short Title: TOPICS IN COMPLEX ANALYSIS  
Department: Mathematics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): MATH 382 or MATH 427  
Description: Graduate/Undergraduate Equivalency: MATH 428. Mutually Exclusive: Cannot register for MATH 518 if student has credit for MATH 428. Repeatable for Credit.

MATH 521 - ADVANCED TOPICS IN REAL ANALYSIS  
Short Title: ADV TOPIC: REAL ANAL YSIS  
Department: Mathematics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Topic to be announced. Repeatable for Credit.

MATH 522 - TOPICS IN ANAL YSIS  
Short Title: TOPICS IN ANAL YSIS  
Department: Mathematics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Topic to be announced. Repeatable for Credit.

MATH 523 - FUNCTIONAL ANAL YSIS  
Short Title: FUNCTIONAL ANAL YSIS  
Department: Mathematics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Banach spaces: review of L^p spaces, linear operators, dual space, Hahn-Banach theorem, weak topologies, Banach-Alaoglu theorem, compact and bounded operators, closed graph theorem; Hilbert spaces: self-adjoint and unitary operators (including spectral theorem), symmetric operators and self-adjoint extensions; if time allows, distributions and Sobolev spaces. Repeatable for Credit.

MATH 524 - TOPICS IN PARTIAL DIFFERENTIAL EQUATIONS  
Short Title: TOPICS IN PDE  
Department: Mathematics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Topic to be announced. Repeatable for Credit.
MATH 527 - ERGODIC THEORY AND TOPOLOGICAL DYNAMICS  
Short Title: ERGODIC THRY&TOP DYNAMICS  
Department: Mathematics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Topic to be announced. Repeatable for Credit.

MATH 528 - ERGODIC THEORY AND TOPOLOGICAL DYNAMICS  
Short Title: ERGODIC THRY&TOPOLOGICAL DYN  
Department: Mathematics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Repeatable for Credit.

MATH 538 - GENERAL TOPOLOGY  
Short Title: GENERAL TOPOLOGY  
Department: Mathematics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Graduate/Undergraduate Equivalency: MATH 443. Mutually Exclusive: Cannot register for MATH 538 if student has credit for MATH 443.

MATH 539 - GEOMETRIC TOPOLOGY  
Short Title: GEOMETRIC TOPOLOGY  
Department: Mathematics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): MATH 356 and MATH 443  
Description: Graduate/Undergraduate Equivalency: MATH 444. Mutually Exclusive: Cannot register for MATH 539 if student has credit for MATH 444.

MATH 540 - ALGEBRAIC TOPOLOGY  
Short Title: ALGEBRAIC TOPOLOGY  
Department: Mathematics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): MATH 539  
Description: Graduate/Undergraduate Equivalency: MATH 445. Mutually Exclusive: Cannot register for MATH 540 if student has credit for MATH 445.

MATH 541 - TOPICS IN TOPOLOGY  
Short Title: TOPICS IN TOPOLOGY  
Department: Mathematics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Topic to be announced. Repeatable for Credit.

MATH 542 - TOPICS IN ADVANCED TOPOLOGY  
Short Title: TOPICS IN ADVANCED TOPOLOGY  
Department: Mathematics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Topic to be announced. Repeatable for Credit.

MATH 543 - TOPICS IN LOW-DIMENSIONAL TOPOLOGY  
Short Title: L-D TOPOLOGY  
Department: Mathematics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 1-3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Repeatable for Credit.

MATH 544 - ABSTRACT ALGEBRA II  
Short Title: ABSTRACT ALGEBRA II  
Department: Mathematics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): MATH 356  
Description: Graduate/Undergraduate Equivalency: MATH 463. Mutually Exclusive: Cannot register for MATH 544 if student has credit for MATH 463.

MATH 545 - ABSTRACT ALGEBRA III  
Short Title: ABSTRACT ALGEBRA III  
Department: Mathematics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): MATH 563  
Description: Graduate/Undergraduate Equivalency: MATH 464. Mutually Exclusive: Cannot register for MATH 545 if student has credit for MATH 464.
MATH 565 - TOPICS IN ALGEBRA: INTRODUCTION TO ALGEBRAIC GEOMETRY
Short Title: TOPICS IN ALGEBRA
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Varieties as solution sets of systems of polynomial equations, varieties in projective space, rational and regular functions, maps of varieties, local properties and singularities. Graduate/Undergraduate Equivalency: MATH 465. Mutually Exclusive: Cannot register for MATH 565 if student has credit for MATH 465. Repeatable for Credit.

MATH 566 - TOPICS IN ALGEBRA II
Short Title: TOPICS IN ALGEBRA II
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate/Undergraduate Equivalency: MATH 466. Mutually Exclusive: Cannot register for MATH 566 if student has credit for MATH 466. Repeatable for Credit.

MATH 567 - TOPICS IN ALGEBRAIC GEOMETRY
Short Title: TOPICS IN ALGEBRAIC GEOMETRY
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Possible topics include rational points on algebraic varieties, moduli spaces, deformation theory, and Hodge structures. Recommended Prerequisite(s): MATH 463 and MATH 464. Repeatable for Credit.

MATH 571 - MATHEMATICS OF APERIODIC ORDER
Short Title: MATHEMATICS OF APERIODIC ORDER
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Mathematical models of quasicrystals, whose discovery in the early 1980's led to a paradigm shift in materials science. Topics include: classical theory of ordered structures (i.e., lattices modeling crystals), Delone subsets and tilings of Euclidean space, aperiodically ordered structures generated by inflation or cut-and-project schemes. Graduate/Undergraduate Equivalency: MATH 471. Recommended Prerequisite(s): MATH 356 Mutually Exclusive: Cannot register for MATH 571 if student has credit for MATH 471.

MATH 590 - CURRENT MATHEMATICS SEMINAR
Short Title: CURRENT MATHEMATICS SEMINAR
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Lectures on topics of recent research in mathematics delivered by mathematics graduate students and faculty. Repeatable for Credit.

MATH 591 - GRADUATE TEACHING SEMINAR
Short Title: GRADUATE TEACHING SEMINAR
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Discussion on teaching issues and practice lectures by participants as preparation for classroom teaching of mathematics. Repeatable for Credit.

MATH 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

MATH 680 - MATHEMATICS COLLOQUIUM
Short Title: MATHEMATICS COLLOQUIUM
Department: Mathematics
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Presentations of research topics in mathematics and related fields. Repeatable for Credit.

MATH 681 - TOPOLOGY SEMINAR
Short Title: TOPOLOGY SEMINAR
Department: Mathematics
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Presentations of research in topology and related areas. Repeatable for Credit.
MATH 682 - ALGEBRAIC GEOMETRY SEMINAR
Short Title: ALGEBRAIC GEOMETRY SEMINAR
Department: Mathematics
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Presentations of research in algebraic geometry and related areas. Repeatable for Credit.

MATH 683 - GEOMETRY AND ANALYSIS SEMINAR
Short Title: GEOMETRY AND ANALYSIS SEMINAR
Department: Mathematics
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Presentations of research in geometric analysis, mathematical physics, dynamics and related areas. Repeatable for Credit.

MATH 690 - SUPERVISED READING
Short Title: SUPERVISED READING
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MATH 698 - RESEARCH THEMES IN THE MATHEMATICAL SCIENCES
Short Title: RESEARCH THEMES IN MATH. SCI.
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A seminar course that will cover selected theme of general research in the mathematical sciences from the perspectives of mathematics, computational and applied mathematics and statistics. The course may be repeated multiple times for credit. Cross-list: CAAM 698, STAT 698. Graduate/Undergraduate Equivalency: MATH 498. Mutually Exclusive: Cannot register for MATH 698 if student has credit for MATH 498. Repeatable for Credit.

MATH 699 - MATHEMATICAL SCIENCES VIGRE SEMINAR
Short Title: MATHEMATICAL SCIENCES
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-9
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MATH 700 - SUMMER RESEARCH FOR PHD STUDENTS
Short Title: SUMMER RESEARCH
Department: Mathematics
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 6
Restrictions: Students in the program may not enroll. Enrollment is limited to Graduate level students. Enrollment limited to students in a Doctor of Philosophy degree.
Course Level: Graduate
Description: Summer research for MATH PhD students. Can be repeated for credit. Repeatable for Credit.

MATH 800 - GRADUATE THESIS AND RESEARCH
Short Title: GRADUATE THESIS AND RESEARCH
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MBA for Professionals-Evening (MGMP)

MGMP 500 - PMBA LAUNCH
Short Title: PMBA LAUNCH
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PMBA or XMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The Rice MBA Program Launch is composed of a rigorous one week experience intended to help acclimate students to the Jones School Culture, as well as the rapid pace of a top-tier graduate business program. At the end of Launch, students will be better prepared academically, professionally, administratively, and culturally to reap the full benefits of the MBA experience. The Rice MBA Program Launch is a mandatory activity for all incoming students.

MGMP 501 - FINANCIAL ACCOUNTING
Short Title: FINANCIAL ACCOUNTING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the preparation, analysis, and use of corporate financial reports. Covers the basic techniques of financial reporting analysis from the perspective of managers as well as external users of information such as investors. Required for MBA.
MGMP 502 - MANAGERIAL ACCOUNTING
Short Title: MANAGERIAL ACCOUNTING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PMBA or XMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the use of financial and cost information by managers in budgeting, resource allocation, pricing, quality control, and other contexts to help managers set goals and monitor and evaluate performance.

MGMP 510 - ORGANIZATIONAL BEHAVIOR
Short Title: ORGANIZATIONAL BEHAVIOR
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of the many factors, which influence how individuals, groups, and teams behave and function in complex organizations and how they can be effectively managed.

MGMP 511 - ORGANIZATIONAL CHANGE
Short Title: ORGANIZATIONAL CHANGE
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the PMBA or XMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Emphasizes understanding what constitutes effective organizational designs, considers both the macro designing initiatives and the micro execution of those initiatives.

MGMP 540 - MANAGERIAL ECONOMICS
Short Title: MANAGERIAL ECONOMICS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: We study production and pricing decisions under different assumptions about firm market power. Emphasis is placed on understanding the relevant costs in firm decision-making. Examples are used from marketing and accounting areas. Required for MBA.

MGMP 543 - FINANCE
Short Title: FINANCE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the PMBA or XMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the theory and practice of corporate finance, with emphasis on topics such as valuation, capital budgeting, risk and return, and capital structure.

MGMP 550 - CORPORATE SOCIAL RESPONSIBILITY
Short Title: CORP SOCIAL RESPONSIBILITY
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the PMBA or XMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An exploration of the necessary ethical and legal basis of managerial decision making and the positive social and environmental contributions of the business firm.

MGMP 570 - COMPETITIVE STRATEGY
Short Title: COMPETITIVE STRATEGY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Systematic examination of models and techniques used to analyze a competitive situation within an industry from a strategic perspective. Examines the roles of key players in competitive situations and the fundamentals of analytical and fact-oriented strategic reasoning. Examples of applied competitive and industry analysis are emphasized. Required for MBA.

MGMP 571 - STRATEGY FORMULATION AND IMPLEMENTATION
Short Title: STRATEGY FORMULATION
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PMBA or XMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course focuses on formulating and implementing effective organizational strategy, including competitive positioning, core competencies and competitive advantage, cooperative arrangements, and tools for implementation.
MGMP 574 - OPERATIONS MANAGEMENT
Short Title: OPERATIONS MANAGEMENT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the PMBA or XMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the principles of production management and process improvement.

MGMP 580 - MARKETING
Short Title: MARKETING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the PMBA or XMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the principles of production management and process improvement.

MGMP 594 - STRATEGIC BUSINESS COMMUNICATION I
Short Title: STRATEGIC BUSINESS COMMUNICATION I
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture/Laboratory
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the PMBA or XMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the strategy and practice of business presentations. Includes frequent oral presentations (both individual and team) and feedback.

MGMP 595 - DATA ANALYSIS
Short Title: DATA ANALYSIS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The ever-increasing capacity of computers to analyze data and the explosion of the amount of data available have resulted in an increase role for data analysis as an aid to business decision-making. This course exposes the student to most important ideas and methods relevant for data analysis in a business context. Emphasizing practical applications to real problems, the course covers the following topics: sampling, descriptive statistics, probability distributions, and regression analysis. Required for MBA.

MGMP 596 - STRATEGIC BUSINESS COMMUNICATION II
Short Title: STRATEGIC BUSINESS COMM II
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the PMBA or XMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Continued instruction in the core strategic business communication skills that were introduced during Strategic Business Communication I. In addition to a mandatory writing workshop, students will have the opportunity to select other communication topics, based on individual needs and interest.

MGMP 597 - INTEGRATIVE COMPETITIVE EXERCISE ILE
Short Title: ILE
Department: Management
Grade Mode: Standard Letter
Course Type: Intensive Learning Experience
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs.
Course Level: Graduate
Description: This course is designed with two major objectives in mind. First, is to thoroughly understand, and be able to competently apply, those statistical methods typically used in the analysis of business data. Secondly, is to affect how you think about problems. If data can help you resolve a business problem, this course should enable you to: structure the problem in a way that facilitates its analysis; specify the data that needs to be analyzed; decide on the statistical technique(s) most appropriate for analyzing the data; apply the technique correctly; and, insightfully interpret the results in terms of their implications for the original problem.

MGMP 600 - EDUCATION LEADERSHIP INDEPENDENT STUDY
Short Title: EDUCATION LEADERSHIP IND STUDY
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Independent Study
Credit Hours: 1.5
Course Level: Graduate
Description: Repeatable for Credit.

MGMP 601 - USING FINANCIAL STATEMENTS TO EVALUATE FIRM PERFORMANCE
Short Title: USING FINANCIAL STATEMENTS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is designed to develop basic skills in financial statement analysis with special emphasis on understanding, organizing and summarizing financial data for decision making purposes related to valuation. The course focuses on financial and accounting analysis which consists of documenting and understanding a firm's profitability relative to past performance and comparable firms. Ratio analysis, accounting quality, and earnings management are the focal points of this portion of the course.
MGMP 602 - ACCOUNTING-BASED VALUATION
Short Title: ACCOUNTING-BASED VALUATION
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MGMP 601 (may be taken concurrently)
Description: This course covers two major topics: 1) Forecasting financial statements based on a complete historical analysis of the firm; 2) Deriving firm value under a variety of approaches including DCF and residual income valuation (RIV). The prerequisite MGMP 601 may be taken concurrently with MGMP 602.

MGMP 603 - FEDERAL TAXATION
Short Title: FEDERAL TAXATION
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs.
Course Level: Graduate
Description: Taxes affect most business decisions in the industrialized world. This course provides the body of tax knowledge that corporate executives and professionals need as a part of basic business decision making. The course is designed for those with no formal tax background and for those whose tax work is dated or has not included a focus on business entities. The course emphasizes corporate tax matters and questions to consider in choosing a business entity. Class members should be tax literate at the end of the course.

MGMP 626 - FINANCING THE STARTUP VENTURE
Short Title: FINANCING THE STARTUP VENTURE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The goal of this course is to provide students with an overview of financing options for startups. The course covers crowdfunding, angel investors, accelerators, and the venture capital industry; the organization and operation of venture capital funds; investment methodology; monitoring and portfolio liquidation.

MGMP 627 - ENTERPRISE EXCHANGE
Short Title: ENTERPRISE EXCHANGE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs.
Course Level: Graduate
Description: Repeatable for Credit.

MGMP 645 - INVESTMENTS / PORTFOLIO MANAGEMENT
Short Title: INVESTMENTS / PORTFOLIO MGMT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs.
Course Level: Graduate
Description: Review of classic investment theory, with emphasis on measuring & managing investment risk & return. Includes the development of modern portfolio theory & asset pricing models, an introduction to option & futures contracts, market efficiency, & stock evaluation. Repeatable for Credit.

MGMP 651 - FIXED INCOME MANAGEMENT
Short Title: FIXED INCOME MANAGEMENT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs.
Course Level: Graduate
Description: The course provides an in-depth analysis of the concepts that are most often encountered in the market for fixed income securities. The goals of the course are twofold: (i) to illustrate the fundamental concepts that are commonly used for analyzing fixed income instruments; (ii) to investigate how the fundamental concepts are related to the institutional structures that are most often encountered in practice. The course will focus on topics that are most likely to have practical relevance for students once they graduate. The goals are accomplished via a combination of case studies, lectures, problem sets (to be handed in). Some of the topics that will be covered include term structure of interest rate, duration-based analysis, inverse floater, corporate bond markets, mortgage-backed securities. Repeatable for Credit.

MGMP 659 - REAL ESTATE FINANCE
Short Title: REAL ESTATE FINANCE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs.
Course Level: Graduate
Description: This course has two major objectives: First, this course provides an overview of topics related to real estate finance. Specifically, this course provides a detailed description of the Discounted Cash Flow (DCF) model applied to real estate. The DCF model is the main financial decision tool used in the real estate industry and we use it extensively in this course. In addition, this course also describes the connection between financial markets and real estate. A large part of this course is devoted to the study of public traded securities that have their cash flows tied to real property cash flows, such as commercial mortgage-backed securities and REITs. Second, this course is the first elective related to real estate in a series available to Rice MBA students, and hence it briefly overviews basic concepts commonly used in the Real Estate Industry. Repeatable for Credit.
MGMP 677 - SPECIAL TOPICS  
Short Title: SPECIAL TOPICS  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory  
Credit Hours: 1-4  
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.  
Course Level: Graduate  
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

MGMP 684 - BRAND STRATEGY  
Short Title: BRAND STRATEGY  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 1.5  
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs.  
Course Level: Graduate  
Description: Brand Management is an elective class that addresses important branding decisions faced by an organization. Its basic objectives are: 1) to provide students with a complete understanding of the consumer and of how consumers develop brand attitudes and behaviors; 2) to increase understanding of the important issues in planning and evaluating brand strategies; and 3) to provide a forum for students to apply branding strategies in a variety of domains. Particular emphasis is placed in the course on understanding psychological principles at the consumer or customer level that will improve managerial decision-making with respect to brands. One aim of the course is to make these concepts relevant for any type of organization (public or private, large or small, etc).

MGMP 689 - DECISION MODELS  
Short Title: DECISION MODELS  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 1.5  
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Successful management requires the ability to recognize a decision situation, understand its essential features, and make a choice. However, many of these situations - particularly those involving uncertainty and/or complex interactions - may be too difficult to grasp intuitively, and the stakes may be too high to learn by experience. This course introduces spreadsheet modeling, simulation, decision analysis and optimization to represent and analyze such complex problems. The skills learned in this course are applicable in almost all aspects of business and should be helpful in future courses. The course is divided into two parts. In the first part, we discuss the use of decision trees for structuring decision problems under uncertainty. In the second part of the course, we discuss Monte Carlo simulation, a technique for simulating complex, uncertain systems. Throughout the course, we will use Microsoft Excel as a modeling environment, using add-in programs as necessary. Familiarity with Excel is an important prerequisite for this course. Repeatable for Credit.

MGMP 700 - REEP SUMMER INSTITUTE: EDUCATION ENTREPRENEURSHIP  
Short Title: EDUCATION ENTREPRENEURSHIP  
Department: Management  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs.  
Course Level: Graduate  
Description: Brand Management is an elective class that addresses important branding decisions faced by an organization. Its basic objectives are: 1) to provide students with a complete understanding of the consumer and of how consumers develop brand attitudes and behaviors; 2) to increase understanding of the important issues in planning and evaluating brand strategies; and 3) to provide a forum for students to apply branding strategies in a variety of domains. Particular emphasis is placed in the course on understanding psychological principles at the consumer or customer level that will improve managerial decision-making with respect to brands. One aim of the course is to make these concepts relevant for any type of organization (public or private, large or small, etc).

MGMP 701 - COMMUNICATION I ILE  
Short Title: COMMUNICATION I ILE  
Department: Management  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Intensive Learning Experience  
Credit Hours: 0.75  
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Internal and Interpersonal Communications Students discuss and practice effective ways to communicate both to groups within and organization and one-on-one. Content includes analyzing pitfalls of hierarchical communication; listening skills; productive vs. unproductive feedback; etc. Repeatable for Credit.

MGMP 703 - CORPORATE RESPONSIBILITY II  
Short Title: CORPORATE RESPONSIBILITY II  
Department: Management  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Intensive Learning Experience  
Credit Hours: 0.75  
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs.  
Course Level: Graduate  
Description: This ILE expands on the topics of the first ILE with three learning objectives in mind: 1. Heightened moral imagination defined as the ability to recognize ethical dilemmas / moral problems in business situations. 2. Increased skill at analyzing those dilemmas / problems in terms of economic outcomes, legal requirement, and moral duties through use of ethical decision-making frameworks. 3. Increased skill at ethical leadership as an executive / manager in presenting your moral point of view to others in order to best develop and maintain an ethical climate / culture in all our organizations, communities, and societies. Repeatable for Credit.

MGMP 704 - COMMUNICATION II ILE  
Short Title: COMMUNICATION II ILE  
Department: Management  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Intensive Learning Experience  
Credit Hours: 0.75  
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs.  
Course Level: Graduate  
Description: Crisis Communications Students discuss and practice the methodology of managing crisis in business settings. Both proactive and reactive actions are reviewed; historic examples of both good and bad communication in a crisis are studied. Guest lecturer will discuss crisis communications. Repeatable for Credit.
MGMP 707 - COMMUNICATIONS ILE
Short Title: COMMUNICATIONS ILE
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Intercultural Communications Students focus on understanding how to conduct business in cultures different from their own. Content includes cultural and emotional intelligence; cross-cultural exercises; and ways to approach and learn about foreign culture and its related business practices.

MGMP 708 - LEADERSHIP ILE
Short Title: LEADERSHIP ILE
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PMBA or XMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The purpose of this course is to teach you some skills and give you some hands on practice around leading others in group settings. The course will focus on Fundamental Leadership Skills: Influence and Vision; Fundamental Leadership Skills: Leading a Key Decision; Fundamental Leadership Skills: Interpretive Leading under Crisis; Putting it Together: Climbing Mt. Everest.

MGMP 709 - NEGOTIATIONS ILE
Short Title: NEGOTIATIONS ILE
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PMBA or XMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Managers and professionals cannot be successful without possessing effective negotiation skills and strategies. The purpose of this ILE is to help one understand the processes of negotiation in a variety of settings. The ILE will cover a broad spectrum of negotiation problems faced by managers and professionals. This ILE helps students develop negotiation skills by tackling a series important topics central to effective negotiation.

MGMP 789 - STRATEGIC MANAGEMENT SIMULATION
Short Title: STRATEGIC MGMT SIMULATION
Department: Management
Grade Mode: Standard Letter
Course Type: Intensive Learning Experience
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PMBA or XMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This core course uses a capstone business strategy simulation conducted in close proximity to the required formulation/implementation course. Student teams operate simulated companies in a highly competitive industry. Emphasis is placed on integrating strategy, financial control, operational excellence, and team building. Teams make presentations at the end of the course.

MGMP 798 - CAPSTONE CONSULTING PROJECT
Short Title: CAPSTONE CONSULTING PROJECT
Department: Management
Grade Mode: Standard Letter
Course Type: Intensive Learning Experience
Credit Hours: 3
Restrictions: Enrollment limited to students in the PMBA or XMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The PMBA Capstone course is a comprehensive, real-world strategic planning course with a unique twist to challenge student teams – they will work with a non-corporate, Houston-based, community organization. Students will apply all of the disciplines (strategy, finance, marketing, organizational behavior, etc.) that they have learned in the program to thoroughly assess the organization’s current situation and develop a strategy, detailed functional design, business case, and implementation plan for the senior executives and board of directors at these organizations.

MBA for Professionals-Weekend (MGMW)

MGMP 799 - CAPSTONE CONSULTING PROJECT
Short Title: CAPSTONE CONSULTING PROJECT
Department: Management
Grade Mode: Standard Letter
Course Type: Intensive Learning Experience
Credit Hours: 3
Restrictions: Enrollment limited to students in the WMBA program.
Course Level: Graduate
Description: The Rice MBA Program Launch is composed of a rigorous one week experience intended to help acclimate students to the Jones School Culture, as well as the rapid pace of a top-tier graduate business program. At the end of Launch, students will be better prepared academically, professionally, administratively, and culturally to reap the full benefits of the MBA experience. The Rice MBA Program Launch is a mandatory activity for all incoming students.

MGMW 500 - PMBA LAUNCH
Short Title: PMBA LAUNCH
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The Rice MBA Program Launch is composed of a rigorous one week experience intended to help acclimate students to the Jones School Culture, as well as the rapid pace of a top-tier graduate business program. At the end of Launch, students will be better prepared academically, professionally, administratively, and culturally to reap the full benefits of the MBA experience. The Rice MBA Program Launch is a mandatory activity for all incoming students.
MGMW 501 - FINANCIAL ACCOUNTING
Short Title: FINANCIAL ACCOUNTING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMB program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Financial statements are a key source of information about the economic activities of a firm. This course addresses the construction and interpretation of financial statements. The goal of the course is not to train you to become an accountant. Rather, the course should equip you to become an informed user of financial statement information. Because annual reports are somewhat formidable, we will study how firms present the information for various accounts in their financial statements, including the footnotes. By the end of the course, you should have a basic understanding of financial statements and the ability to use them for decision making. Fulfillment of these objectives involves acquiring several skills. The course will emphasize (i) gaining familiarity with the types of transaction firms engage in, (ii) mapping of transactions into accounting numbers, (iii) understanding the accounting-related choices that managers have for transactions and the rationale behind the various methods, (iv) developing fluency in accounting terminology, and (v) appreciating the complexity of accounting due to the often considerable discretion and judgment involved in choosing among alternative accounting methods, making estimates, and disclosing information in financial statements.

MGMW 502 - MANAGERIAL ACCOUNTING
Short Title: MANAGERIAL ACCOUNTING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the WMBA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course provides an introduction to accounting systems that managers use to support decision making and to align behaviors. The objective of cost management systems is to provide information about costs; including, but not limited to costs of products and services. While financial accounting requires that product cost information be accumulated in particular ways for external reporting, these approaches often provide inadequate information for managing the firm. Management accounting is distinct from financial accounting in its focus on internal (to the firm) uses of accounting and nonfinancial data and in the relative absence of external rules-making bodies such as the SEC or FASB and external monitors such as public accounting firms.

MGMW 510 - ORGANIZATIONAL BEHAVIOR
Short Title: ORG. BEHAVIOR
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMB program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Issues involving power and influence, norms and values, and incentives and rewards shape individual and group behavior in organizations. Throughout your work life, you have accrued a number of experiences and insights concerning the “human” side of management. In this course, we will discuss your experiences, evaluate and interpret them, and develop a toolkit that will further enhance your ability to make effective decisions, motivate and lead employees, and understand the processes underlying social interaction in organizations.

MGMW 511 - ORGANIZATIONAL CHANGE
Short Title: ORGANIZATIONAL CHANGE
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the WMBA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Over the course of your life you have already encountered—and will continue to encounter—the need to lead change or, at a minimum, adapt to change. Chances are good that you already do an adequate job navigating change and may have experienced satisfactory or even better-than-expected results. However, by applying frameworks that elevate your abilities beyond the “common sense” level of performance, you can markedly improve the degree and/or frequency of your success. The primary goal of this course is to help you become an effective leader of organizational change. In this very brief class, you will learn, discuss and put into action an important framework for managing organizational change. Your participation in this course will: 1) provide you with an effective framework for managing organizational change. 2) Improve your competencies as both a leader and participant in change.

MGMW 540 - MANAGERIAL ECONOMICS
Short Title: MANAGERIAL ECONOMICS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMB program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Managerial economics deals with the application of microeconomic analysis to managerial decision-making. It is therefore a very broad subject and serves as the foundation for making decisions in finance, accounting, marketing, and management/strategy.
MGMW 541 - ECONOMIC ENVIRONMENT OF BUSINESS
Short Title: ECONOMIC ENV. OF BUSINESS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the WMBA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: EEB stresses an understanding of the major macroeconomic forces affecting business in today's global economy. Fluency in major macroeconomic concepts and forces enhances business decision making in the globally competitive product, financial, and labor markets that characterize the modern business environment. With this in mind, the learning objectives for the course include an understanding of 1) the key economic policy goals and how they are related: low unemployment, price stability and long-term sustainable growth; 2) the primary economic policy tools: fiscal policy and monetary policy; and 3) key economy-wide prices: inflation, interest rates, and exchange rates. Repeatable for Credit.

MGMW 543 - FINANCE
Short Title: FINANCE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the WMBA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The objective of this course is to introduce you to the theory and practice of corporate finance, and to provide you with a set of analytical tools necessary to answer the most important questions related to firms’ financing and investment policies. The theory of corporate finance consists of the following building blocks: Valuation, Investment Decisions, Risk and Return, Financing Decisions, Derivative Securities.

MGMW 560 - CORPORATE SOCIAL RESPONSIBILITY
Short Title: CORP SOCIAL RESPONSIBILITY
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the WMBA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: MGMW 560 is an interdisciplinary, interactive study of business ethics and the social responsibility of business organizations. It is not designed to dictate individual values, but to show how values can be integrated effectively in successful business decision-making. It encompasses an in-depth examination of the sorts of ethical conflicts that arise in business and an exploration of the interplay between professional and applied ethics, law and management. Emphasis is placed on consideration of stakeholder concerns and the development of personal ethical decision-making skills. Repeatable for Credit.

MGMW 561 - BUSINESS - GOVERNMENT RELATIONS
Short Title: BUS - GOVERNMENT RELATIONS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the WMBA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: MGMW 561 is a study of the relationship between business and government and its impact on the formation of public policy. The course examines how business issues are influenced by political structures and institutions, information, relationships, stakeholders, crisis, media and ethics. Students will participate in a Congressional simulation exercise and create an issue management plan that applies class lectures, readings and independent research to an issue of their choice.

MGMW 570 - COMPETITIVE STRATEGY
Short Title: COMPETITIVE STRATEGY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The field of strategic management explores how firms achieve competitive advantage in a dynamic and complex environment from the general manager's perspective. This course is organized around fundamental frameworks to assist you in analyzing a wide range of strategic issues facing a firm. It will: 1) Cover theories for in-depth industry analysis, for anticipating and predicting future industry developments; 2) Examine some of the firm specific underpinnings of competitive advantage and growth in both domestic and international settings; 3) Explore some of the challenges in implementing the strategy that has been formulated. Nevertheless, the best analysis in the world will have little effect if it cannot be communicated to others. Managers must be able to articulate their views coherently and persuasively, and they must be skilled at understanding and critiquing other points of view. Management is a 'verbal sport;' perhaps 90% of a typical manager's day is consumed by oral communication. Time is often scarce. You must learn to make convincing arguments and to make them quickly, or the merits of your ideas are likely to become simply irrelevant. This skill takes practice, and we will place a great deal of emphasis on it in class.
MGMW 571 - STRATEGY FORMULATION AND IMPLEMENTATION
Short Title: STRATEGY FORMULATION
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the WMBA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The central concern of strategic management is to help companies succeed in competitive environments. Hence, the purpose of the course is to expose students to core concepts, ideas and analytical techniques that can be used to create sustainable advantage and growth in difficult competitive environments. The perspective adopted is that of a general manager who has overall responsibility for the performance of the firm as whole. To this end, the course will attempt to build students’ ability to develop, evaluate, and implement value-creating strategies at the business and corporate level. In doing so, the course will not only introduce new or advanced concepts in strategy, but also review and build upon some of the concepts students have already studied in the first core course in strategy. Given the integrative nature of strategic management, we shall attempt to establish links with important concepts that students have been exposed to in other functional areas.

MGMW 574 - OPERATIONS MANAGEMENT
Short Title: OPERATIONS MANAGEMENT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the WMBA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the design and integration of successful operations tactics both within the organization and across the supply chain. The course focuses on understanding, managing and improving processes and flows of products, customers, and information. Touching upon bottlenecks, inventory, quality management, and strategic issues in operations.

MGMW 580 - MARKETING
Short Title: MARKETING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the WMBA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is built around the premise that providing superior value to customers is a central means of creating value for the firm’s stakeholders. The course focuses on marketing strategy – the strategic decision of what value to provide, how to provide it, and to whom. You will lean the importance of balancing effectiveness and efficiency through formulation, implementation, evaluation, and control of marketing mix programs directed at target segments.

MGMW 594 - STRATEGIC BUSINESS COMMUNICATION I
Short Title: STRAT BUSINESS COMMUNICATION I
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture/Laboratory
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the WMBA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the strategy and practice of business presentations. Includes frequent oral presentations (both individual and team) and feedback.

MGMW 595 - DATA ANALYSIS
Short Title: DATA ANALYSIS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The objective of this course is to help you learn to analyze data and use methods of statistical inference in making business decisions.

MGMW 596 - STRATEGIC BUSINESS COMMUNICATION II
Short Title: STRATEGIC BUSINESS COMM II
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the WMBA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Continued instruction in the core strategic business communication skills introduced in Strategic Business Communication I. In addition to a mandatory writing workshop, students have the opportunity to select workshops on other communication topics, based on individual needs and interests.
MGMW 597 - ICE ILE
Short Title: ICE ILE
Department: Management
Grade Mode: Standard Letter
Course Type: Intensive Learning Experience
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs.

Description: The Ice Cream Game is a realistic, competitive game set in a Marketing Context. Student teams have a fixed budget to spend on Production and Advertising across each of three different time periods. They control: 1) How many different product types they offer (up to 4); 2) What specific raw material ingredient combinations make up those products; 3) How many units of each product type to produce; 4) What price to charge; 5) How much money to allocate to advertising (if any) for each product in each media; and, 6) How much to spend stressing each product attribute. All teams compete with each other for share, sales, and profit in a world composed of three segments which (may) differ in their preferences – thus each team's strategy can definitely affect all the other team's results. The game allows the student to apply what they have learned in Data Analysis, Marketing, Economics, Strategy, and Organization Behavior all in a world where both analysis and creativity are important ingredients in the recipe for success.

MGMW 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Management
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.

Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

MGMW 680 - 2ND YEAR IMMERSION
Short Title: 2ND YEAR IMMERSION
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs.

Course Level: Graduate
Description: Repeatable for Credit.

MGMW 701 - COMMUNICATIONS
Short Title: COMMUNICATIONS
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs.

Course Level: Graduate
Description: In this course students will explore current topics in business communications. The course applies theory and research in business communications to everyday business communication practice. Individual sessions focus on the following issues: Internal Corporate Communications and Web 2.0; Crisis Communications; Cross-Cultural Communications; Interpersonal Communications in Business. Students will be expected to conduct research, analyze case studies, and present their findings. The course strives to teach knowledge and skills immediately applicable to solving business communication problems in the 21st century workplace. Repeatable for Credit.

MGMW 706 - LEADERSHIP
Short Title: LEADERSHIP
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the WMBA program.

Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: This course aims to develop a more thorough understanding of leadership and the leadership process. Through this exploration, it is hoped that students will come to understand themselves better within the leadership context (i.e., as a follower, as a self-leader, and as a leader of others).

MGMW 709 - NEGOTIATIONS
Short Title: NEGOTIATIONS
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA, PMBA, WMBA or XMBA programs. Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: Negotiating is an important part of our everyday lives, whether we realize this or not. As research tends to show, however, most of us are often not as effective as we could be in negotiation situations. The purpose of this course is simply to improve your ability to negotiate in ways that are consistent with the demands of the situation and your own personal values. The course is designed around the premise that negotiation is a science and an art. The assigned readings are informed by the latest research on negotiations. The exercises and other learning activities were chosen to help you gain a feel for how this science informs the practice of securing agreements between interdependent parties. Repeatable for Credit.
MGMW 798 - STRATEGIC MANAGEMENT SIMULATION
Short Title: STRATEGIC MGMT SIMULATION
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the WMBA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The goal of MGMW 798: First Year Capstone Course is to deliver an applied learning educational experience that provides broad functional and foundational coverage of first year MBA core courses. In order to be successful, students must be able to demonstrate the following: (1) integrating concepts across business functional areas, (2) articulating value and solicit buy in for their plan internally and externally, and (3) demonstrating results from a strategic plan.

MGMW 799 - CAPSTONE CONSULTING PROJECT
Short Title: CAPSTONE CONSULTING PROJECT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the WMBA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The PMBA Capstone course is a comprehensive, real-world strategic planning course with a unique twist to challenge student teams – they work with a non-corporate, Houston-based, community organization. Students apply all of the disciplines (strategy, finance, marketing, organizational behavior, etc.) that they have learned in the program to thoroughly assess the organization's current situation and develop a strategy, detailed functional design, business case, and implementation plan for the senior executives and board of directors at these organizations.

Mechanical Engineering (MECH)

MECH 200 - CLASSICAL THERMODYNAMICS
Short Title: CLASSICAL THERMODYNAMICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Explication of the fundamental laws of classical thermodynamics and deductions from them. Includes applications with particular attention to pure substances. Required for mechanical engineering majors. Department Permission Required. Recommended Prerequisite(s): PHYS 101 and PHYS 102.

MECH 202 - MECHANICS/STATICS
Short Title: MECHANICS/STATICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): (MATH 101 or MATH 105 or MATH 102 or MATH 106) and PHYS 101
Description: Mechanics is the branch of the physical sciences that deals with the response of bodies to the action of forces and is based on the implementation of Newton's laws. This class is divided into two sections: study of rigid bodies in equilibrium; and strength of materials. Fundamental concepts such as equilibrium, stress and strain, deformations and displacements, elasticity and inelasticity, strain energy, and load-carrying capacity will be covered.

MECH 203 - MECHANICAL ENGINEERING DESIGN TOOLS
Short Title: MECH ENG DESIGN TOOLS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): PHYS 101
Description: Learning the use of computer aided design tools for preparing complex solid parts, assemblies, and their dimensioned drawings. Learn to apply black-box simulation tools for stress analysis, heat transfer, vibration, etc. of complex parts and assemblies.

MECH 210 - INTRODUCTION TO NUMERICAL METHODS
Short Title: INTRO TO NUMERICAL METHODS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): PHYS 101 and PHYS 102 and (MATH 101 or MATH 105) and (MATH 102 or MATH 106)
Description: Numerical Methods covers computational methods for generating numerical solutions to mathematical problems, with an emphasis on engineering applications and computer implementation in MATLAB.
MECH 211 - ENGINEERING MECHANICS
Short Title: ENGINEERING MECHANICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): (PHYS 101 or PHYS 111 or PHYS 125 or PHYS 141) and (MATH 101 or MATH 105) and (MATH 102 or MATH 106)
Description: The study of equilibrium of static systems, the dynamics of a particle and particle systems, and rigid-body dynamics. Required for mechanical engineering and materials science and engineering majors. Cross-list: CEVE 211.

MECH 231 - SOPHOMORE LAB
Short Title: SOPHOMORE LAB
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Instruction in application of engineering thermodynamics. Includes uncertainty analysis, measurement of thermodynamic properties, and design of experiments. Required for mechanical engineering majors in B.S. program. Recommended Prerequisite(s): MECH 200

MECH 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

MECH 308 - SENIOR DESIGN JUNIOR OBSERVERS
Short Title: SENIOR DESIGN JUNIOR OBSERVERS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MECH 310 - RIGID BODY DYNAMICS
Short Title: RIGID BODY DYNAMICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PHYS 101 and PHYS 102 and (MATH 101 or MATH 105) and (MATH 102 or MATH 106)
Description: Mechanics is the branch of the physical sciences that deals with the response of bodies to the action of forces and is based on the implementation of Newton's laws. Statics is the study of bodies in equilibrium and is based on Newton's first and third laws, while Dynamics focuses on bodies in motion and is based on Newton's second and third laws. This class focuses on Rigid Body Dynamics.

MECH 311 - MECHANICS OF SOLIDS AND STRUCTURES
Short Title: MECHANICS OF SOLIDS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Bioengineering, Civil & Environmental Engineer, Civil Engineering or Mechanical Engineering. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CEVE 211 or MECH 211 or MECH 202
Description: Analysis of stress and the deformation of solids with applications to beams, circular shafts, and columns. Required for following undergraduate majors: civil and environmental and mechanical engineering. Cross-list: CEVE 311.

MECH 315 - STRESS ANALYSIS
Short Title: STRESS ANALYSIS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MECH 202 or MECH 211
Description: Stress analysis is integral to much of mechanical engineering, whether in industrial design or academic research. This course is divided into two parts. First, the concepts of stress analysis are introduced for two-dimensional, then three-dimensional bodies. The second part of this course builds upon stress analysis by going into failure - both dynamic and static theories. A series of month long design projects will apply the tools learned in this course to specific engineering problems.
MECH 331 - JUNIOR LABORATORY I
Short Title: JUNIOR LABORATORY I
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Instruction in static and impact testing of engineering materials. Includes beam deflection and shear center experiments, as well as the application and testing of strain gauges. Required for mechanical engineering majors in B.S. program.

MECH 332 - JUNIOR LABORATORY II
Short Title: JUNIOR LABORATORY II
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Corequisite: MECH 371
Description: Instruction in fluid mechanics and thermodynamics. Students work in groups and perform classic experiments in fluid flow. This laboratory course provides experimental support to MECH 371. Required course for mechanical engineering majors in B.S. program. See on-line registration for sections.

MECH 340 - INDUSTRIAL PROCESS LAB
Short Title: INDUSTRIAL PROCESS LAB
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to students with a major in Mechanical Engineering. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Practical experience in, and observation of, selected industrial processes. Must sign up in department office at the beginning of registration for sections; each section is limited to 8 students. Open only to mechanical engineering majors. Required for mechanical engineering majors in B.S. program. Final registration confirmed after the first week's organizational meeting. Meeting announcements posted in the MEMS department.

MECH 343 - MODELING OF DYNAMIC SYSTEMS
Short Title: MODELING OF DYNAMIC SYSTEMS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (MECH 211 or CEVE 211) and MECH 200 and MATH 211
Description: Energy-based modeling of dynamic systems. The focus of the course will be mechanical systems and electrical circuits, but will also involve fluid, thermal and other domains. The course will introduce modeling and simulation of systems via MATLAB, Simulink, and Labview, and an introduction to systems theory. Modeling and simulation of systems via MATLAB, and an introduction to systems theory. Includes laboratory assignments. Required for mechanical engineering majors in B.S. program. Recommended Prerequisite(s): CAAM 335.

MECH 350 - MECHANICAL ELEMENTS
Short Title: MECHANICAL ELEMENTS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MECH 315 or MECH 311 or CEVE 311
Description: The principles of mechanics are applied to the design of machine elements, including load path and stress analysis, selection of mechanical components, and materials selection. A semester design project requires using the analysis tools learned in the course. Required for mechanical engineering majors in B.S. program.

MECH 371 - FLUID MECHANICS I
Short Title: FLUID MECHANICS I
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MECH 200 and MATH 212
Description: Introduction to fluid statics and dynamics. Includes the development of the fundamental equations of fluid mechanics and their application to problems of engineering interest. Required for mechanical engineering majors in B.S. program. Department Permission Required.

MECH 373 - ACOUSTICS
Short Title: ACOUSTICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Basics of technical acoustics, including generation, propagation, reception and reproduction of sound, speech and hearing, musical and architectural acoustics, and noise control. Offered alternate years.

Rice University
MECH 380 - INTRODUCTION TO MECHANICAL EFFECTS IN TISSUES
Short Title: INTRO TO MECHANICAL EFFECTS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MECH 211 and MECH 311 or CEVE 300
Description: Development of a general background in physiology and in advanced mechanics for applications in medicine. Includes bone mechanics in remodeling, cartilage and ligament mechanics, and muscle mechanics, as well as an on paper design project on a subject selected by students.

MECH 383 - INTRODUCTION TO BIOMEDICAL INSTRUMENTATION AND MEASUREMENT TECHNIQUES
Short Title: BIOMED INSTRUMENT&MESURE TECHN
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 381
Description: Review of basic sensors, measurement principles and analog electronics using operational amplifiers. Includes design problems using operational amplifier circuits (e.g. instrumentation and isolation amplifiers, comparators, timer circuits). Introduction to development of virtual instruments (VIs) using LabView. Discussion of micro and macro-biopotential electrodes, cell cytometry, the measurement of blood pressure, blood flow, and heart sounds, temperature, and the principles of electrical safety (e.g. micro and macro-shock hazards in the clinical environment). Includes discussion of pulmonary instrumentation and medical applications of ultrasound. Two lab exercises and a term project required.

MECH 390 - TOPICAL ISSUES IN ENGINEERING
Short Title: TOPICAL ISSUES IN ENG
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This discussion based class will focus on current events and how engineering can be used to directly address them throughout a career. Topics will include energy, environmental, space, and societal (e.g., inequality, social media, etc.) related issues amongst others.

MECH 400 - ADVANCED MECHANICS OF MATERIALS
Short Title: ADV MECHANICS OF MATERIALS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (MECH 202 or MECH 211 or CEVE 211) and (MECH 311 or CEVE 311)
Description: Advanced topics in solid mechanics and strength of materials including energy methods, principle of virtual work, conservation laws, constitutive modeling, aspects of elasticity theory, stability and fracture mechanics with application to the analysis and design of reliable structures. Cross-list: CEVE 400. Graduate/Undergraduate Equivalency: MECH 500. Mutually Exclusive: Cannot register for MECH 400 if student has credit for MECH 500.

MECH 401 - MECHANICAL DESIGN APPLICATIONS
Short Title: MECHANICAL DESIGN APPLICATIONS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MECH 311 or CEVE 311
Description: Brief review of solid mechanics with introduction to failure theories and fatigue analysis. The principles of mechanics are applied to the design of machine elements. A semester design project requires using the analysis tools learned in the course. Required for mechanical engineering majors in B.S. program.

MECH 403 - COMPUTER AIDED DESIGN
Short Title: COMPUTER AIDED DESIGN
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Investigation of the integration of the computer into the area of mechanical design. Includes such subjects as optimization, finite element, analysis, and commercial software. Graduate/Undergraduate Equivalency: MECH 503. Mutually Exclusive: Cannot register for MECH 403 if student has credit for MECH 503.

MECH 404 - MECHANICAL DESIGN PROJECT
Short Title: MECHANICAL DESIGN PROJECT
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Project based course for group or individual design projects relating to mechanical engineering topics.
**MECH 407 - CAPSTONE DESIGN PROJECT I**

**Short Title:** CAPSTONE DESIGN PROJECT I  
**Department:** Mechanical Engineering  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Credit Hours:** 4  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** An interdisciplinary capstone design experience in mechanical engineering. This course provides an opportunity for students to apply knowledge and skills acquired in previous courses to the solution of a realistic engineering problem. Teams of students will specify, design, and build a system to meet a prescribed set of requirements. The topics covered in this course will include design methodology, effective teamwork, project management, documentation, and presentation skills. Must complete MECH 408 to receive credit for MECH 407. Required for mechanical engineering majors in B.S. program. Recommended Prerequisite(s): MECH 343, MECH 350, and MECH 481  

**MECH 408 - CAPSTONE DESIGN PROJECT II**

**Short Title:** CAPSTONE DESIGN PROJECT II  
**Department:** Mechanical Engineering  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** An interdisciplinary capstone design experience in mechanical engineering. This course provides an opportunity for students to apply knowledge and skills acquired in previous courses to the solution of a realistic engineering problem. Teams of students will specify, design, and build a system to meet a prescribed set of requirements. The topics covered in this course will include design methodology, effective teamwork, project management, documentation, and presentation skills. Must complete MECH 408 to receive credit for MECH 407. Required for mechanical engineering majors in B.S. program. Department Permission Required.  

**MECH 411 - DYNAMICS AND CONTROL OF MECHANICAL SYSTEMS**

**Short Title:** DYNAMICS & CONTROL OF MECH SYS  
**Department:** Mechanical Engineering  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** MECH 343 and MECH 420  
**Description:** The application of the principles of kinematics, dynamics and systems and control theory to the design and analysis of controlled mechanical systems. Kinematics and Newtonian dynamics of particles and rigid bodies, elements of analytical dynamics, system analysis, stability, and simulation of dynamical behavior, control of mechanical systems. Demonstrations and laboratory examples. Graduate/Undergraduate Equivalency: MECH 501. Mutually Exclusive: Cannot register for MECH 411 if student has credit for MECH 501.  

**MECH 412 - VIBRATIONS**

**Short Title:** VIBRATIONS  
**Department:** Mechanical Engineering  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** MECH 343  
**Description:** Analysis of discrete and continuous linear vibrating systems, with emphasis on multi-degree-of-freedom systems. Includes approximate methods. Coverage of statistics (e.g. Gaussian and other distributions; and power spectra) as a foundation for random vibrations analysis. Required for mechanical engineering majors in B.S. program. Graduate/Undergraduate Equivalency: MECH 502. Mutually Exclusive: Cannot register for MECH 412 if student has credit for MECH 502.  

**MECH 417 - FINITE ELEMENT ANALYSIS**

**Short Title:** FINITE ELEMENT ANALYSIS  
**Department:** Mechanical Engineering  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** (MATH 212 or MATH 222) and (CAAM 210 or CAAM 211)  
**Description:** An introduction to finite element analysis by Galerkin's method and the method of least squares as applied to both ordinary and partial differential equations common in engineering applications. Element interpolations, numerical integration, computational considerations for efficient solution and post-processing methods. Application of the commercial codes to ANSYS and Cosmosworks. Cross-list: CEVE 417. Graduate/Undergraduate Equivalency: MECH 517. Mutually Exclusive: Cannot register for MECH 417 if student has credit for MECH 517.  

**MECH 420 - FUNDAMENTALS OF CONTROL SYSTEMS**

**Short Title:** FUNDAMENTALS OF CONTROL SYST  
**Department:** Mechanical Engineering  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** (CAAM 335 or MATH 355) and ((MECH 343 or (ELEC 242 and ELEC 244)) )  
**Description:** Linear systems and the fundamental principles of classical feedback control, state variable analysis of linear dynamic systems, stability of linear control systems, time-domain analysis and control of linear systems, root-locus analysis and design and pole-zero synthesis, frequency domain techniques for the analysis and design of control systems. Required for mechanical engineering majors in B.S. program. Cross-list: ELEC 436. Graduate/Undergraduate Equivalency: MECH 620. Mutually Exclusive: Cannot register for MECH 420 if student has credit for MECH 620.
MECH 427 - COMPUTATIONAL STRUCTURAL MECHANICS AND FEM
Short Title: COMPUTATIONAL STR MECH & FEM
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CEVE 311 or MECH 311
Description: Introduction to matrix structural analysis, trusses, beams, frames. Use of computer programs for structural analysis of Civil, Mechanical, and Aerospace Structures. Cross-list: CEVE 427. Mutually Exclusive: Cannot register for MECH 427 if student has credit for MECH 527.

MECH 431 - SENIOR LABORATORY I
Short Title: SENIOR LABORATORY I
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Laboratory instruction in heat transfer and thermodynamics. Students work in groups doing experiments with emphasis on applied thermodynamics. Required for mechanical engineering majors in B.S. program. See online registration for sections.

MECH 435 - INTRODUCTION TO ENERGY-EFFICIENT MECHATRONICS
Short Title: INTRO TO MECHATRONICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 242 or ELEC 243
Description: Introduction to electromechanical systems, focusing on motor mechanics, electric drives & electronics, & modern digital control algorithms. Covers basic principles of electromechanical energy conversion & motor control. Students are introduced to energy efficiency considerations of modern electric drives. Includes hands-on laboratory projects involving digital computer control of various motor types. Cross-list: ELEC 435. Graduate/Undergraduate Equivalency: MECH 535. Mutually Exclusive: Cannot register for MECH 435 if student has credit for MECH 535.

MECH 450 - ALGORITHMIC ROBOTICS
Short Title: ALGORITHMIC ROBOTICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (COMP 221 or COMP 321) and COMP 215
Description: Robots have fascinated people for generations. Today, robots are built for applications as diverse as exploring remote planets, de-mining war zones, cleaning toxic waste, assembling cars, inspecting pipes in industrial plants and mowing lawns. Robots are also interacting with humans in a variety of ways: robots are museum guides, robots assist Surgeon sin life threatening operations, and robotic cars can drive us around. The field of robotics studies not only the design of new mechanisms but also the development of artificial intelligence frameworks to make these mechanism useful in the physical world, integrating computer science, engineering, mathematics and more recently biology and sociology, in a unique way. This class will present fundamental algorithmic advances that enable today's robots to move in real environments and plan their actions. It will also explore fundamentals of the field of Artificial Intelligence through the prism of robotics. The class involves a significant programming project. Cross-list: COMP 450, ELEC 450. Graduate/Undergraduate Equivalency: MECH 550. Mutually Exclusive: Cannot register for MECH 450 if student has credit for MECH 550.

MECH 454 - COMPUTATIONAL FLUID MECHANICS
Short Title: COMPUTATIONAL FLUID MECHANICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MECH 371 (may be taken concurrently) or CEVE 363 (may be taken concurrently) or CHBE 401 (may be taken concurrently) or BIOE 420 (may be taken concurrently) or CHBE 420 (may be taken concurrently)
Description: Fundamental concepts of finite element methods in fluid mechanics, including spatial discretization and numerical integration in multidimensions, time-integration, and solution of nonlinear ordinary differential equation systems. Advanced numerical stabilization techniques designed for fluid mechanics problems. Strategies for solution of complex, real-world problems. Topics in large-scale computing, parallel processing, and visualization. Prerequisites may be taken concurrently. Cross-list: BIOE 454, CEVE 454. Graduate/ Undergraduate Equivalency: MECH 554. Mutually Exclusive: Cannot register for MECH 454 if student has credit for MECH 554.
MECH 456 - LEGAL THEMES IN ENGINEERING AND MANAGING PRACTICES
Short Title: LEGAL THEMES IN ENGI PRACTICES
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Introduction to fundamental legal concepts of the American legal system for upper level undergraduate students, primarily aimed at what engineers, scientists and other professionals could expect to encounter in their professional careers. The primary focus is to provide students with the basic tools to understand and interact with lawyers. Cross-list: MANA 499. Graduate/Undergraduate Equivalency: MECH 556. Mutually Exclusive: Cannot register for MECH 456 if student has credit for MECH 556.

MECH 472 - THERMAL SYSTEMS DESIGN
Short Title: THERMAL DESIGN
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MECH 371 (may be taken concurrently) and MECH 481
Description: Design and synthesis of systems based on applications of thermodynamics, fluid mechanics, heat transfer, economics, and optimization theories. Required for mechanical engineering majors in B.S. program.

MECH 473 - ADVANCED FLUID MECHANICS I
Short Title: ADVANCED FLUID MECHANICS I
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Governing equations for inviscid and viscous flows. Constitutive laws, simple non-Newtonian flows, and surface tension. Derivation and applications of the equations representing the conservation of mass and momentum. Various forms of the Bernoulli equation. Introductory concepts of computational fluid mechanics. Graduate/Undergraduate Equivalency: MECH 573. Mutually Exclusive: Cannot register for MECH 473 if student has credit for MECH 573.

MECH 474 - ADVANCED COMPUTATIONAL MECHANICS
Short Title: ADV COMPUTATIONAL MECHANICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 454 or CEVE 454 or MECH 454 or BIOE 554 or CEVE 554 or MECH 554
Description: Undergraduate version of MECH 654. The required semester-end report and presentation will be on the introductory topics of the course. Graduate/Undergraduate Equivalency: MECH 654. Mutually Exclusive: Cannot register for MECH 474 if student has credit for MECH 654.

MECH 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Laboratory, Lecture, Seminar, Lecture/Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

MECH 481 - HEAT TRANSFER
Short Title: HEAT TRANSFER
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (MECH 200 and MECH 371)
Description: Study of the general principles of heat transfer by conduction, convection, and radiation. Includes their application to problems of engineering practice. Required for mechanical engineering majors in B.S. program.

MECH 482 - CONVECTIVE HEAT TRANSFER
Short Title: CONVECTIVE HEAT TRANSFER
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MECH 481
Description: Rigorous study of the transfer of heat by free and forced convection. Graduate/Undergraduate Equivalency: MECH 582. Mutually Exclusive: Cannot register for MECH 482 if student has credit for MECH 582.
MECH 484 - MICROSCOPIC THERMODYNAMICS AND TRANSPORT
Short Title: MICRO THERMO & TRANSPORT
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MECH 481
Description: This course introduces concepts in statistical mechanics and non-equilibrium thermodynamics that are used to understand the physical mechanisms of heat transfer, particularly in micro/nanoscale systems. Emphasis is placed on energy storage and thermal transport by electrons, phonons, molecules, and photons. Topics include the kinetic theory of gases, thermodynamic distribution functions, energy carrier dispersion relations, Boltzmann equation modeling of thermal and electrical properties, size effects (classical and quantum-mechanical) on material properties, and thermoelectric energy conversion. Graduate/Undergraduate Equivalency: MECH 584.

MECH 488 - DESIGN OF MECHATRONIC SYSTEMS
Short Title: DESIGN OF MECHATRONIC SYSTEMS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MECH 343 or ELEC 241 or ELEC 243
Description: Analog electronic design for purposes of controlling electromechanical systems, including electromechanical sensors and actuators, analog electronic design of filters, state space and classical controllers, and transistor-based servo amplifiers and high voltage amplifiers. Implementation of digital controllers. Significant laboratory component with design and fabrication of circuits to control electromechanical systems. Graduate/Undergraduate Equivalency: MECH 588. Recommended Prerequisite(s): MECH 211 and ELEC 436 or MECH 420. Mutually Exclusive: Cannot register for MECH 488 if student has credit for MECH 588.

MECH 490 - MECHANICAL ENGINEERING RESEARCH PROJECTS
Short Title: MECH ENG RESEARCH PROJECTS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Independent investigation of a specific topic or problem in mechanical engineering. Research under the direction of a selected faculty member. Instructor Permission Required. Repeatable for Credit.

MECH 497 - NEUROMUSCULOSKELETAL MODELING AND SIMULATION
Short Title: NEUROMUSCULOSKELETAL MODELING
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (MECH 211 or CEVE 211) and CAAM 210
Description: Introduction to computer modeling and simulation of the human neuromusculoskeletal system. Topics include measurement of human movement, 3D kinematic modeling, inverse and forward dynamic simulations, muscle and joint contact force estimation, and neural control modeling. Programming proficiency in Matlab required. Graduate/Undergraduate Equivalency: MECH 597. Mutually Exclusive: Cannot register for MECH 497 if student has credit for MECH 597.

MECH 498 - INTRODUCTION TO ROBOTICS
Short Title: INTRODUCTION TO ROBOTICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 354 or MATH 355 or CAAM 335
Description: The course will provide the student with a mathematical introduction to many of the key ideas used in today's intelligent robot systems. The focus of the course is on the analysis and control of manipulators. The course will also give an overview of common approaches to building intelligent robot systems. Cross-list: COMP 498, ELEC 498. Graduate/Undergraduate Equivalency: MECH 598. Recommended Prerequisite(s): MECH 211 or CEVE 211 or MECH 310. Mutually Exclusive: Cannot register for MECH 498 if student has credit for MECH 598.

MECH 499 - CURRENT TOPICS
Short Title: CURRENT TOPICS
Department: Mechanical Engineering
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Designed for undergraduate mechanical engineering students. Lectures in areas of current interest in mechanical engineering. Topics vary from term to term. Repeatable for Credit.
MECH 500 - ADVANCED MECHANICS OF MATERIALS
Short Title: ADV MECHANICS OF MATERIALS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (MECH 211 or CEVE 211) and (MECH 311 or CEVE 311)
Description: Advanced topics in solid mechanics and strength of materials including energy methods, principle of virtual work, conservation laws, constitutive modeling, aspects of elasticity theory, stability and fracture mechanics with application to the analysis and design of reliable structures. Cross-list: CEVE 500. Graduate/Undergraduate Equivalency: MECH 400. Mutually Exclusive: Cannot register for MECH 500 if student has credit for MECH 400.

MECH 501 - DYNAMICS AND CONTROL OF MECHANICAL SYSTEMS
Short Title: DYNAMICS & CONTROL OF MECH SYS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MECH 343 and MECH 420
Description: Graduate version of MECH 411. Offered continually with MECH 411. Graduate/Undergraduate Equivalency: MECH 411. Mutually Exclusive: Cannot register for MECH 501 if student has credit for MECH 411.

MECH 502 - VIBRATIONS
Short Title: VIBRATIONS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MECH 343
Description: Term project is required. Graduate/Undergraduate Equivalency: MECH 412. Mutually Exclusive: Cannot register for MECH 502 if student has credit for MECH 412.

MECH 503 - COMPUTER AIDED DESIGN
Short Title: COMPUTER AIDED DESIGN
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Investigation of the integration of the computer into the area of design. Includes such subjects as optimization, finite element analysis, and commercial software. Graduate/Undergraduate Equivalency: MECH 403. Mutually Exclusive: Cannot register for MECH 503 if student has credit for MECH 403.

MECH 505 - NUMERICAL METHODS FOR ENGINEERS
Short Title: NUMERICAL METHODS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Numerical methods are the computational solution of mathematical problems. This course focuses on developing a competency in the four basic areas of numerical methods: differentiation, integration, optimization, and continuation. These four categories of methods form a tool set that are used throughout the computational solution of engineering problems.

MECH 508 - NONLINEAR SYSTEMS: ANALYSIS AND CONTROL
Short Title: NONLINEAR SYSTEMS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

MECH 510 - ELASTO DYNAMICS
Short Title: ELASTO DYNAMICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
MECH 517 - FINITE ELEMENT ANALYSIS
Short Title: FINITE ELEMENT ANALYSIS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (MATH 212 or MATH 222) and (CAAM 210 or CAAM 211)

MECH 519 - ELASTICITY, PLASTICITY AND DAMAGE MECHANICS
Short Title: ELASTICITY/PLASTICITY/DAMAGE
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An overview of phenomena that determine the response of solids to deformation and loading: elasticity, plasticity, damage mechanics and cracking. Review of continuum mechanics with emphasis on the physical mechanisms of deformation and fracture. Classification of the behavior of solids. Modeling of different types of material behavior. The physics underlying the phenomena and methods for the numerical analysis of the resulting equations are discussed. Cross-list: CEVE 519.

MECH 527 - COMPUTATIONAL STRUCTURAL MECHANICS AND FEM
Short Title: COMPUTATIONAL STR MECH & FEM
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to differential and integral formulations, minimum principles, variational principles, weighted residuals, energy principles, and principle of virtual work. Boundary, initial, and eigenvalue problems. Finite element and finite difference methods for structural mechanics. Applications to static and dynamic truss beams and frame problems. MATLAB programming and use of computer software. Cross-list: CEVE 527. Mutually Exclusive: Cannot register for MECH 527 if student has credit for MECH 427.
MECH 535 - INTRODUCTION TO ENERGY-EFFICIENT MECHATRONICS  
Short Title: INTRO TO MECHATRONICS  
Department: Mechanical Engineering  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Introduction to electromechanical systems, focusing on motor mechanics, electric drives & electronics, & modern digital control algorithms. Covers basic principles of electromechanical energy conversion & motor control. Students are introduced to energy efficiency considerations of modern electric drives. Includes hands-on laboratory projects involving digital computer control of various motor types. Additional coursework required beyond the undergraduate course requirements. Cross-list: ELEC 532. Graduate/Undergraduate Equivalency: MECH 435. Mutually Exclusive: Cannot register for MECH 535 if student has credit for MECH 435.

MECH 537 - DESIGN AND CONTROL OF COMPUTER NETWORKS  
Short Title: COMMUNICATION NETWORKS  
Department: Mechanical Engineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Graduate-level introduction to design and analysis of communication networks. Topics include wireless networks, medium access, routing, traffic modeling, congestion control, and scheduling. Cross-list: ELEC 537.

MECH 543 - MANUFACTURING PROCESSES AND SYSTEMS  
Short Title: MANUFACTURING PROC AND SYS  
Department: Mechanical Engineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.  
Course Level: Graduate  
Prerequisite(s): INDE 501  
Description: Fundamentals of manufacturing processes and systems. Topics include machining, casting, 2D printing, material flow, capacities, bottlenecks, and just-in-time systems. Simulation and optimization of various manufacturing systems. Trade-offs among various processes. Instructor Permission Required.

MECH 550 - ALGORITHMIC ROBOTICS  
Short Title: ALGORITHMIC ROBOTICS  
Department: Mechanical Engineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 4  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): (COMP 221 or COMP 321) and COMP 215  
Description: Robots have fascinated people for generations. Today, robots are built for applications as diverse as exploring remote planets, de-mining war zones, cleaning toxic waste, assembling cars, inspecting pipes in industrial plants and mowing lawns. Robots are also interacting with humans in a variety of ways: robots are museum guides, robots assist surgeon in life threatening operations, and robotic cars can drive us around. The field of robotics studies not only the design of new mechanisms but also the development of artificial intelligence frameworks to make these mechanism useful in the physical world, integrating computer science, engineering, mathematics and more recently biology and sociology, in a unique way. This class will present fundamental algorithmic advances that enable today's robots to move in real environments and plan their actions. It will also explore fundamentals of the field of Artificial Intelligence through the prism of robotics. The class involves a significant programming project. Cross-list: COMP 550, ELEC 550. Graduate/Undergraduate Equivalency: MECH 450. Mutually Exclusive: Cannot register for MECH 550 if student has credit for MECH 450.

MECH 554 - COMPUTATIONAL FLUID MECHANICS  
Short Title: COMPUTATIONAL FLUID MECHANICS  
Department: Mechanical Engineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): MECH 371 (may be taken concurrently) or CEVE 363 (may be taken concurrently) or CHBE 401 (may be taken concurrently) or BIOE 420 (may be taken concurrently) or CHBE 420 (may be taken concurrently)  
Description: Fundamental concepts of finite element methods in fluid mechanics, including spatial discretization and numerical integration in multidimensions, time-integration, and solution of nonlinear ordinary differential equation systems. Advanced numerical stabilization techniques designed for fluid mechanics problems. Strategies for solution of complex, real-world problems. Topics in large-scale computing, parallel processing, and visualization. Prerequisites may be taken concurrently. Additional work required. Cross-list: BIOE 554, CEVE 554. Graduate/Undergraduate Equivalency: MECH 454. Mutually Exclusive: Cannot register for MECH 554 if student has credit for MECH 454.
MECH 555 - COMPUTATIONAL FLUID-STRUCTURE INTERACTION  
Short Title: COMPUTATIONAL FSI  
Department: Mechanical Engineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): (MECH 454 or BIOE 454 or CEVE 454) or (MECH 554 or BIOE 554 or CEVE 554)  
Description: Components and challenges of fluid-structure interaction (FSI) computations. Finite element methods for flows with moving interfaces; space-time techniques. Fluid-structure interface projection techniques. Mesh moving and remeshing techniques. FSI coupling techniques for fluid, structure, and mesh equation blocks. FSI computation sequences. FSI contact algorithms, multiscale FSI, cardiovascular FSI, and parachute FSI.

MECH 556 - LEGAL THEMES IN ENGINEERING AND MANAGING PRACTICE  
Short Title: LEGAL THEMES IN ENG PRACTICES  
Department: Mechanical Engineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Introduction to fundamental legal concepts of the American legal system for upper level undergraduate students, primarily aimed at what engineers, scientists and other professionals could expect to encounter in their professional careers. The primary focus is to provide students with the basic tools to understand and interact with lawyers. Graduate/Undergraduate Equivalency: MECH 456. Mutually Exclusive: Cannot register for MECH 556 if student has credit for MECH 456.

MECH 550 - TRIBOLOGY: THE STUDY OF FRICTION, LUBRICATION, AND WEAR  
Short Title: TRIBOLOGY  
Department: Mechanical Engineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Tribology is the interdisciplinary study of interacting surfaces from the nanoscale to the macro-scale. These surfaces undergo friction and wear and sometimes, have fluids between them for lubrication. This course will occur mainly in two parts: (i) Contact Mechanics, (ii) Hydrodynamic (fluid) lubrication. Fundamental topics include friction, wear, heat transfer within interfaces, thin-film lubrication and computational Tribology.

MECH 572 - AEROSPACE SYSTEMS ENGINEERING  
Short Title: AEROSPACE SYSTEMS ENGINEERING  
Department: Mechanical Engineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Integration of engineering problem solving methodologies based on systems concepts. Applications to complex, large scale aerospace systems and problems faced by engineering managers. Recommended Prerequisite(s): MECH 472 and MECH 594.

MECH 570 - ADVANCED FLUID MECHANICS I  
Short Title: ADVANCED FLUID MECHANICS I  
Department: Mechanical Engineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Study of the fundamentals of fluid dynamic turbulence including origins, nature, turbulent transport of momentum and heat, statistical description, spectral dynamics, and numerical modeling.

MECH 573 - ADVANCED FLUID MECHANICS II  
Short Title: ADVANCED FLUID MECHANICS II  
Department: Mechanical Engineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Study of the fundamentals of fluid dynamic turbulence including origins, nature, turbulent transport of momentum and heat, statistical description, spectral dynamics, and numerical modeling.

MECH 574 - TURBULENCE  
Short Title: TURBULENCE  
Department: Mechanical Engineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Study of the fundamentals of fluid dynamic turbulence including origins, nature, turbulent transport of momentum and heat, statistical description, spectral dynamics, and numerical modeling.
MECH 576 - STRUCTURAL DYNAMIC SYSTEMS  
**Short Title:** STRUCTURAL DYNAMIC SYSTEMS  
**Department:** Mechanical Engineering  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Introduction to structural dynamic systems. Linear SDOF and MDOF discrete systems, undamped and damped systems, free and forced vibration, dynamic response to periodic and arbitrary excitations, numerical evaluation of dynamic response, response spectrum and modal analysis. Additional topics for graduate version 576: Linear systems theory, transform methods, state space methods, feedback control, observers and identification. Applications using MATLAB. Demonstrations and laboratory examples. Students will be required to do more advanced assignments and a project. Cross-list: CEVE 576. Recommended Prerequisite(s): (CEVE 521 or CIVI 521 or MECH 502) and (CEVE 527 or CIVI 527).

MECH 578 - ORBITAL MECHANICS AND MISSION DESIGN  
**Short Title:** ORBITAL MECHANICS AND MISSION  
**Department:** Mechanical Engineering  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Prerequisite(s):** MECH 334  
**Description:** Develop an understanding of orbital mechanics. Obtain a detailed knowledge of the two-body problem and its solutions with applications to geocentric orbits and interplanetary transfers. Understand the concept of impulsive thrusting and its use in orbital transfers including plane changes. Obtain a knowledge of time-of-flight relations on two-body trajectories, using both classical and universal variables.

MECH 579 - LAUNCH VEHICLE AND SPACECRAFT DESIGN  
**Short Title:** LV AND SPACECRAFT DESIGN  
**Department:** Mechanical Engineering  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This course examines the design of launch vehicles and spacecraft, including the impacts of the atmosphere and the space environment on requirements and configurations. The principles and design aspects of the structure, propulsion, power, thermal, communication, and control subsystems will be examined.

MECH 580 - MECHANICS AND KINEMATICS OF RESPIRATORY MUSCLE IN OBESITY  
**Short Title:** RESPIRATORY MECH IN OBESITY  
**Department:** Mechanical Engineering  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** The course is designed to understand unique aspects of remodeling the respiratory system mechanics in obesity. Focus will be on remodeling of diaphragm muscle and chest wall as a consequence of obesity. In particular, alteration in the kinematics and mechanics of the diaphragm in obese subjects will be evaluated.

MECH 581 - MICRO AND NANO HEAT TRANSPORT METHODOLOGIES AND DESIGN  
**Short Title:** MICRO & NANO HEAT TRANSPORT  
**Department:** Mechanical Engineering  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to students with a major in Mechanical Engineering or Materials Science & NanoEng. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Prerequisite(s):** MECH 481  

MECH 582 - CONVECTIVE HEAT TRANSFER  
**Short Title:** CONVECTIVE HEAT TRANSFER  
**Department:** Mechanical Engineering  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Rigorous study of the transfer of heat by free and forced convection. Graduate/Undergraduate Equivalency: MECH 482. Mutually Exclusive: Cannot register for MECH 582 if student has credit for MECH 482.
MECH 584 - MICROSCOPIC THERMODYNAMICS AND TRANSPORT
Short Title: MICRO THERMO & TRANSPORT
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course introduces concepts in statistical mechanics and non-equilibrium thermodynamics that are used to understand the physical mechanisms of heat transfer, particularly in micro/nanoscale systems. Emphasis is placed on energy storage and thermal transport by electrons, phonons, molecules, and photons. Topics include the kinetic theory of gases, thermodynamic distribution functions, energy carrier dispersion relations, Boltzmann equation modeling of thermal and electrical properties, size effects (classical and quantum-mechanical) on material properties, and thermoelectric energy conversion. Graduate/Undergraduate Equivalency: MECH 484.

MECH 586 - RESPIRATORY SYSTEM MECHANICS
Short Title: RESPIRATORY SYSTEM MECHANICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Mechanics of ventilation, respiratory muscle mechanics, rib cage mechanics, mechanical coupling between the respiratory muscles and the rib cage, and inferences on mechanics from respiratory muscle anatomy. The class will meet in the Pulmonary Division at Baylor College of Medicine in the Texas Medical Center. Cross-list: BIOE 586.

MECH 588 - DESIGN OF MECHATRONIC SYSTEMS
Short Title: DESIGN OF MECHATRONIC SYSTEMS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Additional work required. Graduate/Undergraduate Equivalency: MECH 488. Mutually Exclusive: Cannot register for MECH 588 if student has credit for MECH 488.

MECH 590 - AEROSPACE PROPULSION
Short Title: AEROSPACE PROPULSION
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Aspects of one-dimensional compressible flow, including isentropic flow and normal shocks; effects of friction and combustion; analysis and design of and air-breathing and rocket engines, including performance and cycle analysis; flow in nozzles, diffusers, compressors, and turbines; combustion chamber processes and propellants.

MECH 591 - GAS DYNAMICS
Short Title: GAS DYNAMICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MECH 371
Description: Study of the fundamentals of compressible, one-dimensional gas flows with area change, normal shocks, friction, and heat addition. Includes oblique shocks, Prandtl-Meyer flows expansions, and numerical techniques.

MECH 592 - DESIGN FOR AEROSPACE ENVIRONMENTS
Short Title: AEROSPACE ENVIRONMENTS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate course on aerospace environments, including theoretical bases. Topics include key mission phases, orbital mechanics, the effects of the sun, plasma, particles and ionizing radiation, neutral atmosphere, contamination, micrometeoroid/orbital debris, thermal and aerothermal environments. Extraterrestrial environments are briefly discussed.

MECH 593 - MECHANICAL ENGINEERING PROBLEMS
Short Title: MECH ENGINEERING PROBLEMS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Mechanical Engineering. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An approved investigation or design project under the direction of a member of the staff. Open only to mechanical engineering majors. Repeatable for Credit.

MECH 594 - INTRODUCTION TO AERONAUTICS
Short Title: INTRODUCTION TO AERONAUTICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MECH 371
Description: Development of theories for the prediction of aerodynamic forces and moments acting on airfoils, wings, and bodies. Includes their design applications.
MECH 595 - MODELING TISSUE MECHANICS
Short Title: MODELING TISSUE MECHANICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Independent study and seminar course which focuses on modeling the mechanical properties of biological tissues. Data from experiments will be used to refine the predictions of nonlinear mathematical computer models. Aimed at juniors, seniors, and graduate students. Laboratory work performed at Baylor College of Medicine, computer work at Rice University. Cross-list: BIOE 595.

MECH 596 - INTRODUCTION TO FLIGHT MECHANICS
Short Title: INTRO TO FLIGHT MECHANICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will examine the basic flight mechanics of human movement, 3D kinematic modeling, inverse and forward dynamic simulations, muscle and joint contact force estimation, and neural control modeling. Programming proficiency in Matlab required. Additional work required for Graduate course. Graduate/Undergraduate Equivalency. MECH 497. Mutually Exclusive: Cannot register for MECH 597 if student has credit for MECH 497.

MECH 597 - NEUROMUSCULOSKELETAL MODELING AND SIMULATION
Short Title: NEUROMUSCULOSKELETAL MODELING
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to computer modeling and simulation of the human neuromusculoskeletal system. Topics include measurement of human movement, 3D kinematic modeling, inverse and forward dynamic simulations, muscle and joint contact force estimation, and neural control modeling. Programming proficiency in Matlab required. Additional work required for Graduate course. Graduate/Undergraduate Equivalency. MECH 497. Mutually Exclusive: Cannot register for MECH 597 if student has credit for MECH 497.

MECH 598 - INTRODUCTION TO ROBOTICS
Short Title: INTRODUCTION TO ROBOTICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the kinematics, dynamics, and control of robot manipulators and to applications of artificial intelligence and computer vision in robotics. Additional work required for Graduate course. Cross-list: COMP 598, ELEC 598. Graduate/Undergraduate Equivalency. MECH 498. Mutually Exclusive: Cannot register for MECH 598 if student has credit for MECH 498.

MECH 599 - CURRENT TOPICS IN MECHANICAL ENGINEERING
Short Title: SPECIAL TOPICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Designed for senior and graduate level students. Lectures in areas of current interest in mechanical engineering. Topics may vary from term to term. Fall 2019, Section 003: This course focuses on numerical techniques for solving partial differential equations (PDEs) including the full incompressible Navier-Stokes equations. Several spatial-temporal discretization methods will be taught, primarily the finite difference method, but also moderate exposure to the finite volume method, and light exposure to the finite element method. Explicit and implicit approaches, in addition to methods to solve linear equations are employed to study fluid flows. A review of various finite difference methods which will be used to analyze elliptic, hyperbolic, and parabolic partial differential equations and the concepts of stability, consistency and convergence are taught to familiarize the students with general numerical PDE methods. Commercial computational fluid dynamics (CFD) software used in the field will be briefly introduced. Repeatable for Credit.

MECH 601 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-9
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics may vary. Please consult with the department for additional information. FA 2016, Section 001: Special Topics: Advanced Topics and Tools in Particle Flows & Tribology. Instructor Permission Required.

MECH 602 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-9
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics may vary. Please consult with the department for additional information.

MECH 606 - GRADUATE SEMINAR
Short Title: GRADUATE SEMINAR
Department: Mechanical Engineering
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.
MECH 611 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-9
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MECH 612 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-9
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MECH 620 - FUNDAMENTALS OF CONTROL SYSTEMS
Short Title: FUNDAMENTALS OF CONTROL SYST
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Linear systems and the fundamental principles of classical feedback control, state variable analysis of linear dynamic systems, stability of linear control systems, time-domain analysis and control of linear systems, root-locus analysis and design and pole-zero synthesis, frequency domain techniques for the analysis and design of control systems. Required for mechanical engineering majors in B.S. program. Additional work required for MECH 620. Cannot be taken if MECH 420 or ELEC 436 was previously taken. Instructor Permission Required. Graduate/Undergraduate Equivalency: MECH 420. Mutually Exclusive: Cannot register for MECH 620 if student has credit for MECH 420.

MECH 621 - M.M.E. RESEARCH PROJECT I
Short Title: M.M.E. RESEARCH PROJECT I
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is the first part of the M.M.E. research project course. The faculty advisor, taking into account the background and research interests of the student as well as the research interests of the faculty advisor, will determine the contents. Course requirements will include a final report. Instructor Permission Required.

MECH 622 - M.M.E. RESEARCH PROJECT II
Short Title: M.M.E. RESEARCH PROJECT II
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is the second part of the M.M.E. research project and continuation of MECH 621. Course requirements will include a final report.

MECH 625 - LINEAR DYNAMICS OF STRUCTURAL SYSTEMS
Short Title: LINEAR DYNAMICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Focuses on classical methods for the analysis of mechanical systems and structures. The course will focus mainly on periodic behavior. Modeling and analysis methods will be discussed for both discrete and continuous time systems and discrete maps. Floquet theory and Poincare maps are used to study periodic behavior.

MECH 626 - ADVANCED COMPLEX SYSTEMS
Short Title: ADVANCED COMPLEX SYSTEMS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced topics in computational mechanics with emphasis on finite element methods and fluid mechanics. Additional work required for MECH 620. Cannot be taken if MECH 420 or ELEC 436 was previously taken. Instructor Permission Required. Graduate/Undergraduate Equivalency: MECH 420. Mutually Exclusive: Cannot register for MECH 620 if student has credit for MECH 420.

MECH 654 - ADVANCED COMPUTATIONAL MECHANICS
Short Title: ADV COMPUTATIONAL MECHANICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): BIOE 554 or MECH 554 or MECH 454 or MECH 454
Description: Advanced topics in computational mechanics with emphasis on finite element methods and fluid mechanics. Additional work required for MECH 620. Cannot be taken if MECH 420 or ELEC 436 was previously taken. Instructor Permission Required. Graduate/Undergraduate Equivalency: MECH 420. Mutually Exclusive: Cannot register for MECH 654 if student has credit for MECH 474.

MECH 665 - ANALYSIS OF VIBRATIONS IN NONLINEAR SYSTEMS
Short Title: NONLINEAR VIBRATIONS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MECH 502
Description: Nonlinear vibrations are studied in structural and mechanical systems. Methods for the qualitative and quantitative analysis of these systems are applied. The classification and stability of equilibrium and periodic solutions are discussed for continuous time systems and discrete maps. Floquet theory and Poincare maps are used to study periodic behavior.

MECH 667 - NONLINEAR DYNAMIC BEHAVIOR IN MECHANIC SYSTEMS
AND STRUCTURES
Short Title: NONLINEAR DYNAMICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MECH 502
Description: Various types of nonlinear dynamic behavior are studied in mechanical systems and structures. The course will focus mainly on quasi-periodic and chaotic behavior but will also include periodic behavior. Modeling and analysis methods will be discussed for both discrete and continuous time systems including Lyapunov exponents and pseudo-state space. Recommended Prerequisite(s): MECH 665
MECH 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

MECH 678 - APPLIED STOCHASTIC MECHANICS
Short Title: APPLIED STOCHASTIC MECHANICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Nonlinear random vibrations, Statistical Linearization, ARMA filters modeling, Monte Carlo Simulation, Wiener-Volterra series, time-variant structural reliability, and Stochastic Finite Elements are presented from a perspective of usefulness to aerospace, civil, marine, and mechanical applications. Cross-list: CEVE 678.

MECH 679 - APPLIED MONTE CARLO ANALYSIS
Short Title: APPLIED MONTE CARLO ANALYSIS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Probability density and power spectrum based simulation concepts and procedures are discussed. Scalar and vectorial simulation are addressed. Spectral decomposition and digital filter algorithms are presented. Applications from aerospace, earthquake, marine, and wind engineering, and from other applied science disciplines are included. Cross-list: CEVE 679.

MECH 683 - RADIATIVE HEAT TRANSFER I
Short Title: RADIATION HEAT TRSF I
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Rigorous study of the transfer of heat by radiant exchange in the absence of absorbing media.

MECH 691 - INTRODUCTION TO HYPERSONIC AERODYNAMICS
Short Title: INTRO TO HYPERSONICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Recommended Prerequisite(s): MECH 591.

MECH 800 - RESEARCH AND THESIS
Short Title: RESEARCH AND THESIS
Department: Mechanical Engineering
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-12
Restrictions: Enrollment is limited to students with a major in Mechanical Engineering. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

Medieval/Early Modern Studies (MDEM)

MDEM 101 - ELEMENTARY LATIN I
Short Title: ELEMENTARY LATIN I
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Study of the fundamentals of Latin grammar with emphasis on acquisition of reading skills. Effective May 15, 2019, this course does not carry D1 credit. Cross-list: LATI 101.

MDEM 102 - ELEMENTARY LATIN II
Short Title: ELEMENTARY LATIN II
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): LATI 101 or MDST 101
Description: Continuation of LATI 101 and MDST 101. Graduate students require permission of instructor. Effective May 15, 2019, this course does not carry D1 credit. Cross-list: LATI 102.

MDEM 103 - INTRODUCTION TO JEWISH MYSTICISM
Short Title: INTRO TO JEWISH MYSTICISM
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Surveys the historical development and central themes of Jewish mysticism. From the bible to ancient mysticism to medieval Kabbalah to modern expressions, we will critically reflection the ideas such as divine presence in the world, the cultivation of insight and magical powers, contemplative and restorative practices, and charismatic authority. Cross-list: RELI 104.
MDEM 105 - INTRODUCTION TO MEDIEVAL CHRISTIAN THOUGHT
Short Title: MEDIEVAL CHRISTIAN THOUGHT
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Survey of major medieval Christian thinkers. Primary focus on high and late middle ages (12th-15th century), with some attention to spiritual and apocalyptic writings and dissenting thought in this period. Cross-list: RELI 105.

MDEM 111 - INTRODUCTION TO THE HISTORY OF WESTERN ART I: PREHISTORIC TO GOTHIC
Short Title: INTRO TO HIST OF WESTERN ART I
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A survey of painting, sculpture, and architecture from Antiquity through the 15th century. Students will also attend a one-hour weekly tutorial with a teaching assistant. Cross-list: CLAS 102, HART 101. Mutually Exclusive: Cannot register for MDEM 111 if student has credit for HART 220.

MDEM 116 - MYSTICISM THROUGHOUT THE AGES
Short Title: MYSTICISM THROUGHOUT THE AGES
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course examines the historical development of mysticism in Western thought, placing the Christian experiential traditions in comparison with Jewish developments. Through mystical texts, we will explore key concepts, such as visions of God and spiritual journeys, as developed during late antiquity, the middle-ages, and into the early modern period. Cross-list: RELI 116.

MDEM 120 - MEDIEVAL CIVILIZATIONS
Short Title: MEDIEVAL CIVILIZATIONS
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Focusing on the period between 300-1500 CE, the course will survey political institutions, society, and culture in medieval European, Byzantine, and Islamic civilizations. Topics include Christianization of Europe, the rise of Islam, the Crusades, scholastic theology, persecution of heretics, bubonic plague, and the rise of centralized monarchies. Cross-list: HIST 120.

MDEM 201 - HISTORY OF PHILOSOPHY I
Short Title: HISTORY OF PHILOSOPHY I
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Survey of the major philosophers and philosophical systems of ancient Greece, from Parmenides to the Stoics. Cross-list: CLAS 201, PHIL 201.

MDEM 205 - MEDIEVAL MEDITERRANEAN WORLD
Short Title: MEDIEVAL MEDITERRANEAN WORLD
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Course examines the political, institutional, military, and cultural development of the societies that successively dominated the 'Middle Sea' from AD 500-1500 in Europe and the Islamic World. It highlights the Mediterranean legacy of commercial, cultural, and religious exchange and coexistence, as well as its history of confrontation and warfare. Cross-list: HIST 205.
MDEM 210 - MEDIEVAL VIOLENCE
Short Title: MEDIEVAL VIOLENCE
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Discussion course looks at private and large-scale warfare during the European Middle Ages. It considers how violence was legitimized and carried out, and examines attitudes towards violence and its effects on society. Topics include theoretical approaches to violence, crusading, chivalry, Truce of God, rituals of violence, military technologies, and cinematic portrayals of medieval warfare. Cross-list: HIST 211.

MDEM 211 - INTERMEDIATE LATIN I: PROSE
Short Title: INTERMEDIATE LATIN I: PROSE
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Review of grammar and readings in Latin prose. Cross-list: LATI 201.

MDEM 212 - INTERMEDIATE LATIN II
Short Title: INTERMEDIATE LATIN II
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): LATI 201 or MDST 211 or MDEM 211

MDEM 222 - MEDIEVAL AND RENAISSANCE ERAS
Short Title: MEDIEVAL AND RENAISSANCE ERAS
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): MUSI 211 or MUSI 317
Description: Introduction to the study of Western music history, with emphasis on music before 1600. Score reading ability required. Cross-list: MUSI 222.

MDEM 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Seminar, Internship/Practicum, Laboratory, Lecture, Lecture/Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

MDEM 271 - MEDIEVAL POPULAR CHRISTIANITY
Short Title: MEDIEVAL POPULAR CHRISTIANITY
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: For much of the Middle Ages, literacy was a luxury that ordinary people could not afford. How could peasants participate in Christian traditions? Course surveys devotional practices engaged by the laity, including penance, pilgrimage, plays, charms and spells, as well as traditions of lay interaction with dead saints and ghosts. Cross-list: RELI 271.

MDEM 281 - GOLDEN AGE OF ISLAM
Short Title: GOLDEN AGE OF ISLAM
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): LATI 201 or MDST 211 or MDEM 211
Description: Introduction to the Islamic World from the 8th century to the 13th century. Topics include conquests and classical Islamic states, Arabization, Jewish and Christian communities, impact of Turkic peoples, and the Ottoman Empire, with emphasis on social, cultural, artistic, and scientific trends that shaped the region's history. Cross-list: HIST 281.

MDEM 301 - ANCIENT AND MEDIEVAL PHILOSOPHY
Short Title: ANCIENT & MEDIEVAL PHILOSOPHY
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): MUSI 211 or MUSI 317
Description: Topics in the history of philosophy from the 4th century B.C. through the 14th century. Graduate students require permission of instructor. Credit may not be received for both MDEM 301 and MDEM 481. Cross-list: CLAS 301, PHIL 301. Mutually Exclusive: Cannot register for MDEM 301 if student has credit for MDEM 481. Repeatable for Credit.
MDEM 306 - DISABILITY IN THE MEDIEVAL AND EARLY MODERN WORLD
Short Title: DISABILITY IN MED & EARL MOD
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A study of disability and impairment during the medieval and early modern periods. Students will approach the subject through primary and secondary readings, including theoretical tests on disability studies and the humanities.

MDEM 308 - THE WORLD OF LATE ANTIQUITY
Short Title: THE WORLD OF LATE ANTIQUITY
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of the social, religious, and political history of the Roman world from Diocletian to the rise of Islam, with emphasis on the breaking of the unity of the Mediterranean world and the emergence of early medieval societies in the east and west. Cross-list: HIST 308.

MDEM 311 - AFRICAN PREHISTORY
Short Title: AFRICAN PREHISTORY
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Thematic coverage of developments throughout the continent from the Lower Paleolithic to medieval times, with emphasis on food production, metallurgy and the rise of cities and complex societies. Cross-list: ANTH 312.

MDEM 312 - OLD ENGLISH LITERATURE AND LANGUAGE
Short Title: OLD ENGL LIT AND LANGUAGE
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A survey course in Old English literature and language. Cross-list: ENGL 312. Repeatable for Credit.

MDEM 316 - CHAUCER
Short Title: CHAUCER
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An introduction to Geoffrey Chaucer's The Canterbury Tales, Middle English, and the political and cultural climate of the fourteenth century. Cross-list: ENGL 316, SWGS 305.

MDEM 317 - ARTHURIAN LITERATURE
Short Title: ARTHURIAN LITERATURE
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A survey of the origins and development of the Arthurian legend from the earliest chronicles in the sixth century and later medieval French, Welsh, Irish, and English Arthurian poems to modern adaptations of Arthurian material, including films. Cross-list: ENGL 317, SWGS 301.

MDEM 319 - MEDIEVAL ROMANCE
Short Title: MEDIEVAL ROMANCE
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course that examines the development of romance as a genre during the medieval period. Cross-list: ENGL 314.

MDEM 320 - DIRECTED READING IN MEDIEVAL STUDIES
Short Title: DIRECTED READING MEDIEVAL STDY
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Student works one-on-one with an individual faculty member on a topic directly related to Medieval Studies. Instructor Permission Required.
MDEM 323 - BUDDHIST AND DAOIST VISUAL CULTURES IN TRADITIONAL CHINA
Short Title: BUDDHIST AND DAOIST ART
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Graduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores the visual materials and their context that shed light on pre-modern China's Buddhist, Daoist, funeral and other diverse religious and ritual practices. Topics of discussion include methodologies, Dunhuang Buddhist grottoes and "library caves", Daoist body and cosmos, images of heaven, hell and rebirth, art and ritual, multi-cultural aspects, patronage, tombs, printing, women, and so on. Through careful examinations of the proposed topics and assigned readings, students will develop analytical skills, critical thinking, and holistic views regarding the meaning, function, and style of the arts of diverse religious traditions, as well as people from different social and ethnic backgrounds who participated in the making, spreading, and use of religious visual culture in traditional China. Students should have some background in Chinese art, history, or religions. Cross-list: ASIA 323, HART 323. Recommended Prerequisite(s): HART 372, ASIA 372.

MDEM 324 - COEXISTENCE IN MEDIEVAL SPAIN
Short Title: COEXISTENCE IN MEDIEVAL SPAIN
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Graduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores the history of the Iberian Peninsula from late Antiquity to the early 16th century, focusing on coexistence and conflict between medieval Spain's three religious communities - Christians, Jews, and Muslims. Cross-list: HIST 324, ASIA 327.

MDEM 327 - EUROPEAN FRONTIER SOCIETIES
Short Title: MEDIEVAL BORDERS
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Graduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines the military, political, social and cultural developments on the European frontiers between 500-1500 AD. Topics include colonization and conquest, crusades and Spanish Reconquista, piracy, slavery, encounters with native peoples, spread of Christianity, medieval colonial regimes, map-making and cultural exchanges. Cross-list: HIST 327.

MDEM 330 - EARLY MEDIEVAL ART
Short Title: EARLY MEDIEVAL ART
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Graduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines the full array of sacred art and architecture produced in the early and high gothic periods in northern Europe. Includes cathedral architecture, sculpture, stained glass, manuscripts, and metalwork studies in relationship to the expansion of royal and Episcopal power. Cross-list: HIST 331.
MDEM 340 - NORTHERN RENAISSANCE ART
Short Title: NORTHERN RENAISSANCE ART
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of art in northern Europe from Jan van Eyck to Peter Bruegel. Cross-list: HART 340.

MDEM 343 - MASTERS OF THE BAROQUE ERA
Short Title: MASTERS OF THE BAROQUE ERA
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of the works of the greatest painters and sculptors in Europe during the Baroque period. Includes Rembrandt, Rubens, Caravaggio, Poussin, Claude, and Velazquez. Cross-list: HART 343.

MDEM 350 - DEMONS, MENTAL ILLNESS AND MEDICINE
Short Title: DEMONS/MENTAL ILLNESS/MEDICINE
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Treats complex connections between religious beliefs/practices and formulation of human psychology in western tradition, through a historical reckoning with demonology. Consider the way demons are represented – from semi-corporeal beings to marks of mental illness – by looking at texts from the ancient world to modern psychiatry. Cross-list: RELI 350.

MDEM 357 - JEWS AND CHRISTIANS IN MEDIEVAL EUROPE
Short Title: JEWS & CHRISTIANS-MEDIEVAL EUR
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Course will focus on Jewish-Christian coexistence in medieval Europe. Will examine the Jews' legal status in Christendom, their communal life, economic activities, intellectual achievements, while also focusing on the complex dynamics of Jewish-Christian interaction, and the shifting patterns of persecution and acceptance. Cross-list: HISTR 357.

MDEM 370 - INTRODUCTION TO TRADITIONAL CHINESE POETRY
Short Title: INTRO TO TRAD CHINESE POETRY
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course seeks to decode enchanting features of traditional Chinese poetry through examining the transformation of poetic genres, the interaction between poetic creation and political, social and cultural changes, and the close association of poetry with art. Thus, this course also serves to understand Chinese culture and history through poetic perspectives. All readings in English translation. Cross-list: ASIA 330, CHIN 330.

MDEM 373 - CHINESE ART AND VISUAL CULTURE
Short Title: CHINESE ART AND VISUAL CULTURE
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Chinese Art and Visual Culture is an introductory seminar studying the history of traditional Chinese art and visual culture from ancient times to the nineteenth century. This course draws upon masterpieces and monuments from both archaeological finds and museum collections, including bronze vessels, funeral objects, painting, calligraphy, sculptures, architecture, ceramics, and so on. Designed for students who have no background in Chinese art, Chinese history, or art history, the seminar uses diverse teaching materials in multiple media beyond traditional textbook-based readings to achieve four main goals: 1) Develop visual literacy through a direct encounter with objects. The development of specialized vocabulary to describe, analyze, and communicate function, composition, and meaning in art. 2) Understand major artistic movements of art and architecture within historical, social, political contexts. 3) Develop specialized knowledge in art from specific geographical locations (e.g. China), time periods, artists or artistic movements. 4) Evaluate and use primary and secondary source materials. Cross-list: ASIA 372, CHIN 372.

MDEM 375 - INTRODUCTION TO CLASSICAL CHINESE NOVELS
Short Title: CLASSICAL CHINESE NOVELS
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Examination of the basic characteristics of classical Chinese novels, primarily through six important works from the 16th to 18th centuries: Water Margin, Monkey, Golden Lotus, Scholars, Romance of the Three Kingdoms, and Dream of the Red Chamber. Cross-list: ASIA 335, CHIN 335.
MDEM 376 - EAST & WEST: MEDIEVAL VISUAL CULTURE IN CHINA AND NORTHERN EUROPE
Short Title: EAST AND WEST
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores a series of issues that are critically important for the medieval art of both China and northern Europe. Topics include materials and techniques; public and private art: commerce, technology and prints; art and motion; archaeology; paradise and hell; maps and space; the gaze; erotica; patronage; and multiculturalism. Cross-list: ASIA 376, HART 376.

MDEM 377 - MEDIEVAL MANUSCRIPTS
Short Title: MEDIEVAL MANUSCRIPTS
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar explores illuminated European manuscripts from late antiquity through the early sixteenth century. It examines manuscripts' functions, patrons, makers, and materials and technique, as well as such issues as the relationship between text and image and the manuscript's ideological stance. Students have the opportunity to study original medieval illuminations. Cross-list: HART 377.

MDEM 378 - DUTCH ART IN THE AGE OF REMBRANDT
Short Title: DUTCH ART IN AGE OF REMBRANDT
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will examine Dutch and Flemish seventeenth-century art, including major masters, such as Rembrandt, Rubens, and Vermeer, and major developments, such as the rise of still life, genre, and landscape painting. Cross-list: HART 378.

MDEM 379 - WOMEN IN CHINESE LITERATURE
Short Title: WOMEN IN CHINESE LITERATURE
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines women's roles in Chinese Literature as writers, readers, and characters, focusing particularly on the tension between women's lived bodily experiences and the cultural experiences inscribed on the female body and how, in the process, women have contrarily gendered patriarchal culture into their own. It will also touch on Chinese women's incorporation of the Western Tradition. Cross-list: ASIA 399, SWGS 399.

MDEM 391 - THE REFORMATION & ITS RESULTS
Short Title: THE REFORMATION & ITS RESULTS
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Theology and church-state issues from 16th-century Reformation to 17th-century; medieval background; Luther and Calvin, the Catholic Reformation; religious wars; Protestant orthodoxy; Pietist spirituality; Puritanism; and calls for toleration. Cross-list: RELI 391. Mutually Exclusive: Cannot register for MDEM 391 if student has credit for RELI 286.

MDEM 398 - INDEPENDENT STUDY IN MEDIEVAL AND EARLY MODERN STUDIES
Short Title: INDEPENDENT STUDY
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Independent study reading, or special research in medieval and early modern studies. Repeatable for Credit.

MDEM 402 - MIDDLE HIGH GERMAN
Short Title: MIDDLE HIGH GERMAN
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An introduction to the phonology and morphology of Middle High German, such as will prepare students to read 'Tristan', 'Parzifal', and the 'Niebelungenlied', as well as the great lyric poets of that period. Emphasis will be on pronunciation and grammatical distinctions between Middle High and Modern High German as well as on the diverging semantic developments of the two vocabularies.
MDEM 404 - BEGINNINGS OF THE LANGUAGE AND LITERATURE OF FRANCE
Short Title: THE LANG AND LIT OF FRANCE
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course includes and external history of the French language, an examination of hagiographic literature and the chanson de geste in their cultural and artistic contexts, as well as bibliographic component to acquaint the students with library tools available for research emphasizing medieval resources but not excluding those for later periods. Student will acquire a reading knowledge of Old French. Course taught in French. Effective May 15, 2019, this course does not carry D1 credit. Cross-list: FREN 404. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor

MDEM 411 - THE LITERARY AND HISTORICAL IMAGE OF THE MEDIEVAL WOMAN
Short Title: LIT & HIST IMAGE MED WOMAN
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): FREN 311 or FREN 312
Description: Comparison and contrast of the presentation of the medieval woman in literature with evidence of historical women from contemporary documents and records.

MDEM 425 - COURTLY LOVE IN MEDIEVAL FRANCE
Short Title: COURTLY LOVE MEDIEVAL FRANCE
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of the Occitan and Old French poetry that served as the source of the kind of love that came to be called 'Amour courtois' in the nineteenth century. Effective May 15, 2019, this course does not carry D1 credit. Cross-list: FREN 415. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor.

MDEM 427 - TOPICS IN EARLY MUSIC
Short Title: TOPICS IN EARLY MUSIC
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description:
**MDEM 435 - MULTICULTURAL EUROPE, 1400-1700**

**Short Title:** MULTICULTURAL EUROPE, 1400-1700  
**Department:** Medieval/Early Modern Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** The art of Europe was never the product of a single culture working in isolation. This seminar will explore the multicultural aspects of medieval and early modern Europe by focusing on the visual culture of groups who defined themselves or are today defined by nationality, race, or religion. Cross-list: HART 435, HIST 443.

**MDEM 436 - LITERATURE AND CULTURE OF THE MIDDLE AGES: KING ARTHUR**

**Short Title:** LIT & CULTURE OF MIDDLE AGES  
**Department:** Medieval/Early Modern Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Examination of the origins of the legend of King Arthur and reasons for its popularity, particularly in literature of the French Middle Ages but also in other medieval literatures of Western Europe. Includes discussion of the legend's influence in diverse areas even in modern times. Effective May 15, 2019, this course does not carry D1 credit. Cross-list: FREN 416. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor.

**MDEM 444 - VISIONS AND VISIONARY PRACTICES: MEDIEVAL TO MODERN**

**Short Title:** VISIONS & VISIONARY PRACTICES  
**Department:** Medieval/Early Modern Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course examines accounts of visions, comparing medieval and modern visionary techniques and processes and relating visionary writings to cultural and personal contexts. Includes some Christian theology along with other theoretical frameworks, but emphasis on praxis. Cross-list: RELI 444.

**MDEM 456 - COLLEGIUM MUSICUM**

**Short Title:** COLLEGIUM MUSICUM  
**Department:** Medieval/Early Modern Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Studio  
**Credit Hours:** 2  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Performance of music up to the early 17th century. Does not count as chamber music. Instructor permission required. Repeatable for credit. Instructor Permission Required. Cross-list: MUSI 436. Repeatable for Credit.

**MDEM 477 - SPECIAL TOPICS**

**Short Title:** SPECIAL TOPICS  
**Department:** Medieval/Early Modern Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Internship/Practicum, Seminar, Lecture, Laboratory  
**Credit Hours:** 1-4  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

**MDEM 478 - MEDIEVAL STUDIES**

**Short Title:** MEDIEVAL STUDIES  
**Department:** Medieval/Early Modern Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Special Topics in medieval Europe comparative literature. Repeatable for Credit.
MDE 495 - SENIOR THESIS  
Short Title: SENIOR THESIS  
Department: Medieval/Early Modern Studies  
Grade Mode: Standard Letter  
Course Type: Research  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): MDE 494  
Description: Independent research course for undergraduate Medieval and Early Modern Studies majors who wish to write a senior thesis. Students may enroll in MDE 495 only with consent of a faculty advisor and the program director, and only if they enrolled in MDE 494 in the previous semester. Senior Thesis is a year-long research course. Instructor Permission Required.

Mgmt Integrated Crs Offering (MICO)  
MICO 601 - CRITICAL THINKING AND STRATEGIC DECISION MAKING  
Short Title: CRITICAL THINKING & DECISION  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 6  
Course Level: Graduate  
MICO 602 - CUSTOMER FOCUS PRODUCT MANAGEMENT FOR OILFIELD SERVICES FIRMS  
Short Title: CUSTOMER FOCUS PRODUCT MGMT  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 1.5  
Course Level: Graduate  
Description: Understanding customer needs, and developing products that successfully meet those needs is a cornerstone of success for oilfield services firms. Products in such firms may range from nuts and bolts to multi#million dollar rigs. How should firms ensure that their products, processes, people, and pricing strategies are aligned to customer needs? The course will introduce a strategic framework that can enable firms to become customer focused, gain competitive advantage, become financially disciplined, and develop strategic focus. Case studies and articles from business press will be used to illustrate the key concepts. Department Permission Required.

MICO 603 - STRATEGIC DESIGN AND MANAGEMENT OF LOGISTICS DISTRIBUTION NETWORKS FOR THE ENERGY INDUSTRY  
Short Title: STRATEGY DGN & MGMT: LOGISTICS  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 1.5  
Course Level: Graduate  
Description: This course provides the necessary quantitative modeling techniques for managers to address logistics problems – that is, finding the least expensive way to transport products from their origin to their destinations. Real logistic problems are often coupled with manufacturing / plant location decisions. We will study both Linear and Non#Linear modeling techniques. Many of these problems have a natural graphical network representation and are part of the minimum cost network flow model. Specific examples of network optimization problems include plant location problems, transportation problems, shortest route problems, maximal flow problems, equipment replacement problems and others. We will develop the basic concepts behind those methodologies with simple examples and then use them to solve complex problems in the oil and gas industry. We will use excel and other appropriate software. Department Permission Required.

MICO 604 - MINDFULNESS AND PERFORMANCE IN HIGH RELIABILITY ORGANIZATIONS  
Short Title: MINDFULNESS AND PERFORMANCE  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 1.5  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: While organizations frequently discuss the importance of safety, safety incidents are both commonplace and costly across a number of industries. This course is designed to equip you with tools and insights that will help you and your organization prevent costly, safety-related errors and achieve higher and more reliable performance. Department Permission Required.

MICO 605 - MANAGING FOREIGN MARKET ENTRY FOR THE ENERGY INDUSTRY  
Short Title: MANAGING FOREIGN MARKET ENTRY  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 0.75  
Restrictions: Enrollment limited to students in the following programs: EMBA MBA PMBA WMBA XMBA Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: The energy industry is global in nature. This course is designed to equip you and your organization with the skills, knowledge and sensitivity required to successfully manage foreign market entries in the energy industry. This course will cover the following issues: (1) how to mitigate political risk in the global environment, (2) how to choose foreign entry strategies, (3) how to manage partnerships with local firms, (4) how to manage relationships with local stakeholders, and (5) the environmental concerns in the global energy industry. The course is structured around cases and newspaper articles to highlight the relevance and applications of the course concepts. We will also have guest speakers from major energy companies to join us and share their experiences and insights.
MICO 606 - POST-MERGER INTEGRATION PROCESS FOR THE ENERGY INDUSTRY
Short Title: POSTMERGER INTEGRATION PROCESS
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Course Level: Graduate

MICO 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Management
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

Military Science (MILI)

MILI 106 - INTERMEDIATE PHYSICAL FITNESS
Short Title: INTERMEDIATE PHYSICAL FITNESS
Department: Military Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Physically demanding. Develops skills through team competition. Land navigation, assembly/disassembly of weapon, tactics, assembly of one-man rope bridge. Students are also required to attend fitness training 5 times a week. Participants compete for Ranger Challenge slots. Selected cadets compete against other teams at the annual Ranger Challenge competition. Course taught at the University of Houston. Must provide CC Form 139-r to Military Science Dept. at UH prior to attendance. Recommended prerequisite(s): Must be ROTC cadet. MUST BE ENROLLED IN ONE OF THE FOLLOWING COURSES: MILI 121, MILI 201, MILI 301 OR MILI 401. Faculty: Al Francis. Repeatable for Credit.

MILI 109 - INTRODUCTION TO PHYSICAL FITNESS
Short Title: INTRO TO PHYSICAL FITNESS
Department: Military Science
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Open to all students. Utilizes Army fitness techniques; develops strength, flexibility and endurance; develops self-confidence through leadership training and physical activities. Course taught at the University of Houston. Must provide CC Form 139-r to Military Science Dept. at UH prior to attendance. Repeatable for Credit.

MILI 121 - INTRODUCTION TO LEADERSHIP
Short Title: INTRODUCTION TO LEADERSHIP
Department: Military Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Principles of effective leadership and reinforcement of self-confidence through participation in physically and mentally challenging training with upper-division ROTC students; develop communication skills to improve individual performance and group interaction. One hour classroom session and a required lab. No military commitment is required for attending this course. Course taught at the University of Houston. Must provide CC Form 139-r to Military Science Dept. at UH prior to attendance. Department Permission Required.

MILI 122 - INTRODUCTION TO LEADERSHIP II
Short Title: INTRODUCTION TO LEADERSHIP II
Department: Military Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Continuation of MILI 121. One hour classroom session and a required lab. No military commitment is required for attending this course. Course taught at the University of Houston. Must provide CC Form 139-r to Military Science Dept. at UH prior to attendance. Department Permission Required.

MILI 123 - LEADERSHIP LAB
Short Title: LEADERSHIP LAB
Department: Military Science
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 0
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Course taught at the University of Houston. Must provide CC Form 139-r and DA 3425 to Military Science Dept. at UH prior to attendance. Department Permission Required.

MILI 201 - FOUNDATIONS OF LEADERSHIP
Short Title: FOUNDATIONS OF LEADERSHIP
Department: Military Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Characteristics of leadership, problem analysis, decision making, oral presentations, first aid, small unit tactics, land navigation, fitness training. Fitness training required two times per week in addition to class and lab. Course taught at the University of Houston. Must provide CC Form 139-r to Military Science Dept. at UH prior to attendance. Department Permission Required.
MILI 202 - FOUNDATIONS OF LEADERSHIP II
Short Title: FOUNDATIONS OF LEADERSHIP II
Department: Military Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Continuation of MILI 201. Course taught at the University of Houston. Must provide CC Form 139-r to Military Science Dept. at UH prior to attendance. Department Permission Required.

MILI 203 - LEADERSHIP LABORATORY
Short Title: LEADERSHIP LABORATORY
Department: Military Science
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 0
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Course taught at the University of Houston. Must provide CC Form 139-r and DA 3425 to Military Science Dept. at UH prior to attendance. Department Permission Required.

MILI 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Military Science
Grade Mode: Standard Letter
Course Type: Laboratory, Lecture, Seminar, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

MILI 281 - LEADER TRAINING COURSE (LTC)
Short Title: LEADER TRAINING COURSE (LTC)
Department: Military Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 8
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Four week off campus field training practicum. Introduces students to the Army and Leadership. No military obligation is associated with this course. Course taught at the University of Houston. Department Permission Required.

MILI 301 - ADVANCED LEADERSHIP
Short Title: ADVANCED LEADERSHIP
Department: Military Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Leadership training, preparing combat orders, military instruction principles, small unit tactics, and tactical communications. Course is designed to prepare students for Leader Development Assessment Course (LDAC). In addition to class, students must attend lab and physical fitness training. Course taught at the University of Houston. Department Permission Required.

MILI 302 - ADVANCED LEADERSHIP II
Short Title: ADVANCED LEADERSHIP II
Department: Military Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Continuation of MILI 301. Course taught at the University of Houston. Department Permission Required.

MILI 304 - LEADERSHIP LABORATORY
Short Title: LEADERSHIP LABORATORY
Department: Military Science
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 0
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Course taught at the University of Houston. Department Permission Required.

MILI 349 - LEADER DEVELOPMENT ASSESSMENT
Short Title: LEADER DEVELOPMENT ASSESSMENT
Department: Military Science
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MILI 302
Description: Off campus field training practicum stressing application of leadership management with emphasis on tactical and special military skills. Course taught at the University of Houston. Department Permission Required.
MILI 398 - SPECIAL PROBLEMS  
**Short Title:** SPECIAL PROBLEMS  
**Department:** Military Science  
**Grade Mode:** Standard Letter  
**Course Type:** Independent Study  
**Credit Hours:** 3  
**Restrictions:** Enrollment limited to students with a class of Junior or Senior. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Course taught at the University of Houston. Department Permission Required.

MILI 401 - ADAPTIVE LEADERSHIP  
**Short Title:** ADAPTIVE LEADERSHIP  
**Department:** Military Science  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** MILI 302  
**Description:** Leadership and command, military law, administrative/staff operations and procedures, dynamics of the military team, training management, ethics and professionalism. Prepares students for commissioning as an Army Officer. In addition to class, students must attend lab and physical fitness training. Course taught at the University of Houston. Department Permission Required.

MILI 402 - LEADERSHIP IN A COMPLEX WORLD  
**Short Title:** LEADERSHIP IN A COMPLEX WORLD  
**Department:** Military Science  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** MILI 302  
**Description:** Continuation of MILI 401. Course taught at the University of Houston. Department Permission Required.

MILI 403 - LEADERSHIP LABORATORY  
**Short Title:** LEADERSHIP LABORATORY  
**Department:** Military Science  
**Grade Mode:** Standard Letter  
**Course Type:** Laboratory  
**Credit Hours:** 0  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Course taught at the University of Houston. Department Permission Required.

MILI 439 - SPECIAL PROBLEMS  
**Short Title:** SPECIAL PROBLEMS  
**Department:** Military Science  
**Grade Mode:** Standard Letter  
**Course Type:** Independent Study  
**Credit Hours:** 3  
**Restrictions:** Enrollment limited to students with a class of Senior. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Course taught at the University of Houston. Department Permission Required.

MILI 477 - SPECIAL TOPICS  
**Short Title:** SPECIAL TOPICS  
**Department:** Military Science  
**Grade Mode:** Standard Letter  
**Course Type:** Internship/Practicum, Seminar, Lecture, Laboratory  
**Credit Hours:** 1-4  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

Music (MUSI)

MUSI 117 - FUNDAMENTALS OF MUSIC I  
**Short Title:** FUNDAMENTALS OF MUSIC I  
**Department:** Music  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** For non-music majors with minimal music preparation. Rudiments of pitch and duration. Study of scales, chord structure, tonality, and forms.

MUSI 119 - EXPERIENCING MUSIC, EXPRESSING CULTURE: AN INTRODUCTION TO CHINESE MUSIC  
**Short Title:** INTRODUCTION TO CHINESE MUSIC  
**Department:** Music  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** This course is an introduction to Chinese music in the context of its historical and cultural evolution. It will explore the music on its own terms and in comparison to Western classical music.
MUSI 141 - CLASSICAL GUITAR/NON-MAJOR
Short Title: CLASSICAL GUITAR/NON-MAJOR
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Private instruction on guitar. Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 151 - FLUTE FOR NON-MAJORS
Short Title: FLUTE FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 153 - OBOE FOR NON-MAJORS
Short Title: OBOE FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 155 - CLARINET FOR NON-MAJORS
Short Title: CLARINET FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 157 - BASSOON FOR NON-MAJORS
Short Title: BASSOON FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 161 - HORN FOR NON-MAJORS
Short Title: HORN FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 163 - TRUMPET FOR NON-MAJORS
Short Title: TRUMPET FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 165 - TROMBONE FOR NON-MAJORS
Short Title: TROMBONE FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 167 - TUBA FOR NON-MAJORS
Short Title: TUBA FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 171 - PERCUSSION FOR NON-MAJORS
Short Title: PERCUSSION FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.
MUSI 173 - VOICE FOR NON-MAJORS
Short Title: VOICE FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 181 - PIANO FOR NON-MAJORS
Short Title: PIANO FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 183 - ORGAN FOR NON-MAJORS
Short Title: ORGAN FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 187 - HARP FOR NON-MAJORS
Short Title: HARP FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 191 - VIOLIN FOR NON-MAJORS
Short Title: VIOLIN FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 193 - VIOLA FOR NON-MAJORS
Short Title: VIOLA FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 195 - VIOLONCELLO FOR NON-MAJORS
Short Title: VIOLONCELLO FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 197 - DOUBLE BASS FOR NON-MAJORS
Short Title: DOUBLE BASS FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 205 - UNDERGRADUATE PERFORMANCE SEMINAR
Short Title: UG PERFORMANCE SEMINAR
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to students with a major in Bassoon Performance, Cello Performance, Clarinet Performance, Composition, Double Bass Performance, Music History, Horn Performance, Harp Performance, Oboe Performance, Organ Performance, Percussion Performance, Piano Performance, Music Theory, Trombone Performance, Trumpet Performance, Tuba Performance, Music Division, Music, Viola Performance, Violin Performance or Vocal Performance. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is designed to create a dynamic performance experience. Practical exercises that harness, develop and enhance performance skills will be a major focus. Areas of study include efficient practice and performance preparation, confidence on stage, and audience communication. A final performance will incorporate skills developed throughout the semester. NOTE: For Music Majors Only
MUSI 211 - THEORY I
Short Title: THEORY I
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Intensive study of the fundamentals of pitch, rhythm, and timbre. Introduction to diatonic harmony and harmonic progression.

MUSI 212 - THEORY II
Short Title: THEORY II
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Harmony and counterpoint of the Baroque and Classical Eras.

MUSI 220 - SURVEY OF WORLD MUSIC
Short Title: SURVEY OF WORLD MUSIC
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Harmony and counterpoint of the Baroque and Classical Eras.

MUSI 222 - MEDIEVAL AND RENAISSANCE ERAS
Short Title: MEDIEVAL AND RENAISSANCE ERAS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction to the study of Western music history, with emphasis on music before 1600. Score reading ability required. Cross-list: MDEM 222.

MUSI 231 - AURAL SKILLS AND PERFORMANCE TECHNIQUE I
Short Title: AURAL SKILLS & PERFORM TECH I
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Preliminary studies in ear-training, sight-singing, and dictation.

MUSI 232 - AURAL SKILLS AND PERFORMANCE TECHNIQUE II
Short Title: AURAL SKILLS & PERF TECH II
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Continuation of MUSI 231.

MUSI 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Music
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Laboratory, Seminar
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

MUSI 240 - UNITY AND VARIETY IN MUSIC
Short Title: UNITY AND VARIETY IN MUSIC
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: In music, as in life, we need unity and variety: expectations met and occasional surprises. Through studying folk, pop, and art songs, piano solos, instrumental sonatas, chamber and orchestral music, this course helps students become more perceptive listeners by investigating how composers manipulate musical elements to balance unity and variety. Must be able to read music.

MUSI 251 - SECONDARY FLUTE
Short Title: SECONDARY FLUTE
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Repeatable for Credit.
MUSI 253 - SECONDARY OBOE
Short Title: SECONDARY OBOE
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Repeatable for Credit.

MUSI 255 - SECONDARY CLARINET
Short Title: SECONDARY CLARINET
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Repeatable for Credit.

MUSI 257 - SECONDARY BASSOON
Short Title: SECONDARY BASSOON
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Repeatable for Credit.

MUSI 261 - SECONDARY HORN
Short Title: SECONDARY HORN
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Repeatable for Credit.

MUSI 263 - SECONDARY TRUMPET
Short Title: SECONDARY TRUMPET
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Repeatable for Credit.

MUSI 265 - SECONDARY TROMBONE
Short Title: SECONDARY TROMBONE
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Repeatable for Credit.

MUSI 267 - SECONDARY TUBA
Short Title: SECONDARY TUBA
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Repeatable for Credit.

MUSI 271 - SECONDARY PERCUSSION
Short Title: SECONDARY PERCUSSION
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Repeatable for Credit.

MUSI 273 - SECONDARY VOICE
Short Title: SECONDARY VOICE
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Repeatable for Credit.

MUSI 281 - SECONDARY PIANO
Short Title: SECONDARY PIANO
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Repeatable for Credit.

MUSI 283 - SECONDARY ORGAN
Short Title: SECONDARY ORGAN
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Repeatable for Credit.
MUSI 285 - SECONDARY HARPSICHORD
Short Title: SECONDARY HARPSICHORD
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Repeatable for Credit.

MUSI 287 - SECONDARY HARP
Short Title: SECONDARY HARP
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Repeatable for Credit.

MUSI 291 - SECONDARY VIOLIN
Short Title: SECONDARY VIOLIN
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Repeatable for Credit.

MUSI 293 - SECONDARY VIOLA
Short Title: SECONDARY VIOLA
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Repeatable for Credit.

MUSI 295 - SECONDARY VIOLONCELLO
Short Title: SECONDARY VIOLONCELLO
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Repeatable for Credit.

MUSI 297 - SECONDARY DOUBLE BASS
Short Title: SECONDARY DOUBLE BASS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Repeatable for Credit.

MUSI 303 - UNDERGRAD COMPOSITION SEMINAR
Short Title: UNDERGRAD COMPOSITION SEMINAR
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 305 - COMPOSITION ELECTIVE
Short Title: COMPOSITION ELECTIVE
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Must register with the Shepherd School of Music and the Registrar’s office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 307 - COMPOSITION FOR NON-MAJORS
Short Title: COMPOSITION FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Creative composition employing 20th and 21st century vocabularies. Repeatable for Credit.

MUSI 311 - THEORETICAL STUDIES III
Short Title: THEORETICAL STUDIES III
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An examination of music from the Classical Era through the late Nineteenth Century, with particular focus on phrase structure, form and chromatic harmony.

MUSI 312 - THEORETICAL STUDIES IV
Short Title: THEORETICAL STUDIES IV
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Analysis of selected works composed since 1900
MUSI 314 - MUSIC IN WESTERN CULTURE
Short Title: MUSIC IN WESTERN CULTURE
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A survey of the history of Western music.

MUSI 317 - THEORY FOR NON-MAJORS I
Short Title: THEORY FOR NON MAJORS I
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of harmony, melody, rhythm, and form.

MUSI 318 - THEORY FOR NON-MAJORS II
Short Title: THEORY FOR NON-MAJORS II
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MUSI 317
Description: Continuation of MUSI 317.

MUSI 321 - BAROQUE AND EARLY CLASSICAL ERAS
Short Title: BAROQUE & EARLY CLASSICAL ERAS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (MUSI 212 or MUSI 317) and (MUSI 222 or MDST 222)
Description: Advanced historical studies in music of the seventeenth and eighteenth centuries. Score reading ability required.

MUSI 322 - CLASSICAL AND ROMANTIC ERAS
Short Title: CLASSICAL AND ROMANTIC ERAS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MUSI 321
Description: Advanced historical studies in the music of the eighteenth and nineteenth centuries. Score reading ability required.

MUSI 329 - SPECIAL STUDIES IN MUSIC HISTORY
Short Title: SPEC STUDIES IN MUSIC HISTORY
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Special studies in music history. Topics may vary. Please consult with the department for additional information. Repeatable for Credit.

MUSI 331 - AURAL SKILLS & PERFORMANCE TECHNIQUES III
Short Title: AURAL SKILLS & PERF TECH III
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Continuation of MUSI 332.

MUSI 332 - AURAL SKILLS AND PERFORMANCE TECHNIQUES IV
Short Title: AURAL SKILLS & PERF TECH IV
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Continuation of MUSI 331.
MUSI 334 - CAMPANILE ORCHESTRA
Short Title: CAMPANILE ORCHESTRA
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Registration is by audition only. This course requires weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Repeatable for Credit.

MUSI 335 - UNDERGRADUATE CHORUS
Short Title: RICE CHORALE
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Repeatable for Credit.

MUSI 336 - UNDERGRADUATE OPERA WORKSHOP
Short Title: UNDERGRADUATE OPERA WORKSHOP
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Operatic techniques for the singer/actor: the cultivation, through study and performance, of free, expressive and significant movement on stage, and the development of musical, dramatic and muscular sensitivity as the basis of good opera theater. Participation in scenes programs. On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Repeatable for Credit.

MUSI 337 - UNDERGRADUATE ORCHESTRA
Short Title: UNDERGRADUATE ORCHESTRA
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Repeatable for Credit.

MUSI 338 - UNDERGRADUATE CHAMBER MUSIC
Short Title: CHAMBER MUSIC - UG
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. NOTE: ALL STUDENTS INTERESTED IN REGISTERING FOR CHAMBER MUSIC SHOULD REGISTER IN SECTION 1. Repeatable for Credit.

MUSI 339 - UNDERGRADUATE ORCHESTRAL REPertoire
Short Title: UG ORCHESTRAL REP
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Section 1: Violin; Section 2: Viola; Section 3: Cello; Section 4: Double Bass; Section 5: Woodwinds; Section 6: Brass; Section 7: Percussion; Section 8: Harp. Repeatable for Credit.

MUSI 340 - RICE SYMPHONIC BAND
Short Title: RICE SYMPHONIC BAND
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Section 1: SYMPHONIC BAND, TUD Band Hall; Section 2: CHAMBER MUSIC FOR NON-MAJORS: students with already-formed chamber ensembles will apply for this course in the fall. See bands.rice.edu for applications. Those selected will be given instructor permission for the spring semester. Repeatable for Credit.

MUSI 341 - JUNIOR RECITAL
Short Title: JUNIOR RECITAL
Department: Music
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Studio
Credit Hours: 0
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Department Permission Required.
MUSI 342 - RICE JAZZ ENSEMBLE
Short Title: RICE JAZZ ENSEMBLE
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Section 1, Jazz Ensemble; Section 2, Jazz Lab. TUD Band Hall. On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Repeatable for Credit.

MUSI 345 - APPLIED STUDIES IN JAZZ
Short Title: APPLIED STUDIES IN JAZZ
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Private lessons on specific advanced techniques in jazz improvisation. Must register with the Shepherd School and the Registrar's Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 351 - CONCENTRATION FLUTE
Short Title: CONCENTRATION FLUTE
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 353 - CONCENTRATION OBOE
Short Title: CONCENTRATION OBOE
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 355 - CONCENTRATION CLARINET
Short Title: CONCENTRATION CLARINET
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 357 - CONCENTRATION BASSOON
Short Title: CONCENTRATION BASSOON
Department: Music
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 361 - CONCENTRATION HORN
Short Title: CONCENTRATION HORN
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 363 - CONCENTRATION TRUMPET
Short Title: CONCENTRATION TRUMPET
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 365 - CONCENTRATION TROMBONE
Short Title: CONCENTRATION TROMBONE
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 367 - CONCENTRATION TUBA
Short Title: CONCENTRATION TUBA
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 371 - CONCENTRATION PERCUSSION
Short Title: CONCENTRATION PERCUSSION
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.
MUSI 373 - CONCENTRATION VOICE
Short Title: CONCENTRATION VOICE
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 377 - UNDERGRADUATE OPERA PERFORMANCE
Short Title: UG OPER PERFORMANCE
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A practicum exploring the pianist as an ensemble player. 3 sessions weekly. Performance class for pianists in partnership with instrumentalists and singers-particular techniques discovered in balance, pedaling, articulation, style, etc.; Supervised sight-reading private appointment with instructor on individual repertoire-songs, sonatas, concerto reductions, etc. Instructor Permission Required. Repeatable for Credit.

MUSI 378 - CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC
Short Title: CROSS-CULTURAL ASIAN MUSIC
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will focus on traditional and contemporary art music from Asia. The classroom lectures are designed to introduce and accompany one or two events which will include live performances, workshops, lectures by invited performers and scholars. This course may be repeated since each year the countries and invited guest performers/scholars will represent different geographical areas. Cross-list: ASIA 378. Repeatable for Credit.

MUSI 379 - CREATIVITY UP CLOSE
Short Title: CREATIVITY UP CLOSE
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This inter-disciplinary course explores creativity in human behavior and society. Seminars focus on the neuroscience, psychology, sociology and economics of creativity. Students develop hands-on creative projects in oral history, music, industrial design and video. No prior experiences in study of these disciplines required.

MUSI 381 - CONCENTRATION PIANO
Short Title: CONCENTRATION PIANO
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 383 - CONCENTRATION ORGAN
Short Title: CONCENTRATION ORGAN
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 384 - CONCENTRATION ORGAN INTENSIVE
Short Title: CONCENTRATION ORGAN INTENSIVE
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 387 - CONCENTRATION HARP
Short Title: CONCENTRATION HARP
Department: Music
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 389 - COLLABORATIVE PIANO SKILLS
Short Title: COLLABORATIVE PIANO SKILLS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A practicum exploring the pianist as an ensemble player. 3 sessions weekly. Performance class for pianists in partnership with instrumentalists and singers-particular techniques discovered in balance, pedaling, articulation, style, etc.; Supervised sight-reading private appointment with instructor on individual repertoire-songs, sonatas, concerto reductions, etc. Instructor Permission Required. Repeatable for Credit.
MUSI 391 - CONCENTRATION VIOLIN
Short Title: CONCENTRATION VIOLIN
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 393 - CONCENTRATION VIOLA
Short Title: CONCENTRATION VIOLA
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 395 - CONCENTRATION VIOLONCELLO
Short Title: CONCENTRATION VIOLONCELLO
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 397 - CONCENTRATION DOUBLE BASS
Short Title: CONCENTRATION DOUBLE BASS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 399 - COMPOSITION FOR MAJORS
Short Title: COMPOSITION FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 403 - BASIC ELECTRONIC MUSIC
Short Title: BASIC ELECTRONIC MUSIC
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Introduction to electronic and computer music.

MUSI 404 - ELECTRONIC MUSIC COMPOSITION
Short Title: ELECTRONIC MUSIC COMPOSITION
Department: Music
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Continuation of MUSI 403.

MUSI 405 - MUSIC BUSINESS AND LAW
Short Title: MUSIC BUSINESS AND LAW
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A comprehensive overview of entrepreneurship and the music economy, as applicable to the classical musician, and of pertinent sections of intellectual property law.

MUSI 407 - CHAMBER MUSIC IN THE CLASSIC PERIOD
Short Title: CHAMBER MUSIC CLASSIC PERIOD
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Performance styles and rhetoric are examined and directed toward performance approaches to the music of Haydn, Mozart, and early Beethoven, and others. Practical application of dances, textures, and popular topics of the time as well as an understanding of harmonic and formal implications. String quartet majors only – other music majors may audit.

MUSI 413 - INTRODUCTION TO DALCROZE EURHYTHMICS
Short Title: DALCROZE EURHYTHMICS
Department: Music
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Dalcroe Eurhythmics is a musical education which aims to engage and utilize one's whole being in the learning process. Students will explore very basic to quite complex rhythmic concepts through experiencing their own inner fluidity and spacial energy. The class is designed around the philosophy and teachings of Emile Jaques-Dalcroze. Department Permission Required.
MUSI 414 - PIANO CHAMBER MUSIC LITERATURE

Short Title: PIANO CHAMBER MUSIC LITERATURE

Department: Music

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: Survey on 20th and 21st century chamber music with piano. Instructor Permission Required.

MUSI 415 - BAND ARRANGING

Short Title: BAND ARRANGING

Department: Music

Grade Mode: Standard Letter

Course Type: Lecture/Laboratory

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: Creative band arranging for marching, jazz, and concert bands. Study of contemporary harmony, musical style, and scoring supported by practical performance and analysis of student projects. Meets in TUD S101A. Repeatable for Credit.

MUSI 416 - ORCHESTRATION

Short Title: ORCHESTRATION

Department: Music

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: Intensive study of the individual instruments of the orchestra and orchestrational techniques from the classical period through the present. Works for analysis include those by Mozart, Beethoven, and Ravel. Students will also form an ensemble and arrange/orchestrate works for the ensemble.

MUSI 417 - MUSIC FOR MEDIA

Short Title: MUSIC FOR MEDIA

Department: Music

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: An overview of writing music for linear and non-linear media, includes motion pictures, television, interactive and passive multimedia and digital games. Instructor Permission Required.

MUSI 418 - PIANO LITERATURE - SURVEY

Short Title: PIANO LITERATURE - SURVEY

Department: Music

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: Survey on 20th and 21st century chamber music with piano. Instructor Permission Required.

MUSI 419 - THE MODERN ERA

Short Title: THE MODERN ERA

Department: Music

Grade Mode: Standard Letter

Course Type: Lecture

Distribution Group: Distribution Group I

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Prerequisite(s): MUSI 322

Description: Advanced historical studies in music of the twentieth and twenty-first centuries. Score reading ability required.

MUSI 420 - RENAISSANCE MUSIC

Short Title: RENAISSANCE MUSIC

Department: Music

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: A study of the major musical styles and composers of Western art and music between 1400 and 1600 and their historical, cultural, and sociological contexts.

MUSI 421 - THE MODERN ERA

Short Title: THE MODERN ERA

Department: Music

Grade Mode: Standard Letter

Course Type: Lecture

Distribution Group: Distribution Group I

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Prerequisite(s): MUSI 322

Description: Advanced historical studies in music of the twentieth and twenty-first centuries. Score reading ability required.

MUSI 422 - RENAISSANCE MUSIC

Short Title: RENAISSANCE MUSIC

Department: Music

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: A study of the major musical styles and composers of Western art and music between 1400 and 1600 and their historical, cultural, and sociological contexts.

MUSI 423 - MUSIC OF THE MIDDLE AGES

Short Title: MUSIC OF THE MIDDLE AGES

Department: Music

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: A study of the major musical styles and composers of western art music before 1400 and their historical, cultural, and sociological contexts. Cross-list: MDEM 429.

MUSI 424 - GRADUATE AURAL SKILLS REVIEW

Short Title: GRADUATE AURAL SKILLS REVIEW

Department: Music

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hours: 2

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: A remedial course in ear-training, sight-singing, and musical dictation.
MUSI 435 - CONTEMPORARY MUSIC ENSEMBLE

Short Title: CONTEMPORARY MUSIC ENSEMBLE
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Note: Does not count as chamber music. Not offered regularly. On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Repeatable for Credit.

MUSI 436 - COLLEGIUM MUSICUM

Short Title: COLLEGIUM MUSICUM
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The performance of vocal and instrumental music of the Renaissance and Baroque eras in which instrumentalists use period instruments. Specific repertory will depend on student interest and on the availability of instruments. The class entails two hours of evening rehearsal each week and an end-of-semester recital of music prepared. On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Instructor Permission Required. Cross-list: MDEM 456. Repeatable for Credit.

MUSI 441 - SENIOR RECITAL

Short Title: SENIOR RECITAL
Department: Music
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Studio
Credit Hours: 0
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Department Permission Required.

MUSI 444 - PRACTICUM IN CONTEMPORARY MUSIC

Short Title: PRACTICUM IN CONTEMPORARY MUSIC
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A creative course in which the students both compose and perform. The course includes both compositional studies and free composition, and culminates in a class concert of original works written for the class ensemble. Repeatable for Credit.

MUSI 445 - KEYBOARD HARMONY AND FIGURED BASS I

Short Title: KEYBOARD HARMONY & FIG BASS I
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MUSI 483 or MUSI 683
Description: A study in skills of harmonization at the keyboard, realization of figured bass, score and clef reading, transposition, and modulation.

MUSI 446 - KEYBOARD HARMONY AND FIGURED BASS II

Short Title: KEYBOARD HARMONY & FIG BASS II
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MUSI 483 or MUSI 683
Description: A continued exploration of skills introduced in MUSI 445. In addition to further study in score reading, and harmonization at the keyboard, students will learn to realize continuo accompaniments from scores using figured bass.

MUSI 447 - INTRODUCTION TO PIANO TECHNOLOGY

Short Title: INTRO TO PIANO TECHNOLOGY
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Introduction to the basic maintenance procedures of pianos. Includes the theory and acoustics of tuning, a brief history of the piano, and a general exposure to restoration, as well as 'hands-on' experience.

MUSI 448 - PIANO TECHNOLOGY PRACTICUM FOR PIANISTS

Short Title: PIANO TECH PRACTICUM PIANISTS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A practicum exploring the basic maintenance procedures of the modern pianoforte. Students will learn cleaning and unison tuning as well as basic action regulation.

MUSI 449 - UNDERGRADUATE INDEPENDENT STUDY

Short Title: UNDERGRAD INDEPENDENT STUDY
Department: Music
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.
MUSI 450 - QUALIFYING RECITAL
Short Title: QUALIFYING RECITAL
Department: Music
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Studio
Credit Hours: 0
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Department Permission Required.

MUSI 451 - FLUTE FOR MAJORS
Short Title: FLUTE FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 453 - OBOE FOR MAJORS
Short Title: OBOE FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 455 - CLARINET FOR MAJORS
Short Title: CLARINET FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 457 - BASSOON FOR MAJORS
Short Title: BASSOON FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 461 - HORN FOR MAJORS
Short Title: HORN FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 463 - TRUMPET FOR MAJORS
Short Title: TRUMPET FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 465 - TROMBONE FOR MAJORS
Short Title: TROMBONE FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 467 - TUBA FOR MAJORS
Short Title: TUBA FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 471 - PERCUSSION FOR MAJORS
Short Title: PERCUSSION FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.
MUSI 472 - GENERAL PERCUSSION STUDIES
Short Title: GENERAL PERCUSSION STUDIES
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A class that will address other issues of percussion playing to prepare for a job that is not related to regular classical studies, i.e. drum set, jazz kits, rudimental drumming, instrument building, playing shows, sight-reading, etc. The emphasis of the class will vary each semester. Repeatable for Credit.

MUSI 473 - VOICE FOR MAJORS
Short Title: VOICE FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Undergraduate Performance Seminar is required for all freshmen and sophomores. The seminar will meet on Tuesday and Thursday from 1:00-1:50. Repeatable for Credit.

MUSI 475 - THEORY OF VOCAL PERFORMANCE TECHNIQUES
Short Title: THEORY OF VOCAL PERFORM TECH
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Primarily for conductors and composers.

MUSI 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

MUSI 481 - PIANO FOR MAJORS
Short Title: PIANO FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 483 - ORGAN FOR MAJORS
Short Title: ORGAN FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 487 - HARP FOR MAJORS
Short Title: HARP FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 491 - VIOLIN FOR MAJORS
Short Title: VIOLIN FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 492 - STRING TECHNOLOGY
Short Title: STRING TECHNOLOGY
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An introduction and practicum in the maintenance and repair of string instruments. Instructor Permission Required.

MUSI 493 - VIOLA FOR MAJORS
Short Title: VIOLA FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.
MUSI 495 - VIOLONCELLO FOR MAJORS
Short Title: VIOLONCELLO FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 497 - DOUBLE BASS FOR MAJORS
Short Title: DOUBLE BASS FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 500 - IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES
Short Title: IMAGINATION AND COMMUNICATION
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course focuses on teaching communication skills through techniques from other areas of the performing arts. Through exercises that enhance imagination and creativity, students will learn to use their physical presences more effectively, thus becoming more effective communicators with audiences, musician colleagues, and future employers. Department Permission Required.

MUSI 501 - ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING
Short Title: MUSIC PERFORMANCE ENHANCEMENT
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course prepares music students to communicate with audiences effectively beyond their musical performance through the use of words, both written and oral. Students will study, practice, and gain practical experience in writing and speaking about music through a variety of performance situations. Department Permission Required.

MUSI 502 - CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS
Short Title: CONDUCTING
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is designed to present an array of conducting tools to instrumentalists, vocalists and composers. Discussions and presentations will cover diverse topics ranging from baton technique to education/outreach programming. Department Permission Required.

MUSI 503 - MUSIC AND PERFORMANCE: THE MIND/BODY CONNECTION
Short Title: MUSIC AND PERFORMANCE
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students learn effective ways to address the physical and mental stress of performance by developing an awareness of the mind/body connection. This course introduces a variety of techniques that help musicians to notice and change unhelpful practice habits and move toward a better performance experience. Department Permission Required.

MUSI 504 - COMPUTER ASSISTED MUSIC COMPOSITION
Short Title: COMPUTER ASSISTED MUSIC COMP
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Course not offered regularly. Instructor Permission Required.

MUSI 505 - MULTIMEDIA AUTHORING
Short Title: MULTIMEDIA AUTHORING
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Course not offered regularly. Instructor Permission Required.

MUSI 507 - TECHNOLOGY FOR MUSICIANS
Short Title: TECHNOLOGY FOR MUSICIANS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will provide student musicians with the computer skills necessary for modern musical life. Computer assisted notation, the basics of audio/video production, and website creation will be covered as students learn to use a number of computer applications. Department Permission Required.

MUSI 508 - FUNDAMENTALS OF PRIVATE TEACHING
Short Title: PRIVATE TEACHING FUNDAMENTALS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will focus on the teaching of individual lessons to music students. It will emphasize effective ways to start a beginning student, how to develop musicianship, and how to teach good practice habits. Department Permission Required.
MUSI 509 - THE ALEXANDER TECHNIQUE FOR MUSICIANS
Short Title: THE ALEXANDER TECHNIQUE
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The Alexander Technique is a mind/body educational process that teaches balance, poise and efficiency of movement. Students will discover how the Technique can be applied to performance and practice, thus gaining greater awareness and ease within their art. Department Permission Required.

MUSI 510 - PROFESSIONAL DEVELOPMENT FOR MUSICIANS
Short Title: PRO DEVELOPMENT FOR MUSICIANS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course explores the practical aspects of building and sustaining a career in music. Using networking, self-promotion, and presentation skills, students will create projects needed for pursuing their careers. Guest speakers will offer additional resources for students as they learn how to navigate the world of the Music Business. Department Permission Required.

MUSI 511 - GRADUATE THEORY REVIEW
Short Title: GRADUATE THEORY REVIEW
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A comprehensive review of Common Practice theory, plus a brief introduction to 20th Century analysis.

MUSI 512 - ANALYTICAL SYSTEMS
Short Title: ANALYTICAL SYSTEMS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of tools for the analysis of rhythm & meter, long-range tonal voice-leading, non-diatonic scales, and timbre/gesture.

MUSI 513 - MODAL COUNTERPOINT
Short Title: MODAL COUNTERPOINT
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Applied contrapuntal techniques of the 16th century, and analysis of selected works.

MUSI 514 - SCORE READING AND THEORY AT THE KEYBOARD
Short Title: SCORE READING
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced studies in reading an orchestral score at the keyboard. Department Permission Required.

MUSI 515 - MUSIC ENTREPRENEURSHIP
Short Title: MUSIC ENTREPRENEURSHIP
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Music Entrepreneurship introduces the music student to the idea and development of a business strategy via introduction to the business plan model. Students learn to develop mission statements, analyze markets and competition, research advertising and promotional strategies and put together financial assumptions and forecast into business friendly templates. Department Permission Required.

MUSI 516 - ADVANCED ORCHESTRATION
Short Title: ADV ORCHESTRATION
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MUSI 416
Description: Advanced studies in orchestral techniques from the classical era through the present day.

MUSI 517 - EARLY MODERN MASTERS
Short Title: EARLY MODERN MASTERS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Analysis of music from 1900-1950. Repeatable for Credit.

MUSI 518 - THE ART AND BUSINESS OF STUDIO TEACHING
Short Title: ART & BUSINESS STUDIO TEACHING
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Independent studio teaching offers musicians both income stability and flexibility in scheduling, but requires clarity of approach, organization, and business savvy to be effective and rewarding. In addition to practicing these skills, students will learn how to attract students and build a reputation as an exemplary teacher. Department Permission Required.
MUSI 519 - THEMATIC PROGRAMMING: THE ART OF THE RECITAL
Short Title: THEMATIC PROGRAMMING
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course concentrates on ways to revitalize and re-invent the traditional recital so that it appeals to performer and audience alike. After gaining an understanding of innovative and thematic programming, presentational skills and production planning, students will create, produce and perform an invigorating and exiting recital program. Department Permission Required.

MUSI 521 - GRADUATE REVIEW OF MUSIC HISTORY I
Short Title: GRAD REVIEW OF MUSIC HIST I
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Survey of Medieval, Renaissance, and Baroque music for graduate students. Assigned on the basis of placement exam only.

MUSI 522 - GRADUATE REVIEW OF MUSIC HISTORY II
Short Title: GRAD REVIEW OF MUSIC HIST II
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Survey of Classical, Romantic and 20th century music for graduate students. Assigned on the basis of placement exam only.

MUSI 523 - BIBLIOGRAPHY AND RESEARCH METHODS
Short Title: BIBLIO&RESEARCH METHODS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of bibliography methods and techniques in research methodology.

MUSI 524 - AMERICAN MUSIC
Short Title: AMERICAN MUSIC
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Exploration of art music in the United States, ca. 1800-ca. 1940, with reference to earlier American and European styles.

MUSI 525 - PERFORMANCE PRACTICES SEMINAR
Short Title: PERFORMANCE PRACTICES SEMINAR
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The study of performing practices of music prior to the Romantic era. Topics will range from pre-performance considerations of pitch and tuning systems to those of performance, such as basso continuo realization, improvisation, vibrato, and articulation. Course not offered regularly.

MUSI 527 - TOPICS IN EARLY MUSIC
Short Title: TOPICS IN EARLY MUSIC
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced study in selected topics in music history prior to 1600. Topics may vary. Please consult with the department for additional information. Repeatable for Credit.

MUSI 528 - TOPICS IN THE 17TH AND 18TH CENTURIES
Short Title: TOPICS IN 17TH&18TH CENTURIES
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics in the 17th and 18th Centuries. Topics may vary. Please consult with the department for additional information. Repeatable for Credit.

MUSI 529 - TOPICS IN 19TH AND 20TH CENTURIES
Short Title: TOPICS IN 19TH&20TH CENTURIES
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced study in selected topics in music history of the 19th and 20th centuries. Topics may vary. Please consult with the department for additional information. Repeatable for Credit.
MUSI 530 - MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD
Short Title: MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course explores the place of music vis-a-vis changing conceptions of the natural and supernatural worlds in Western modernity. Topics include music and occult science in the Renaissance, the impact of the Scientific Revolution and the Enlightenment on musical thought; the development of modern acoustics, and contemporary approaches of the field of music cognition.

MUSI 531 - ORCHESTRAL REPERTOIRE
Short Title: ORCHESTRAL REPERTOIRE
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Section 1: violin; Section 2: viola; Section 3: cello; Section 4: double bass; Section 5: woodwinds; Section 6: brass; Section 7: percussion; Section 8: harp. Repeatable for Credit.

MUSI 532 - THE FELDENKRAIS METHOD AND THE MUSICIAN'S BODY
Short Title: THE FELDENKRAIS METHOD
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students will experience the Feldenkrais Method through the group learning modality of 'Awareness Through Movement' in order to develop a practice that will serve to mitigate stress, reduce the likelihood of repetitive use injuries and create a more easeful presence in performance. Department Permission Required.

MUSI 533 - GRADUATE Conducting Seminar
Short Title: GRADUATE Conducting Seminar
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MUSI 534 - PROGRAM MUSIC IN THE 19TH CENTURY
Short Title: PROGRAM MUSIC
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will explore grammaticism in Western art music with a particular focus on orchestral repertoire of the nineteenth century (including works by Beethoven, Mendelssohn, Berlioz, Liszt, Tchaikovsky, Strauss, Mahler, and Debussy). Alongside formal issues, we will consider historical perspectives on this repertoire as well as long-lived aesthetic debates about music's capacity to represent the external world.

MUSI 536 - LEADERSHIP THROUGH THE ARTS
Short Title: LEADERSHIP THROUGH THE ARTS
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will explore ways individuals in varied disciplines can combine forces to developed launch a creative concept which will be performed of the public on campus. Instructor Permission Required.

MUSI 537 - SATIE, COCTEAU, & LES SIX: PARIS IN THE 1920s AND BEYOND
Short Title: SATIE, COCTEAU, AND LES SIX: PARIS IN THE 1920s AND BEYOND
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A study of the musical realization of Apollinaire’s ‘new spirit’ in the works of Erik Satie, as promoted by Jean Cocteau circa 1918, and the attraction that this new aesthetic had for young composers known as Les Six. With special attention to the works of Francis Poulenc, especially those represented in the Lambiotte Poulenc Archive housed in the Woodson Research Center.

MUSI 538 - THE ART OF PERFORMANCE: PRESENCE ON STAGE
Short Title: PRESENCE ON STAGE
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students will gain skills promoting stage presence in performance and in daily life. By identifying, developing and implementing elements of mental, physical, visual, aural and musical presence, they will learn how to develop an expressive, confident, communicative, creative and polished performance. Department Permission Required.
MUSI 540 - APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM
Short Title: APPLIED JAZZ IMPROVISATION
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: The goal of this course is to introduce and develop Jazz improvisational skills for the classically trained musician. Students will use 'swing style' accompaniment to learn to develop and perform improvised Jazz solos on a variety of harmonic formats. Department Permission Required.

MUSI 543 - MUSIC AND MODERNISM IN FRANCE
Short Title: FRENCH MODERNISM
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: This course considers musical culture in France around the turn of the twentieth century, particularly the music of Debussy, in light of contemporaneous 'modernisms' in visual art and literature (Impressionism, Post-Impressionism, Decadence, Symbolism).

MUSI 545 - LITURGICAL ORGAN PLAYING
Short Title: LITURGICAL ORGAN PLAYING
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.

Course Level: Graduate
Prerequisite(s): MUSI 483 (may be taken concurrently) or MUSI 683 (may be taken concurrently)
Description: A course devoted to the service-playing skills required of a parish organist. Students will study effective techniques of accompanying congregational song from the organ. Emphasis will be placed on introductions, interludes, modulations for hymns and appropriate choices of registration, repertoire and hymnody for ceremonial occasions and liturgical year. Concurrent enrollment in MUSI 483 or MUSI 683 is required.

MUSI 546 - ACCOMPANYING AT THE ORGAN
Short Title: ACCOMPANYING AT THE ORGAN
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.

Course Level: Graduate
Prerequisite(s): MUSI 483 (may be taken concurrently) or MUSI 683 (may be taken concurrently)
Description: This course explores accompanying skills essential to the professional organist using a variety of choral literature customarily accompanied from the organ. Transcribed accompaniments will be mixed with original choral or vocal works scored for organ accompaniment from a variety of styles and periods. Concurrent enrollment in MUSI 483 or MUSI 683 is required.

MUSI 547 - CHURCH MUSIC SEMINAR I
Short Title: CHURCH MUSIC SEMINAR I
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

Course Level: Graduate
Prerequisite(s): MUSI 483 (may be taken concurrently) or MUSI 683 (may be taken concurrently)
Description: A course devoted to the musical and administrative skills required of church music programs serving persons of all ages. Students will develop choral conducting techniques in addition to a knowledge of choral literature, liturgy, and the musical and theological materials available to those who create worship. Concurrent enrollment in MUSI 483 or MUSI 683 is required.

MUSI 548 - CHURCH MUSIC SEMINAR II
Short Title: CHURCH MUSIC SEMINAR II
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

Course Level: Graduate
Prerequisite(s): MUSI 483 (may be taken concurrently) or MUSI 683 (may be taken concurrently)
Description: This course will further develop choral conducting techniques and provide instruction in vocal techniques appropriate for use in choral rehearsals. Large-scale choral works will be analyzed and discussed in order to refine systems of score study and rehearsal planning. Further discussion of liturgical traditions and appropriate repertoire selection. Concurrent enrollment in MUSI 483 or MUSI 683 is required.

MUSI 549 - VOCAL PHYSIOLOGY & FUNCTION
Short Title: VOCAL PHYSIOLOGY & FUNCTION
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: Introduction to anatomy, physiology and function of the singing voice.

MUSI 551 - MUSIC OF RICHARD STRAUSS
Short Title: MUSIC OF RICHARD STRAUSS
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: An examination of Strauss's musical style and professional reputation in the context of changing aesthetic and political perspectives from the 1880s to the 1940s. Analysis of selected lieder, symphonic poems, and operas, including 'Salome' and 'Der Rosenkavalier'.
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**MUSI 573 - ITALIAN DICTION**
- **Short Title:** ITALIAN DICTION
- **Department:** Music
- **Grade Mode:** Standard Letter
- **Course Type:** Lecture/Laboratory
- **Credit Hour:** 1
- **Restrictions:** Enrollment is limited to Graduate level students.
- **Course Level:** Graduate

Description: A comprehensive survey of operatic arias from the standard repertoire for pianists. The survey will be structured according to vocal Fachs and stylistic/historical perspectives. Instructor Permission Required. Repeatable for Credit.
MUSI 583 - INSTRUMENTAL ACCOMPANYING TECHNIQUES
Short Title: INSTRUMENT ACCOMPANY TECHNQ
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A course for graduate piano chamber music majors, emphasizing practical skills of accompanying strings and wind instruments in a wide variety of repertoire. Instructor Permission Required.

MUSI 584 - VOCAL ACCOMPANYING TECHNIQUES FOR PIANISTS
Short Title: VOCAL ACCOMP TECH FOR PIANISTS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A course for graduate piano majors, emphasizing practical skills of accompanying singers. Instructor Permission Required.

MUSI 585 - SONATA CLASS
Short Title: SONATA CLASS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Class focuses on major duo-sonata repertoire for any string or wind instrument with piano. The course consists of up to 10 private coachings; studio class once each month; and final recital. Students may enroll as a duo or as individuals. Students may choose their repertoire and partners for the semester, and may prepare one or two sonatas. Instructor Permission Required. Repeatable for Credit.

MUSI 587 - GRADUATE DICTION FOR SINGERS
Short Title: GRADUATE DICTION FOR SINGERS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Enrollment limited to students with a class of Graduate.
Course Level: Graduate
Description: Principals of lyric diction in Italian, English, French, and German. Repeatable for Credit.

MUSI 588 - PIANO PEDAGOGY
Short Title: PIANO PEDAGOGY
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An overview of the group piano area which includes a comprehensive study of standard methods, in-depth discussion of group vs. individual lessons, and a supervised student teaching practicum.

MUSI 599 - STRING PEDAGOGY
Short Title: STRING PEDAGOGY
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A course for graduate piano chamber music majors, emphasizing practical skills of accompanying strings and wind instruments in a wide variety of repertoire. Instructor Permission Required.

MUSI 601 - COMPOSITION FOR MAJORS ADVANCED AND GRADUATES
Short Title: COMPOSITN FOR MAJORS ADV&GRAD
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MUSI 603 - GRADUATE COMPOSITION SEMINAR
Short Title: GRAD COMPOSITION SEMINAR
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MUSI 605 - ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS
Short Title: ADV ELECT&COMP MUSIC SYSTEMS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced topics and applications in computer and electronic music composition. Instructor Permission Required. Repeatable for Credit.

MUSI 606 - ADVANCED COMPUTER SOUND SYNTHESIS
Short Title: ADV COMPUTER SOUND SYNTHESIS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MUSI 605
Description: Continuation of MUSI 605. Department Permission Required. Repeatable for Credit.
MUSI 608 - IMPROVISATION AT THE ORGAN
Short Title: IMPROVISATION AT THE ORGAN
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MUSI 483 (may be taken concurrently) or MUSI 683 (may be taken concurrently)
Description: A course devoted to advancing knowledge and developing skills of improvisation at the organ. Discussion and analysis of themes, modality vs. tonality, modulations, harmonizations of scales, modes, chorales and plainchant will lead to improvisations in such forms as the chorale partita, monothematic sonata, passacaglia, French suite, fugue, and other forms. Concurrent enrollment in MUSI 483 or MUSI 683 is required. Repeatable for Credit.

MUSI 611 - CLASSROOM PEDAGOGY
Short Title: CLASSROOM PEDAGOGY
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The practical application of various teaching methods, and an in depth study of college-level materials. Department Permission Required.

MUSI 613 - TONAL COUNTERPOINT
Short Title: TONAL COUNTERPOINT
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: 18th Century counterpoint in the style of J.S. Bach. Instructor Permission Required.

MUSI 614 - SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION
Short Title: MUSIC THEORY & COMPOSITION
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics may vary. Please consult with the department for additional information. Repeatable for Credit.

MUSI 615 - MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION
Short Title: MUSIC OF RAVEL
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An in-depth study of Ravel’s music using several approaches, including investigation of additive harmony, Ravel’s use of alternative scales, and the relationship between Ravel’s music and contemporary trend in poetry and psychology. Recommended prerequisite(s): Ability to read music well and some previous study in music theory.

MUSI 617 - MUSIC SINCE 1950
Short Title: MUSIC SINCE 1950
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study and analysis of composers and music from Post-World War II to the present.

MUSI 619 - HISTORY OF THE 20TH CENTURY PIANISM
Short Title: 20TH CENTURY PIANISM HISTORY
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A critical survey of the great pianists of the 20th century covering the stylistic and pianistic traits of each, including a selective discography for each pianist.

MUSI 620 - HISTORICAL OVERVIEW OF PIANO TECHNIQUE
Short Title: HIST OVERVIEW OF PIANO TECHNIQ
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A survey of the teaching of piano technique from the historical perspective. The focus will be on documents and quotes from historical pedagogues such as C.P.E Bach, Clementi, Chopin, and the pianists of the 20th century.

MUSI 621 - SELECTED STUDIES IN MUSIC HISTORY
Short Title: SELECTED STUDIES IN MUSIC HIST
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar on individual topics in music history. Content varies. Repeatable for Credit.
MUSI 623 - J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION
Short Title: J.S. BACH:CAREER,WORKS&RECEPTN
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An examination of Bach's music and the social circumstances in which he created it. A substantial portion of the course will focus on issues and controversies in recent Bach scholarship.

MUSI 624 - SEMINAR ON A SELECTED COMPOSER
Short Title: SEM ON SELECT COMPOSER
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced study of the music of a single composer. Topics may vary. Please consult with the department for additional information. Repeatable for Credit.

MUSI 625 - MOZART OPERAS
Short Title: MOZART OPERAS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of three or four of Mozart’s operas in-depth, with a focus on how music shapes drama, interpretation, characterization, and meaning.

MUSI 626 - THE CLASSICAL STYLE
Short Title: THE CLASSICAL STYLE
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A study of the way in which Haydn, Mozart, and Beethoven create large musical forms that have purely musical meaning which does not derive from a text. We will consider various approaches to understanding musical meaning including rhetoric, structure, and style.

MUSI 627 - ROMANTIC SONGS AND PIANO PIECES
Short Title: ROMANTIC SONGS & PIANO PIECES
Department: Music
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of songs and piano character pieces of Schumann, Chopin, Mendelssohn, and Schubert from analytical and historical perspectives.

MUSI 631 - MOCK AUDITION
Short Title: MOCK AUDITION
Department: Music
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Studio
Credit Hours: 0
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Department Permission Required.

MUSI 635 - ADVANCED ORCHESTRA
Short Title: ADVANCED ORCHESTRA
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Repeatable for Credit.

MUSI 636 - ADVANCED CHAMBER MUSIC
Short Title: ADVANCED CHAMBER MUSIC
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. NOTE: ALL STUDENTS INTERESTED IN REGISTERING FOR CHAMBER MUSIC SHOULD REGISTER IN SECTION 1. Repeatable for Credit.

MUSI 637 - ADVANCED CONDUCTING FOR MAJORS
Short Title: ADVANCED CONDUCTING FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MUSI 640 - RICE CHORALE - ADVANCED
Short Title: RICE CHORALE - ADVANCED
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Repeatable for Credit.
### MUSI 641 - MASTER'S RECITAL I

**Short Title:** MASTER'S RECITAL I  
**Department:** Music  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Studio  
**Credit Hours:** 0  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Department Permission Required.

### MUSI 642 - ACCOMPANYING

**Short Title:** ACCOMPANYING  
**Department:** Music  
**Grade Mode:** Standard Letter  
**Course Type:** Studio  
**Credit Hour:** 1  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Accompanying a single student recital, including the preview, dress rehearsal, performance, their lessons with the soloist’s teacher, and practice times mutually agreeable to soloist and accompanist. OR accompanying private lessons in studios as assigned for a total of four hours per week. On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Instructor Permission Required. Repeatable for Credit.

### MUSI 645 - ORGAN LITERATURE BEFORE 1750

**Short Title:** ORGAN LITERATURE BEFORE 1750  
**Department:** Music  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** A historical study of organ literature coordinated with a study of the development of the organ as a musical instrument. Students will study and research organ music before 1750, developing familiarity with the period and national styles, an understanding of characteristic instruments, as well as practices of registration and performance. Concurrent enrollment in MUSI 483 or MUSI 683 is required.

### MUSI 646 - ORGAN LITERATURE SINCE 1750

**Short Title:** ORGAN LITERATURE SINCE 1750  
**Department:** Music  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** A historical study of organ literature coordinated with a study of the development of the organ as a musical instrument. Students will study and research organ music before 1750, developing familiarity with the period and national styles, an understanding of characteristic instruments, as well as practices of registration and performance. Concurrent enrollment in MUSI 483 or MUSI 683 is required.

### MUSI 647 - MASTER'S THESIS

**Short Title:** MASTER'S THESIS  
**Department:** Music  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Research  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Composition majors are required to attend 3 hours of orchestra rehearsal per week to satisfy the course requirement. Repeatable for Credit.

### MUSI 649 - GRADUATE INDEPENDENT STUDY

**Short Title:** GRAD INDEPENDENT STUDY  
**Department:** Music  
**Grade Mode:** Standard Letter  
**Course Type:** Independent Study  
**Credit Hours:** 1-3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Repeatable for Credit.

### MUSI 651 - FLUTE FOR MAJORS-ADVANCED

**Short Title:** FLUTE FOR MAJORS-ADV  
**Department:** Music  
**Grade Mode:** Standard Letter  
**Course Type:** Studio  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Repeatable for Credit.

### MUSI 653 - OBOE FOR MAJORS-ADVANCED

**Short Title:** OBOE FOR MAJORS-ADV  
**Department:** Music  
**Grade Mode:** Standard Letter  
**Course Type:** Studio  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Repeatable for Credit.

### MUSI 655 - CLARINET FOR MAJORS-ADVANCED

**Short Title:** CLARINET FOR MAJORS-ADV  
**Department:** Music  
**Grade Mode:** Standard Letter  
**Course Type:** Studio  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Repeatable for Credit.

### MUSI 656 - BASSOON FOR MAJORS-ADVANCED

**Short Title:** BASSOON FOR MAJORS-ADV  
**Department:** Music  
**Grade Mode:** Standard Letter  
**Course Type:** Studio  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Repeatable for Credit.
MUSI 661 - HORN FOR MAJORS-ADVANCED
Short Title: HORN FOR MAJORS-ADV
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: Repeatable for Credit.

MUSI 663 - TRUMPET FOR MAJORS-ADVANCED
Short Title: TRUMPET FOR MAJORS-ADV
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: Repeatable for Credit.

MUSI 665 - TROMBONE FOR MAJORS-ADVANCED
Short Title: TROMBONE FOR MAJORS-ADV
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: Repeatable for Credit.

MUSI 667 - TUBA FOR MAJORS-ADVANCED
Short Title: TUBA FOR MAJORS-ADV
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: Repeatable for Credit.

MUSI 669 - PIANO FOR CHAMBER MUSIC AND ACCOMPANYING MAJORS, ADVANCED/GRADUATE
Short Title: PIANO CHAMBER MUSIC&ACCOMP MAJ
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.
MUSI 690 - INDIVIDUAL INSTRUMENT COACHING FOR STRING QUARTET MAJORS
Short Title: IND INST COACH-STR QTET MAJ
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced individual instrumental coaching for students in the M.Mus. string quartet program. Repeatable for Credit.

MUSI 691 - VIOLIN FOR MAJORS-ADVANCED
Short Title: VIOLIN FOR MAJORS-ADV
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MUSI 693 - VIOLA FOR MAJORS-ADVANCED
Short Title: VIOLA FOR MAJORS-ADV
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MUSI 695 - VIOLONCELLO FOR MAJORS-ADVANCED
Short Title: VIOLONCELLO FOR MAJORS-ADV
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MUSI 697 - DOUBLE BASS FOR MAJORS-ADVANCED
Short Title: DOUBLE BASS FOR MAJORS-ADV
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MUSI 698 - ADVANCED STRING QUARTETS
Short Title: ADVANCED STRING QUARTETS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Private lessons for graduate students enrolled in the M.Mus. string quartet program. Repeatable for Credit.

MUSI 700 - GRADUATE RESEARCH
Short Title: GRADUATE RESEARCH
Department: Music
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-9
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MUSI 705 - APPRENTICESHIP - ARTISTIC OUTREACH
Short Title: APPRENTICESHIP ARTISTIC OUTRCH
Department: Music
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Corequisite: MUSI 698
Description: Repeatable for Credit.

MUSI 707 - DOCTORAL INDEPENDENT STUDY, COMPOSITION
Short Title: DOCTORAL IND.STUDY,COMPOSITION
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Independent project at the doctoral level. Instructor Permission Required.

MUSI 711 - ANALYTICAL APPROACHES
Short Title: ANALYTICAL APPROACHES
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In depth exploration of tonal and post-tonal analytical procedures. Required of all doctoral students. Instructor Permission Required. Recommended prerequisite(s): MUSI 512 or equivalent.

MUSI 712 - SEMINAR IN ADVANCED ANALYSIS
Short Title: SEMINAR IN ADVANCED ANALYSIS
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This class will build on the concept and materials presented in MUSI 711. Students will do in-depth analyses of significant pieces from several style periods. Instructor Permission Required.
MUSI 713 - SPECIAL TOPICS IN ADVANCED ANALYSIS
Short Title: SPECIAL TOPICS: ADV. ANALYSIS
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Special topics in Advanced Analysis will be presented by a resident scholar, reflecting current trends in music theory and analysis, and discussing his or her research in these areas. Instructor Permission Required. Repeatable for Credit.

MUSI 716 - MUSIC OF THE MIDDLE AGES
Short Title: MUSIC OF THE MIDDLE AGES
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A study of the major musical styles and composers of western art music before 1400 and their historical, cultural, and sociological contexts.

MUSI 717 - RENAISSANCE MUSIC
Short Title: RENAISSANCE MUSIC
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A study of the major musical styles and composers of Western art and music between 1400 and 1600 and their historical, cultural, and sociological contexts.

MUSI 721 - MUSIC OF SCHOENBERG
Short Title: MUSIC OF SCHOENBERG
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of the music of Arnold Schoenberg in the context of the major musical centers and artistic movements that colored his works: Vienna, Berlin, romanticism, expressionism and the New Objectivity.

MUSI 722 - MUSIC OF STRAVINSKY
Short Title: MUSIC OF STRAVINSKY
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of Igor Stravinsky's major ballets.

MUSI 723 - AESTHETICS OF MUSIC
Short Title: AESTHETICS OF MUSIC
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An introduction to music aesthetics, focusing on contemporary theories and writings.

MUSI 725 - ORGAN LITERATURE SEMINAR
Short Title: ORGAN LITERATURE SEMINAR
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MUSI 483 (may be taken concurrently) or MUSI 683 (may be taken concurrently)
Description: This course is devoted to intensive study of an area of organ literature, design, or performance practice. Emphasis will be placed upon in-depth study or the works of a selected composer or genre. Concurrent enrollment in MUSI 483 or MUSI 683 is required.

MUSI 733 - DOCTORAL SEMINAR I: CAREER SKILLS
Short Title: DOC. SEMINAR I: CAREER SKILLS
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Practical training in digital recording, editing, and producing and preparation for academic jobs. Required of, and limited to, doctoral music majors. Department Permission Required.

MUSI 735 - DOCTORAL SEMINAR II: REPERTORY
Short Title: DOCTORAL SEM II: REPERTORY
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In-depth study of chamber music and concert repertory. Required of, and limited to, all doctoral music students. Department Permission Required.

MUSI 736 - SOLO REP FOR DOC. STUDENTS
Short Title: SOLO REP FOR DOC. STUDENTS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: One semester required of all doctoral students in performance areas. Additional semesters may be taken at the discretion of the major teacher. Department Permission Required. Repeatable for Credit.
MUSI 738 - DOCTORAL INDIVIDUAL PROJECT
Short Title: DOCTORAL INDIVIDUAL PROJECT
Department: Music
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A substantial project in an area of the student's interest. Working with a faculty member, each doctoral music student will propose, carry out and then give a public report on the project. Proposals must be approved by the Graduate Studies Committee. Department Permission Required.

MUSI 739 - PEDAGOGY FOR DOCTORAL STUDENTS
Short Title: PEDAGOGY FOR DOCTORAL STUDENTS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 0
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The study of methods and materials specific to each student's major, focusing on the teaching of private studio lessons and instrumental or vocal classes for college-level students. Includes practical training. Each student will work with their major teacher or a faculty member designated by their department. Department Permission Required.

MUSI 741 - MASTER'S RECITAL II
Short Title: MASTER'S RECITAL II
Department: Music
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Studio
Credit Hours: 0
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Department Permission Required.

MUSI 742 - STRING QUARTET RECITAL
Short Title: STRING QUARTET RECITAL
Department: Music
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Studio
Credit Hours: 0
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Each recital will include a format chosen by the quartet and natural to them in which they relate to the general public in a meaningful, non-technical way (i.e., pre-concert question and answer session, etc.). These are not lecture-recitals in the traditional, academic sense: their aim is to give the quartet guidance and experience in how to impart substantive information that help non-musicians deepen their concert-going experience. On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Department Permission Required. Repeatable for Credit.

MUSI 747 - SURVEY-ORCHESTRAL REPERTOIRE
Short Title: SURVEY-ORCHESTRAL REPERTOIRE
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A survey of the techniques of orchestral playing with emphasis on preparation of orchestral excerpts for professional auditions.

MUSI 749 - VOCAL PHYSIOLOGY & FUNCTION FOR DOCTORAL STUDENTS
Short Title: VOCAL PHYSIOLOGY & FUNCTION
Department: Music
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Supervised research and writing of doctoral document. Repeatable for Credit.

MUSI 750 - DOCTORAL DOCUMENT
Short Title: DOCTORAL DOCUMENT
Department: Music
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Studio
Credit Hours: 0
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Supervised research and writing of doctoral document. Repeatable for Credit.

MUSI 751 - DOCTORAL SOLO RECITAL
Short Title: DOCTORAL RECITAL-SOLO
Department: Music
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Studio
Credit Hours: 0
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Supervised research and writing of doctoral document. Repeatable for Credit.

MUSI 752 - DOCTORAL CHAMBER MUSIC RECITAL
Short Title: DOCTORAL RECITAL-CHAMBER
Department: Music
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Studio
Credit Hours: 0
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Supervised research and writing of doctoral document. Repeatable for Credit.
MUSI 753 - DOCTORAL CONCERTO RECITAL
Short Title: DOCTORAL RECITAL-CONCERTO
Department: Music
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Studio
Credit Hours: 0
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Doctoral students will perform a concerto as the soloist with an orchestra. This may require weekend rehearsals and performances. A preview is not required for the concerto recital. Department Permission Required.

MUSI 754 - DOCTORAL LECTURE-RECITAL
Short Title: DOCTORAL RECITAL-LECTURE
Department: Music
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Studio
Credit Hours: 0
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The lecture-recital is a combination of performance and lecture on a topic approved by the Graduate Studies Committee. The lecture portion, which is approximately 50% of the program, should reflect significant research and analysis, including a discussion of performance practice where applicable. Department Permission Required.

MUSI 760 - INDIVIDUAL AND COMMITTEE INSTRUCTION FOR ARTIST DIPLOMA
Short Title: INDIV & COMMITTEE INSTR FOR AD
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Weekly lessons with principal teacher as well as periodically scheduled mentoring and coaching sessions with members of Diploma Committee. Will cover all areas of performance related to chosen field. Repeatable for Credit.

MUSI 761 - ARTIST DIPLOMA RECITAL
Short Title: ARTIST DIPLOMA RECITAL
Department: Music
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Studio
Credit Hours: 0
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Public performance exhibiting highest level of technical mastery and artistic interpretation. Department Permission Required. Repeatable for Credit.

MUSI 762 - ARTIST DIPLOMA SEMINAR
Short Title: ARTIST DIPLOMA SEMINAR
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Instruction of matters of musical style and historically informed performance practice. Performance within the class is expected. Survey performance practices ranging from the Baroque period through 21st century.

MUSI 763 - ARTIST DIPLOMA SPECIAL PROJECT
Short Title: ARTIST DIPLOMA SPECIAL PROJECT
Department: Music
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Application of both performance and career-building skills directly in the market place. Repeatable for Credit.

MUSI 764 - ARTIST DIPLOMA PERFORMANCE
Short Title: ARTIST DIPLOMA PERFORMANCE
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Participation in orchestra, chamber music, sinfonietta, opera or scenes programs as determined by individual track. Repeatable for Credit.

MUSI 800 - DISSERTATION
Short Title: DISSERTATION
Department: Music
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students are required to write an original composition of substantial dimensions. The composition must be publicly defended and submitted, following the university's regulations and procedures for candidacy, oral examination, and thesis. Repeatable for Credit.
Natural Sciences (NSCI)

NSCI 111 - CONCEPTS IN PHYSICS AND ASTRONOMY
Short Title: CONCEPT IN PHYSICS & ASTRONOMY
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is intended as an investigation of some of the major concepts in physics and astronomy that form the basis of our modern understanding of the universe. By focusing on scientific methodology and a few universal laws, the course will help students appreciate scientific discoveries and give them the conceptual understanding to form intelligent views of contemporary scientific issues. For non-science/engineering majors.

NSCI 120 - INTRODUCTION SCIENTIFIC RESEARCH CHALLENGES
Short Title: INTR SCIENTIFIC RES CHALLENGES
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Students in NSCI 120 will solve client-based problems that require the discovery or application of scientific knowledge, specifically in the fields of biology and chemistry. Students will work in interdisciplinary teams and be involved in shaping their project and implementing the scientific method to find solutions. This course is limited to first-year students only. Mutually Exclusive: Cannot register for NSCI 120 if student has credit for BIOC 112.

NSCI 199 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Independent Study in an area of science with emphasis on scientific procedures and methods. Instructor Permission Required.

NSCI 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

NSCI 305 - NEW VENTURE COMMUNICATION FOR SCIENCE AND ENGINEERING
Short Title: NEW VENTURE COMMUN FOR SCI&ENG
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Teaches students in science or engineering the skills needed to discover, communicate, and promote products and services based on technological innovation or scientific research. Students learn to innovate a product or service with social or commercial application, write an early-stage business plan, and give a 10-minute financing presentation.

NSCI 320 - PUBLIC SCIENCE COMMUNICATION SEMINAR
Short Title: PUBLIC SCIENCE COMM SEMINAR
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 201 or CHEM 111 or CHEM 121 or CHEM 151 or PHYS 101 or PHYS 111 or PHYS 125
Description: Scientists are increasingly expected to communicate with the public. In this course, students learn from people who regularly communicate about science to general audiences in order to gain an appreciation for the various types of public science communication, its importance to society, and techniques used in effective public science communication. Graduate/Undergraduate Equivalency: NSCI 520. Mutually Exclusive: Cannot register for NSCI 320 if student has credit for NSCI 520. Repeatable for Credit.

NSCI 410 - MEDICAL LEADERSHIP RESEARCH
Short Title: MEDICAL LEADERSHIP RESEARCH
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-5
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Students will help in ongoing research in the health profession program with Dr. Gia Merlo. Additionally, students may conduct independent medical leadership/professionalism research upon approval. Instructor Permission Required. Repeatable for Credit.

NSCI 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.
NSCI 501 - PROFESSIONAL MASTER'S SEMINAR  
**Short Title:** PROFESSIONAL MASTER'S SEMINAR  
**Department:** Natural Sciences Division  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Seminar  
**Credit Hour:** 1  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** A weekly seminar which serves to provide exposure to local industry leaders from the areas of oil and gas exploration, nanotechnology, and environmental management; introduce career management and business relations tools; further develop written and oral communication skills; provide a forum for students to present internship project results. Repeatable for Credit.

NSCI 502 - SPACE STUDIES SEMINAR  
**Short Title:** SPACE STUDIES SEMINAR  
**Department:** Natural Sciences Division  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Seminar  
**Credit Hour:** 1  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** A weekly space seminar held by space industry leaders and organized by faculty providing exposure on 'real-world' subjects, such as general, commercial and scientific aspects of space; mission planning and design; astrodynamics/orbital mechanics; spacecraft navigation; Payload definition; Space environment; propulsion and maneuvering; human factors; risk management; export control regulations and others. Repeatable for Credit.

NSCI 505 - ENVIRONMENTAL LAB  
**Short Title:** ENVIRONMENTAL LAB  
**Department:** Natural Sciences Division  
**Grade Mode:** Standard Letter  
**Course Type:** Laboratory  
**Credit Hour:** 1  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Laboratory module offered in conjunction with CAAM 353 that illustrates applications of numerical analysis in the solutions of common environmental science and engineering problems. Instructor Permission Required.

NSCI 506 - ENVIRONMENTAL CASE STUDIES  
**Short Title:** ENVIRONMENTAL CASE STUDIES  
**Department:** Natural Sciences Division  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hour:** 1  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Seminar bringing in outside speakers from the community to address environmental issues.

NSCI 510 - PROFESSIONAL MS INTERNSHIP  
**Short Title:** PROFESSIONAL MS INTERNSHIP  
**Department:** Natural Sciences Division  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Internship/Practicum  
**Credit Hours:** 12  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Supervised internship or project associated with pursued degree. Exclusively for students in the Professional Master's Program in Natural Sciences. Repeatable for Credit.

NSCI 511 - SCIENCE POLICY, AND ETHICS  
**Short Title:** SCIENCE POLICY, AND ETHICS  
**Department:** Natural Sciences Division  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** An introduction to the policy, ethics, politics, and legal issues that relate to science and technology - discovery and application. This course presents a framework for analyzing ethical issues in business and professional work. The course then explores the ways in which government policy and business practices can promote or inhibit advances in science and technology while influencing the ethical choices of the professionals involved. Case studies will be used. Instructor Permission Required.

NSCI 512 - PROFESSIONAL MASTER'S PROJECT  
**Short Title:** PROFESSIONAL MASTER'S PROJECT  
**Department:** Natural Sciences Division  
**Grade Mode:** Standard Letter  
**Course Type:** Independent Study  
**Credit Hour:** 1  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Professional master students present the results of their internship or independent project. Recommended Prerequisite(s): NSCI 510.

NSCI 520 - PUBLIC SCIENCE COMMUNICATION SEMINAR  
**Short Title:** PUBLIC SCIENCE COMM SEMINAR  
**Department:** Natural Sciences Division  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hour:** 1  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Prerequisite(s):** BIOC 201 or CHEM 111 or CHEM 121 or CHEM 151 or PHYS 101 or PHYS 111 or PHYS 125  
**Description:** Scientists are increasingly expected to communicate with the public. In this course, students learn from people who regularly communicate about science with general audiences in order to gain an appreciation for the various types of public science communication, its importance to society, and techniques used in effective public science communication. Graduate/Undergraduate Equivalency: NSCI 320. Mutually Exclusive: Cannot register for NSCI 520 if student has credit for NSCI 320. Repeatable for Credit.
NSCI 521 - WRITING AND PUBLISHING SCIENCE
Short Title: WRITING AND PUBLISHING SCIENCE
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: To prepare graduate students for writing and publishing independent research, this course examines the genre of the primary literature article; analyzes successful writing; explores ways of managing references and avoiding plagiarism; and addresses issues of authorship, submission, and peer review. Students will receive peer feedback on documents in preparation.

NSCI 530 - THE SHAPING OF HEALTH POLICY
Short Title: THE SHAPING OF HEALTH POLICY
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of how health-care policy decisions are made and implemented, using an interdisciplinary approach involving government, law, ethics, economics, and history. Includes case discussions of major policy problems by faculty experts in these disciplines and guest speakers who are leading national figures in the shaping of public policy. Mutually Exclusive: Cannot register for NSCI 530 if student has credit for POST 430/POST 530/SOSC 430.

NSCI 550 - APPLIED MATHEMATICS AND SCIENCE FOR TEACHERS
Short Title: APPLIED MATH FOR TEACHERS
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Mathematics topics related to and transcending elementary school mathematics. Active, student-centered, inquiry-based learning experiences using manipulatives and the latest technologies in a collaborative setting. Contemporary readings related to mathematics education. Problem-solving and motivational strategies, assessment, differentiated instruction, and questioning techniques to meet the needs of all learners. Curriculum development using the RUSMP Learning Plan.

NSCI 573 - CONTEMPORARY TOPICS IN ELEMENTARY SCHOOL MATHEMATICS
Short Title: CONTEMP TOPICS IN ELEM MATH
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Mathematics topics related to and transcending elementary school mathematics. Active, student-centered, inquiry-based learning experiences using manipulatives and the latest technologies in a collaborative setting. Contemporary readings related to mathematics education. Problem-solving and motivational strategies, assessment, differentiated instruction, and questioning techniques to meet the needs of all learners. Curriculum development using the RUSMP Learning Plan.

NSCI 574 - TEACHING PHYSICS VIA INQUIRY II, ELECTRICITY AND MAGNETISM
Short Title: TEACHING PHYSICS - INQUIRY II
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is a professional development course to serve high school physics teachers. It will cover topics in kinematics and mechanics with student-centered inquiry based pedagogy. Teachers will develop laboratory and hands-on activates, learn about new developments in physics research, and share best practices. The course goal is to improve teachers' science content knowledge related to the Texas Essential Knowledge and to provide teachers with tools to engage their students in science. Instructor Permission Required.
NSCI 586 - CONTEMPORARY TOPICS IN K-12 SCIENCE AND MATHEMATICS
Short Title: CONT TOPICS IN K-12 SCI & MATH
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Contemporary topics in grades K-12 science and mathematics instruction and covers both content and pedagogy. Multiple sections are offered. Each section focuses on a specific area of instruction at a specified grade. All sections include field studies, inquiry, curriculum development and implementation of instructional strategies in the classroom. Students may enroll in different sections for repeated credit. Instructor Permission Required. Repeatable for Credit.

NSCI 590 - CONTEMPORARY TOPICS IN SENIOR HIGH SCHOOL MATHEMATICS
Short Title: CONTEMP TOPICS HIGH SCHL MATH
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Mathematics topics related to and transcending high school mathematics. Active, student-centered, inquiry-based learning experiences using manipulatives and the latest technologies in a collaborative setting. Contemporary readings related to mathematics education. Problem-solving and motivational strategies, assessment, differentiated instruction, and questioning techniques to meet the needs of all learners. Curriculum development using the RUSMP Learning Plan.

NSCI 592 - SEMINAR IN SCIENCE FOUNDATIONS
Short Title: SEMINAR IN SCIENCE FOUNDATIONS
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: SEMINAR IN SCIENCE FOUNDATIONS ***** Seminar with a team of university faculty and community-based scientists (in fields such as medicine, space, energy, and the environment) to increase understanding of scientific principles as they are applied in the scientific community of Houston and as they relate to secondary school science.

NSCI 595 - TOPICS IN CONTEMPORARY ALGEBRA FOR IN-SERVICE TEACHERS
Short Title: TOPICS IN CONTEMP ALGEBRA
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Emphasis on function concepts through multiple representations and problem solving. Algebraic thinking and symbolic reasoning, underlying mathematical processes, and connections between algebra and the other mathematical strands. Active, student-centered, inquiry-based learning experiences using manipulatives and the latest technologies in a collaborative setting. Contemporary readings related to mathematics education.

NSCI 610 - MANAGEMENT FOR SCIENCE AND ENGINEERING
Short Title: MGT FOR SCIENCE/ENGINEERING
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is for graduate and undergraduate students who want to understand the basics of management in new and/or small technology-based businesses and is particularly relevant to students who are interested in careers in technology or entrepreneurial ventures. NSCI 610/ENGI 610 is team taught to provide insight into how technology oriented firms manage people, projects, accounting, marketing, strategy, intellectual property, organizations and entrepreneurship. Student's active participation is essential. Students who take this course are eligible for MGMT 625. Cross-list: ENGI 610.

NSCI 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture, Seminar, Internship/Practicum, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

Naval Science (NAVA)

NAVA 100 - NAVAL SCIENCE LABORATORY
Short Title: NAVAL SCIENCE LABORATORY
Department: Naval Science
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Practical applications of leadership principles as a Junior Naval Officer. Repeatable for Credit.
NAVA 101 - NAVAL ORIENTATION
Short Title: NAVAL ORIENTATION
Department: Naval Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An introduction to naval traditions and customs, seamanship, naval organization and missions, and the fundamental concepts of sea power.

NAVA 103 - SEA POWER AND MARITIME AFFAIRS
Short Title: SEA POWER
Department: Naval Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An introduction to naval traditions and customs, seamanship, naval organization and missions, and the fundamental concepts of sea power.

NAVA 203 - LEADERSHIP AND MANAGEMENT I
Short Title: LEADERSHIP AND MANAGEMENT I
Department: Naval Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An introduction to the principles and concepts of management, organization, leadership, information systems, and decision making.

NAVA 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Naval Science
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

NAVA 301 - NAVIGATION I
Short Title: NAVIGATION I
Department: Naval Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Marine navigators and laws of vessel operations. Includes coastal piloting, navigational aids, nautical astronomy, satellite and inertial systems, and rules of the nautical road.

NAVA 302 - NAVAL OPERATIONS AND SEAMANSHIP
Short Title: NAVAL OPERATIONS & SEAMANSHIP
Department: Naval Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An analysis of ship movements, formations, and fleet operations; includes Rules of the Road, maneuvering board, tactical publications and communications.

NAVA 303 - EVOLUTION OF WARFARE
Short Title: EVOLUTION OF WARFARE
Department: Naval Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Historical survey of the evolution of the conduct of warfare. Strategy, tactics, weapons, organization, and military leaders/thinkers are studied. Course is taught in the NROTC Building.

NAVA 304 - NAVAL WEAPONS-NAVAL SHIP SYSTEMS II
Short Title: NAVAL WEAPONS
Department: Naval Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The theory and employment of weapons systems. The student explores the processes of detection, evaluation, threat analysis, weapon selection, delivery, guidance, and explosives. The physical aspects of radar and underwater sound are described in detail.

NAVA 402 - LEADERSHIP AND ETHICS
Short Title: LEADERSHIP AND ETHICS
Department: Naval Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): NAVA 203
Description: Leadership principles, with particular emphasis on ethics, human resources management, military law and discipline, and administration. The Capstone course for NROTC seniors. Recommended prerequisite(s): Spring semester of senior year.
NAVA 403 - NAVAL ENGINEERING
Short Title: NAVAL ENGINEERING
Department: Naval Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Ship propulsion systems, auxiliary systems, steering systems, electrical power distribution, ship design, ship stability and damage control measures.

NAVA 411 - FUNDAMENTALS OF MANEUVER WARFARE
Short Title: FUND OF MANEUVER WARFARE
Department: Naval Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Mutually Exclusive: Cannot register for NAVA 411 if student has credit for NAVA 410.

NAVA 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Naval Science
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

Neuroscience (NEUR)

NEUR 111 - SCIENCE AND ART IN DIALOGUE: EXPERIMENT, IMAGINATION, AND THE INVENTION OF NEUROSCIENCE
Short Title: SCIENCE AND ART IN DIALOGUE
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: We will take up the argument that ‘Proust was right about memory, Cézanne was uncannily accurate about the visual cortex, and Woolf pierced the mystery of consciousness;’ as we discuss aspects of the brain revealed by the texts, paintings, dishes and compositions of eight modern artists.

NEUR 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

NEUR 304 - CELLULAR NEUROPHYSIOLOGY I&II
Short Title: CELLULAR NEUROPHYSIOLOGY I&II
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PHYS 125 and (MATH 101 or MATH 105)
Description: Properties of excitable nerve membranes and chemical synapses; theory of ions in solutions, ion conduction through membranes, ion transport, linear cable theory, nonlinear properties of neurons, + stochastic properties of single ion channels, synaptic transmission, the role of calcium and transmitter release, + postsynaptic mechanism. Taught at Baylor College of Medicine; check NEUR website. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 504. Mutually Exclusive: Cannot register for NEUR 304 if student has credit for NEUR 504. Repeatable for Credit.

NEUR 305 - OPTICAL IMAGING
Short Title: OPTICAL IMAGING
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course includes a theoretical portion which will introduce the fundamentals of optical imaging of neural activity, present the devices that are employed, and review applications and discuss their results. In addition, in a practical part, students will design, set up, and perform simple in vitro experiments to gain practical experience with this exciting and powerful technology. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 505. Mutually Exclusive: Cannot register for NEUR 305 if student has credit for NEUR 505.
Course URL: www.ruf.rice.edu/~neurosci (http://www.ruf.rice.edu/~neurosci/)
NEUR 306 - CONCEPTS OF LEARNING AND MEMORY
Short Title: CONCEPT LEARNING&MEMORY
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course is designed to introduce students to the field of learning and memory. This field has exploded in the last few years with the introduction of new techniques, new approaches, and new concepts. The course will introduce the student to classical and modern concepts of learning and memory across all levels at which learning and memory is studied, including behavioral, anatomical, cellular, molecular and genetic levels of analysis. The basic concepts of learning and memory will also be related to known diseases of learning and memory. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 506. Mutually Exclusive: Cannot register for NEUR 306 if student has credit for NEUR 506.
Course URL: www.ruf.rice.edu/~neurosci (http://www.ruf.rice.edu/~neurosci/)

NEUR 308 - INTRODUCTION TO COGNITIVE NEUROSCIENCE
Short Title: INTRO COGNITIVE NEUROSCIENCE
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An introductory graduate-level overview of cognitive neuroscience. The course will cover basics in history, neuroanatomy, methods of cognitive neuroscience, sensation and perception, control of action, learning and memory, emotion, language, attention, drugs and cognition, impulsivity, cognitive control, social cognition, and neurobiology of disease. This course is usually taught at the Texas Medical Center. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 508. Mutually Exclusive: Cannot register for NEUR 308 if student has credit for NEUR 508.

NEUR 310 - INDEPENDENT RESEARCH FOR NEUROSCIENCE UNDERGRADUATES
Short Title: IND RES FOR NEUR UNDERGRADS
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Independent research in Rice Neuroscience faculty laboratories (or other Texas Medical Center laboratories.) Students spend at least 3 hours per week in the laboratory for each semester hour of credit. If taken for 3 or more hours, counts as one required 300+ level lab course. Requires a proposal abstract, weekly reports, and a final project that summarizes your activities in the lab. Students wishing to perform their research in an off-campus lab must submit a completed application to the NEUR 310 instructor at least 2 weeks prior to the start of classes. Students are strongly advised to secure research advisors and register for the class well in advance of the start of classes. More information on finding a lab, as well as the general application crisis, can be found at www.neur310.rice.edu. Repeatable for Credit. Instructor Permission Required. Repeatable for Credit.

NEUR 318 - INTRO TO NEUROSCIENCE METHODS
Short Title: INTRO TO NEUROSCIENCE METHODS
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course provides an introduction to the recording of signals from live neurons using microscopic and electrophysiologic methods. The course introduces the basics of instrumentation in the recording of real time biologic signals. The course is designed to run in parallel with a lab course. Course taught by Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 518. Mutually Exclusive: Cannot register for NEUR 318 if student has credit for NEUR 518.

NEUR 319 - INTRODUCTION TO NEUROSCIENCE METHODS LAB
Short Title: NEUROSCIENCE METHODS LAB
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This is the laboratory course that is designed to run in parallel with the Introductory Neurosciences Methods lecture course. The Lab is designed to give students hands-on experience applying the ideas for real time recording of microscopic and neurophysiological signals. Course taught by Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 519. Mutually Exclusive: Cannot register for NEUR 319 if student has credit for NEUR 519.
NEUR 321 - ANALYSES OF NEURONAL FUNCTION
Short Title: ANALYSES OF NEURONAL FUNCTION
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will cover all basic aspects of the intrinsic electrophysiological properties of neurons and of synaptic transmission. It will also introduce principles of synaptic integration and plasticity.
Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 521. Mutually Exclusive: Cannot register for NEUR 321 if student has credit for NEUR 521.

NEUR 322 - BRAIN CELL BIOLOGY AND DEVELOPMENT
Short Title: BRAIN CELL BIOL & DEVELOPMENT
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Anatomy and development of the nervous system is designed to introduce the student to the basic structure and function of the nervous system, and describe its rough development. It is intended for first year students without any specific advanced knowledge of neuroscience. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 522. Mutually Exclusive: Cannot register for NEUR 322 if student has credit for NEUR 522. Repeatable for Credit.

NEUR 323 - GENETICS FOR NEUROSCIENCE
Short Title: GENETICS FOR NEUROSCIENCE
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course integrates genetics into neuroscience and is intended to teach neuroscience students how to tackle neurobiological problems using genetic strategies and tools. In the introduction, students will be exposed to the basic concepts in genetics. Strategies using model organisms from C.elegans to mice will be covered. Finally we will discuss genetic approaches in humans. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 523. Mutually Exclusive: Cannot register for NEUR 323 if student has credit for NEUR 523.

NEUR 335 - CELLULAR NEUROPHYSIOLOGY
Short Title: CELLULAR NEUROPHYSIOLOGY
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course provides an upper level graduate treatment on the physiology and biophysics of nerve cell signaling. Topics to be covered include measurement and analysis of single events from ion channels to synaptic vesicle fusion, synaptic transmission and the relationship between calcium signaling and synaptic vesicle dynamics, short-term synaptic plasticity, and postsynaptic integration. This course is taught at the University of Texas Health Sciences Center. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 535. Mutually Exclusive: Cannot register for NEUR 335 if student has credit for NEUR 535.

NEUR 350 - MOLECULAR NEUROBIOLOGY
Short Title: MOLECULAR NEUROBIOLOGY
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course covers the molecular, cellular, and biochemical events that underlie neuronal function. Emphasis is placed on the basic chemistry and biology of cells residing the nervous system. The course also covers the structure and function of receptors, channels and pumps necessary for neuronal function and the neurochemistry of specific transmitter systems. The unique demand of neurons as specialized secretory cells is also covered. This course is taught at UTHSC. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 550. Mutually Exclusive: Cannot register for NEUR 350 if student has credit for NEUR 550. Repeatable for Credit.

NEUR 362 - COGNITIVE NEUROSCIENCE: EXPLORING THE LIVING BRAIN
Short Title: COGNITIVE NEUROSCIENCE
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 203
Description: Survey of theory and research on how mental processes are carried out by the human brain, with an emphasis on relating measures of brain activity to cognitive functioning, methods surveyed included electro physiological recording techniques, functional imaging techniques and methods that involve lessening or disrupting neural activity. Cross-list: PSYC 362.
NEUR 364 - COGNITIVE NEUROSCIENCE LAB
Short Title: COGNITIVE NEUROSCIENCE LAB
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 362 (may be taken concurrently) or NEUR 362 (may be taken concurrently)
Description: The objective is to equip the students of PSYC/NEUR 362 the tools on how to apply cognitive neuroscience techniques to health or clinical topics and to investigate sensorimotor and cognitive measures in a human model. The prereq may be taken the same semester as this class. Instructor Permission Required. Cross-list: PSYC 364. Graduate/Undergraduate Equivalency: NEUR 564. Mutually Exclusive: Cannot register for NEUR 364 if student has credit for NEUR 564.

NEUR 376 - NEUROBIOLOGY OF DISEASE
Short Title: NEUROBIOLOGY OF DISEASE
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Covers some of the most important disorders of nervous system function. Exposes students to incidence, clinical manifestations, pathophysiology, current scientific models of causes/mechanisms of disorders of the adult brain: stroke, Parkinson’s disease, Alzheimer’s disease, seizure disorders, brain tumors, multiple sclerosis, amyotrophic lateral sclerosis, brain/spinal cord injury, addiction, depression, and schizophrenia. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 564. Mutually Exclusive: Cannot register for NEUR 376 if student has credit for NEUR 564.

NEUR 377 - NEUROANATOMY: FUNCTIONAL ORGANIZATION OF THE CENTRAL NERVOUS SYSTEM
Short Title: FUNCTIONAL NEUROANATOMY
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Anatomy and function of components of the nervous system with an emphasis on the central nervous system. This course is offered for Rice psychology graduate undergraduate students. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 577. Mutually Exclusive: Cannot register for NEUR 377 if student has credit for NEUR 577.

NEUR 379 - NEUROBIOLOGY OF SENSATION AND MOVEMENT
Short Title: NEUROBIO OF SENSATION/MOVEMENT
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Overview of basic systems neuroscience. The course covers sensory transductions, development, and motor programming. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 579. Mutually Exclusive: Cannot register for NEUR 379 if student has credit for NEUR 579.

NEUR 380 - FUNDAMENTAL NEUROSCIENCE SYSTEMS
Short Title: NEUROSYSTEMS
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will provide a broad overview of the brain’s neural systems that subserve perception, learning, and behavior. The course will be highly integrative with thematic content including functional organization of the nervous system, neural encoding and decoding, sensory systems, motor systems, and high-level concept processing. Cross-list: BIOC 380, PSYC 380. Recommended Prerequisite(s): PSYC 101.

NEUR 381 - PHYSIOLOGY OF VISUAL SYSTEM
Short Title: PHYSIOLOGY OF VISUAL SYSTEM
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Course provides an advanced level and comprehensive coverage of the physiology of the retina and visual cortex. Useful for graduate students and postdocs in neuroscience, physiology, biochemistry, cell biology, and molecular genetics who are interested in visual information processing and brain function. Offered even years only. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 580. Mutually Exclusive: Cannot register for NEUR 381 if student has credit for NEUR 580.
NEUR 382 - INTRODUCTION TO COMPUTATIONAL NEUROSCIENCE
Short Title: INTRO COMPUTATIONAL NEURSCI
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Introduction to methods and theories used to describe and understand neural information processing in the brain. Models covered will range from single neuron to networks for sensory, motor and learning tasks. Programming exercises will be done using Matlab. Cross-list: ELEC 382. Graduate/Undergraduate Equivalency: NEUR 582. Recommended Prerequisite(s): CAAM 210. Mutually Exclusive: Cannot register for NEUR 382 if student has credit for NEUR 582.

NEUR 383 - INTRODUCTION TO NEUROENGINEERING: MEASURING AND MANIPULATING NEURAL ACTIVITY
Short Title: INTRO TO NEUROENGINEERING
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (PHYS 101 or PHYS 111 or PHYS 125 or PHYS 141) and (PHYS 102 or PHYS 112 or PHYS 126 or PHYS 142)
Description: This course will serve as an introduction to quantitative modeling of neural activity and the methods used to stimulate and record brain activity. Cross-list: BIOE 380, ELEC 380.

NEUR 385 - FUNDAMENTALS OF CELLULAR AND MOLECULAR NEUROSCIENCE
Short Title: FUNDAMENTALS OF NEUROSCIENCE
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIO 201
Description: Cellular, molecular, and integrative mechanisms of neural function, including membrane and axon physiology, synaptic transmission and plasticity, sensory transduction and processing. Cross-list: BIOE 385.
NEUR 411 - NEUROLINGUISTICS
Short Title: NEUROLINGUISTICS
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of language and the brain. Includes localization of speech, language, and memory functions, hemispheric dominance, pathologies of speech and language associated with brain damage, and hypotheses of the representation and operation of linguistic information in the cortex. Cross-list: ANTH 411, LING 411.

NEUR 412 - UNDERGRADUATE RESEARCH SEMINAR
Short Title: UNDERGRADUATE RESEARCH SEMINAR
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): NEUR 402
Corequisite: NEUR 402
Description: This companion seminar requires attendance at course meetings and a formal scientific presentation of research performed while enrolled in the Honors Research Program. Must register for corequisite: NEUR 402. Instructor Permission Required. Repeatable for Credit.

NEUR 415 - THEORETICAL NEUROSCIENCE: FROM CELLS TO LEARNING SYSTEMS
Short Title: THEORETICAL NEUROSCIENCE
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: We present the theoretical foundations of cellular and systems neuroscience from distinctly quantitative point of view. We develop the mathematical and computational tools as they are needed to model, analyze, visualize and interpret a broad range of experimental data. This course is independent, but complementary to NEUR 416. Cross-list: CAAM 415, ELEC 488. Graduate/Undergraduate Equivalency: NEUR 615. Recommended Prerequisite(s): CAAM 210 or MATH 211 or CAAM 335 or MATH 355. Mutually Exclusive: Cannot register for NEUR 415 if student has credit for NEUR 615.

NEUR 416 - NEURAL COMPUTATION
Short Title: NEURAL COMPUTATION
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: How does the brain work? Understanding the brain requires sophisticated theories to make sense of the collective actions of billions of neurons and trillions of synapses. Word theories are not enough; we need mathematical theories. The goal of this course is to provide an introduction to the mathematical theories of learning and computation by neural systems. These theories use concepts from dynamical systems (attractors, oscillations, chaos) and concepts from statistics (information, uncertainty, inference) to relate the dynamics and functions of neural networks. We will apply these theories to sensory computation, learning and memory, and motor control. Students will learn to formalize and mathematically answer questions about neural computations, including “what does a network compute?”, “how does it compute?”, and “why does it compute that way?” Prerequisites: knowledge of calculus, linear algebra, and probability and statistics. Cross-list: CAAM 416, ELEC 489.

NEUR 430 - FUNDAMENTALS OF HUMAN NEUROIMAGING
Short Title: HUMAN NEUROIMAGING
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A survey of methods and results for human brain imaging. Describes the physical and physiological mechanisms of image formation. Provides examples from clinical and basic research, particularly in visual cortex. Emphasis on magnetic resonance imaging, but surveys other imaging modalities including PET, optical, and EEG/MEG source localization. Course taught at Baylor College of Medicine. Cross-list: ELEC 484. Graduate/Undergraduate Equivalency: NEUR 584. Mutually Exclusive: Cannot register for NEUR 430 if student has credit for NEUR 584.

NEUR 450 - ELECTRICAL SIGNALING IN THE BRAIN
Short Title: ELECTRICAL SIGNALING IN BRAIN
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Electrical Signaling in the Brain covers the basics concepts of electrical signaling from the proteins involved, biophysical principles and computational methods required to understand measure and characterize electrical signaling in the brain. Instructor Permission Required. Repeatable for Credit.
NEUR 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

NEUR 481 - COMPUTATIONAL NEUROSCIENCE AND NEURAL ENGINEERING
Short Title: COMP/NEUROSCIENCE/NEURAL ENGR
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An introduction to the anatomy and physiology of the brain. Includes basic electrophysiology of nerve and muscle. Develops mathematical models of neurons, synaptic transmission and natural neural networks. Leads to a discussion of neuromorphic circuits which can represent neuron and neural network behavior in silicon. Recommendation: Knowledge of electrical circuits, operational amplifier circuits and ordinary differential equations. Involves programming Matlab. Cross-list: BIOE 481, ELEC 481. Graduate/Undergraduate Equivalency. NEUR 583. Recommended Prerequisite(s): Knowledge of basic electrical and operational amplifier circuits; and ordinary differential equations. Mutually Exclusive: Cannot register for NEUR 481 if student has credit for NEUR 583.

NEUR 501 - ADVANCED COGNITIVE NEUROSCIENCE: ATTENTION AND PERCEPTION
Short Title: ATTENTION AND PERCEPTION
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Overview of neuropsychological and cognitive neuroscience approaches to higher mental functions including sensation and perception, attention, motor control, and neuroplasticity. Other topics include basic neuroanatomy, experimental and clinical investigative methods, and the historical and philosophical context of contemporary neuroscience. Instructor Permission Required. Cross-list: PSYC 575. Mutually Exclusive: Cannot register for NEUR 501 if student has credit for NEUR 301.
Course URL: www.ruf.rice.edu/~neurosci (http://www.ruf.rice.edu/~neurosci/)

NEUR 502 - ADVANCED COGNITIVE NEUROSCIENCE: HIGHER MENTAL FUNCTIONS
Short Title: HIGHER MENTAL FUNCTIONS
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Overview of neuropsychological and cognitive science approaches to higher mental functions including language, memory, executive functions, reasoning, and numerical processing. Instructor Permission Required. Cross-list: PSYC 576. Mutually Exclusive: Cannot register for NEUR 502 if student has credit for NEUR 302.
Course URL: www.ruf.rice.edu/~neurosci (http://www.ruf.rice.edu/~neurosci/)

NEUR 504 - CELLULAR NEUROPHYSIOLOGY I & II
Short Title: CELLULAR NEUROPHYSIOLOGY I&II
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): PHYS 125 and (MATH 101 or MATH 105)
Description: Properties of excitable nerve membranes and chemical synapses; theory of ions in solutions, ion conduction through membranes, ion transport, linear cable theory, nonlinear properties of neurons, stochastic properties of single ion channels, synaptic transmission, the role of calcium and transmitter release, postsynaptic mechanism. Taught at Baylor College of Medicine; check NEUR website. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 304. Mutually Exclusive: Cannot register for NEUR 504 if student has credit for NEUR 304. Repeatable for Credit.

NEUR 505 - OPTICAL IMAGING
Short Title: OPTICAL IMAGING
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course includes a theoretical portion which will introduce the fundamentals of optical imaging of neural activity, present the devices that are employed, and review applications and discuss their results. In addition, in a practical part, students will design, set up, and perform simple in vitro experiments to gain practical experience with this exciting and powerful technology. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 305. Mutually Exclusive: Cannot register for NEUR 505 if student has credit for NEUR 305.
Course URL: www.ruf.rice.edu/~neurosci (http://www.ruf.rice.edu/~neurosci/)
NEUR 506 - CONCEPTS OF LEARNING AND MEMORY
Short Title: CONCEPT LEARNING&MEMORY
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is designed to introduce graduate students to the field of learning and memory. This field has exploded in the last few years with the introduction of new techniques, new approaches, and new concepts. The course will introduce the student to classical and modern concepts of learning and memory across all levels at which learning and memory is studied, including behavioral, anatomical, cellular, molecular and genetic levels of analysis. The basic concepts of learning and memory will also be related to known diseases of learning and memory. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 306. Mutually Exclusive: Cannot register for NEUR 506 if student has credit for NEUR 306.
Course URL: www.ruf.rice.edu/~neurosci (http://www.ruf.rice.edu/~neurosci/)

NEUR 508 - INTRODUCTION TO COGNITIVE NEUROSCIENCE
Short Title: INTRO COGNITIVE NEUROSCIENCE
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An introductory graduate-level overview of cognitive neuroscience. The course will cover basics in history, neuroanatomy, methods of cognitive neuroscience, sensation and perception, control of action, learning and memory, emotion, language, attention, drugs and cognition, impulsivity, cognitive control, social cognition, and neurobiology of disease. This course is usually taught at the Texas Medical Center. Instructor Permission Required. Cross-list: PSYC 574. Graduate/Undergraduate Equivalency: NEUR 308. Mutually Exclusive: Cannot register for NEUR 508 if student has credit for NEUR 308.

NEUR 510 - NEUROPHARMACOLOGY
Short Title: NEUROPHARMACOLOGY
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The objectives of this course are to examine how pharmacological agents have been used to elucidate the function of neurotransmitter systems in the central nervous system. In addition, the mechanism of some clinically effective drugs are reviewed in terms of the structure and function of the brain. Instructor Permission Required. Repeatable for Credit.

NEUR 515 - NEURAL DEVELOPMENT
Short Title: NEURAL DEVELOPMENT
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An advanced graduate course focusing on molecular genetic studies. Integrates molecular patterning of nervous system with developmental neuroscience using a cross-species approach, with an emphasis on the visual system. Topics include the biochemical and genetic basis for neural plasticity, neurotrophic factors in neural development, and the molecular mechanism of growth core guidance and synapse formation. Course taught at Baylor College of Medicine. Instructor Permission Required.
Course URL: www.ruf.rice.edu/~neurosci (http://www.ruf.rice.edu/~neurosci/)

NEUR 516 - SENSORY SYSTEMS
Short Title: SENSORY SYSTEMS
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A two-part course covering sensory transduction in audition, touch, and the chemical senses, and a detailed coverage of the visual system, including retinal structures and central pathways, phototransduction, receptive fields, and functional organization in the cortex. Course taught at Baylor College of Medicine. Instructor Permission Required.
Course URL: www.ruf.rice.edu/~neurosci (http://www.ruf.rice.edu/~neurosci/)

NEUR 517 - MECHANISMS OF MEMORY
Short Title: MECHANISM OF MEMORY
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Synthesizes our understanding of the mechanism of higher-order memory formation covering learning theory, cellular physiology and biochemistry and discussing memory disorders. Instructor Permission Required.
Course URL: www.ruf.rice.edu/~neurosci/ (http://www.ruf.rice.edu/~neurosci/)
NEUR 518 - INTRODUCTION TO NEUROSCIENCE METHODS
Short Title: INTRO TO NEUROSCIENCE METHODS
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course provides an introduction to the recording of signals from live neurons using microscopic and electrophysiologic methods. The course introduces the basics of instrumentation in the recording of real time biologic signals. The course is designed to run in parallel with a lab course. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 318. Mutually Exclusive: Cannot register for NEUR 518 if student has credit for NEUR 318.

NEUR 519 - INTRODUCTION TO NEUROSCIENCE METHODS LAB
Short Title: NEUROSCIENCE METHODS LAB
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is the laboratory course that is designed to run in parallel with the Introductory Neuroscience Methods lecture course. The lab is designed to give students hands-on experience applying the ideas for real time recording of microscopic and neurophysiological signals. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 319. Mutually Exclusive: Cannot register for NEUR 519 if student has credit for NEUR 319.

NEUR 520 - TEN UNSOLVED QUESTIONS IN NEUROSCIENCE
Short Title: TEN UNSOLVED QUESTIONS IN NEUR
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Neuroscience has yet to establish its general principles. This course introduces the major topics including memory, sleep, consciousness, information in neural activity, emotions, plasticity, and intelligence. Each week's lecture introduces a new problem, addressing why the question is important, its history, current thinking, and what we have learned. Course taught at Baylor College of Medicine. Instructor Permission Required. 
Course URL: [www.ruf.rice.edu/~neurosci](http://www.ruf.rice.edu/~neurosci)

NEUR 521 - ANALYSES OF NEURONAL FUNCTION
Short Title: ANALYSES OF NEURONAL FUNCTION
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will cover all basic aspects of the intrinsic electrophysiological properties of neurons and of synaptic transmission. It will also introduce principles of synaptic integration and plasticity. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 321. Mutually Exclusive: Cannot register for NEUR 521 if student has credit for NEUR 321.

NEUR 522 - BRAIN CELL BIOLOGY AND DEVELOPMENT
Short Title: BRAIN CELL BIOL & DEVELOPMENT
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Anatomy and development of the nervous system is designed to introduce the graduate student to the basic structure and function of the nervous system, and describe its rough development. It is intended for first year graduate students without any specific advanced knowledge of neuroscience. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 322. Mutually Exclusive: Cannot register for NEUR 522 if student has credit for NEUR 322.

NEUR 523 - GENETICS FOR NEUROSCIENCE
Short Title: GENETICS FOR NEUROSCIENCE
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course integrates genetics into neuroscience and is intended to teach neuroscience students how to tackle neurobiological problems using genetic strategies and tools. In the introduction, students will be exposed to the basic concepts in genetics. Strategies using model organisms from C.elegans to mice will be covered. Finally we will discuss genetic approaches in humans. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 323. Mutually Exclusive: Cannot register for NEUR 523 if student has credit for NEUR 323.
NEUR 525 - NEUROSCIENCE AND LAW
Short Title: NEUROSCIENCE AND LAW
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

Description: This course addresses how the modern understanding of brain function will intersect with the making of law, the punishment of criminals, and the development of new rehabilitation strategies. The readings will bring together a unique conjunction of neurobiology, legal scholarship, and policy making. The goals of the course will be to facilitate an understanding of the neurobiological underpinnings of behaviors that are subject to legal consequences for individuals and groups, and using this emerging base of scientific information to design modern, evidence-based policy.

NEUR 530 - THEORY, CONTENT, AND EXEUCTIION IN COGNITIVE NEUROSCIENCE
Short Title: COGNITIVE NEUROSCIENCE THEORY
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

Course Level: Graduate

Description: This course is designed to provide students with the skills necessary to become successful cognitive neuroscientists. Students will receive instruction in designing experiments and analyzing data, selecting research topics, relating theory to their work and how to say up to date on current research. This course is taught at the University of Texas Health Sciences Center. Instructor Permission Required. Repeatable for Credit.

NEUR 535 - CELLULAR NEUROPHYSIOLOGY
Short Title: CELLULAR NEUROPHYSIOLOGY
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

Course Level: Graduate

Description: This course provides an upper level graduate treatment on the physiology and biophysics of nerve cell signaling. Topics to be covered include measurement and analysis of single events from ion channels to synaptic vesicle fusion, synaptic transmission and the relationship between calcium signaling and synaptic vesicle dynamics, short-term synaptic plasticity, and postsynaptic integration. This course is taught at the University of Texas Health Sciences Center. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 335. Mutually Exclusive: Cannot register for NEUR 535 if student has credit for NEUR 335. Repeatable for Credit.

NEUR 540 - GRADUATE NEUROANATOMY
Short Title: GRADUATE NEUROANATOMY
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

Course Level: Graduate

Description: This course covers the molecular, cellular, and biochemical events that underlie neuronal function. Emphasis is placed on the basic chemistry and biology of cells residing the nervous system. The course also covers the structure and function of receptors, channels and pumps necessary for neuronal function and the neurochemistry of specific transmitter systems. The unique demand of neurons as specialized secretory cells is also covered. This course is taught at UTHSC. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 350. Mutually Exclusive: Cannot register for NEUR 550 if student has credit for NEUR 350. Repeatable for Credit.

NEUR 550 - MOLECULAR NEUROBIOLOGY
Short Title: MOLECULAR NEUROBIOLOGY
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

Course Level: Graduate

Description: This course covers a broad overview of the structure and function of the central nervous system. The general architecture of the nervous system and its function systems are present in a series of online exercise. MRIs of brain anatomy, as commonly presented in the scientific literature, will be presented using a computerized learning system. This course is taught at the University of Texas Health Sciences Center. Instructor Permission Required. Repeatable for Credit.

NEUR 554 - COGNITIVE NEUROSCIENCE LAB
Short Title: COGNITIVE NEUROSCIENCE LAB
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.

Course Level: Graduate

Description: The objective is to equip the students of PSYC/NEUR 362 the tools on how to apply cognitive neuroscience techniques to health or clinical topics and to investigate sensorimotor and cognitive measures in a human model. Instructor Permission Required. Cross-list: PSYC 564. Graduate/Undergraduate Equivalency: NEUR 364. Mutually Exclusive: Cannot register for NEUR 554 if student has credit for NEUR 364.
NEUR 576 - NEUROBIOLOGY OF DISEASE
Short Title: NEUROBIOLOGY OF DISEASE
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Covers some of the most important disorders of nervous system function. Exposes students to incidence, clinical manifestations, pathophysiology, current scientific models of causes/mechanisms of disorders of the adult brain: stroke, Parkinson's disease, Alzheimer's disease, seizure disorders, brain tumors, multiple sclerosis, amyotrophic lateral sclerosis, brain/spinal cord injury, addiction, depression, and schizophrenia. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 376. Mutually Exclusive: Cannot register for NEUR 576 if student has credit for NEUR 376.

NEUR 577 - NEUROANATOMY: FUNCTIONAL ORGANIZATION OF THE CENTRAL NERVOUS SYSTEM
Short Title: FUNCTIONAL NEUROANATOMY
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Anatomy and function of components of the nervous system with an emphasis on the central nervous system. This course is offered for Rice psychology graduate undergraduate students. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 377. Mutually Exclusive: Cannot register for NEUR 577 if student has credit for NEUR 377.

NEUR 578 - HIGHER BRAIN FUNCTION
Short Title: HIGHER BRAIN FUNCTION
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Aspects of systems' neuroscience related to higher brain function: (1) role of limbic system in higher brain functions, (2) role of the extended amygdala and the mesolimbic system in reward and addiction, (3) discussion of human brain processes including decision making, goal directed learning and representation of self and others. Course taught at Baylor College of Medicine. Instructor Permission Required. Mutually Exclusive: Cannot register for NEUR 578 if student has credit for NEUR 378.

Course URL: www.ruf.rice.edu/~neurosci (http://www.ruf.rice.edu/~neurosci/)

NEUR 579 - NEUROBIOLOGY OF SENSATION AND MOVEMENT
Short Title: NEUROBIO OF SENSATION/MOVEMENT
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Overview of basic systems neuroscience. The course covers sensory transductions, development, and motor programming. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 379. Mutually Exclusive: Cannot register for NEUR 579 if student has credit for NEUR 379.

NEUR 580 - PHYSIOLOGY OF VISUAL SYSTEM
Short Title: PHYSIOLOGY OF VISUAL SYSTEM
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Course provides an advanced level and comprehensive coverage of the physiology of the retina and visual cortex. Useful for graduate students and postdocs in neuroscience, physiology, biochemistry, cell biology, and molecular genetics who are interested in visual information processing and brain function. Offered even years only. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 381. Mutually Exclusive: Cannot register for NEUR 580 if student has credit for NEUR 381.

NEUR 582 - INTRODUCTION TO COMPUTATIONAL NEUROSCIENCE
Short Title: INTRO COMPUTATIONAL NEURSCI
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to methods and theories used to describe and understand neural information processing in the brain. Models covered will range from single neuron to networks for sensory, motor and learning tasks. Programming exercises will be done using Matlab. Additional coursework required beyond the undergraduate course requirements. Graduate/Undergraduate Equivalency: NEUR 382. Mutually Exclusive: Cannot register for NEUR 582 if student has credit for ELEC 382/NEUR 382.
NEUR 583 - COMPUTATIONAL NEUROSCIENCE AND NEURAL ENGINEERING
Short Title: COMP/NEUROSCIENCE/NEURAL ENGNR
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An introduction to the anatomy and physiology of the brain. Includes basic electrophysiology of nerve and muscle. Develops mathematical models of neurons, synaptic transmission and natural neural networks. Leads to a discussion of neuromorphic circuits which can represent neuron and neural network behavior in silicon. Recommendation: Knowledge of electrical circuits, operational amplifier circuits and ordinary differential equations. Involves programming Matlab. Cross-list: BIOE 583, ELEC 583. Graduate/Undergraduate Equivalency: NEUR 481. Recommended Prerequisite(s): Knowledge of basic electrical and operational amplifier circuits; and ordinary differential equations. Mutually Exclusive: Cannot register for NEUR 583 if student has credit for NEUR 481.

NEUR 584 - FUNDAMENTALS OF HUMAN NEUROIMAGING
Short Title: HUMAN NEUROIMAGING
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A survey of methods and results for human brain imaging. Describes the physical and physiological mechanisms of image formation. Provides examples from clinical and basic research, particularly in visual cortex. Emphasis on magnetic resonance imaging, but surveys other imaging modalities including PET, optical, and EEG/MEG course localization. Course taught at Baylor College of Medicine. Cross-list: ELEC 584. Graduate/Undergraduate Equivalency: NEUR 430. Mutually Exclusive: Cannot register for NEUR 584 if student has credit for NEUR 430.

NEUR 615 - THEORETICAL NEUROSCIENCE: FROM CELLS TO LEARNING SYSTEMS
Short Title: THEORETICAL NEUROSCIENCE
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: We present the theoretical foundations of cellular and systems neuroscience from distinctly quantitative point of view. We develop the mathematical and computational tools as they are needed to model, analyze, visualize and interpret a broad range of experimental data. Additional course work required beyond the undergraduate course requirements. Cross-list: CAAM 615, ELEC 588. Graduate/Undergraduate Equivalency: NEUR 415. Mutually Exclusive: Cannot register for NEUR 615 if student has credit for NEUR 415.

NEUR 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

Philosophy (PHIL)

PHIL 100 - PROBLEMS OF PHILOSOPHY
Short Title: PROBLEMS OF PHILOSOPHY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An introduction to philosophy through such fundamental problems as the basis of morality, the foundation of state authority, determinism and freedom, and the possibility of knowledge.

PHIL 101 - CONTEMPORARY MORAL ISSUES
Short Title: CONTEMPORARY MORAL ISSUES
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Examination of moral issues surrounding such topics as abortion, euthanasia, war, capital punishment, justice, and equality.

PHIL 103 - PHILOSOPHICAL ASPECTS OF COGNITIVE SCIENCE
Short Title: PHIL ASPECT COGNITIVE SCIENCE
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An examination of current research in cognitive science and its philosophical implications. Topics include whether the mind is a computational system, how the mind is organized, what relations minds bear to brains.
PHIL 104 - INTRODUCTION TO PHILOSOPHY OF SCIENCE
Short Title: INTRO TO PHILOSOPHY OF SCIENCE
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course examines core features of scientific method and philosophical accounts of scientific knowledge. Topics include: discovery, explanation, evidence, theories and models.

PHIL 105 - HISTORICAL INTRODUCTION TO PHILOSOPHY
Short Title: HIST INTRO TO PHILOSOPHY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Study and discussion of central issues of Western philosophy as developed by its original thinkers from the ancient Greeks to the twentieth century.

PHIL 106 - LOGIC
Short Title: LOGIC
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction to the formal theory of reasoning, which will be used to assess the validity of arguments in natural languages. Study of general properties of logical implication and logical truth.

PHIL 109 - PHILOSOPHY OF ART
Short Title: PHILOSOPHY OF ART
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An introduction to central issues in contemporary philosophy of art through the lens of artistic works and practice. Students investigate what constitutes a work of art, artistic representation, the nature of aesthetic qualities, and the relevance of artists' intentions to the evaluation of works art, with close attention to visual, performance, literary, and experimental art forms.

PHIL 111 - INTRODUCTION TO FEMINIST PHILOSOPHY
Short Title: INTRO TO FEMINIST PHILOSOPHY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Feminist philosophy both uses philosophical methods to investigate feminism, and critiques philosophy from a feminist perspective. This course introduces the student to feminist philosophy from historical and contemporary perspectives, investigating topics of both feminist and philosophical interest such as gender, sexuality, family, class, race, equality, justice, politics, science, and knowledge. Cross-list: SWGS 111.

PHIL 116 - INTRODUCTION TO THE PHILOSOPHY OF LAW
Short Title: INTRO TO THE PHILOSOPHY OF LAW
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The course will discuss the nature of law in general as well as discrete topics in legal philosophy. How is a legal rule different from an order backed by a terrorist threat? Is retroactive legislation legal? What are legal rights? Is there a general moral duty to obey the law?

PHIL 201 - HISTORY OF PHILOSOPHY I
Short Title: HISTORY OF PHILOSOPHY I
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Survey of the major philosophers and philosophical systems of ancient Greece, from Parmenides to the Stoics. Cross-list: CLAS 201, MDEM 201.

PHIL 202 - HISTORY OF PHILOSOPHY II
Short Title: HIST OF PHILOSOPHY II
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A survey of the history of philosophy from the 17th- to the 20th century. Leading philosophers discussed include Descartes, Locke, Hume, Kant, Mill, Nietzsche and Quine.
PHIL 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

PHIL 267 - PHILOSOPHY OF SEX AND LOVE
Short Title: PHILOSOPHY OF SEX AND LOVE
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will examine philosophical views of the nature and ethics of sex and love. The first half will focus on the historical development of the concept of love, from Plato to contemporary feminism. The second half will consider ethical debates over pornography, sex work, marriage, sexual consent, and more.

PHIL 301 - ANCIENT AND MEDIEVAL PHILOSOPHY
Short Title: ANCIENT & MEDIEVAL PHILOSOPHY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics in the history of philosophy from the 4th century B.C. through the 14th century. Graduate students require permission of instructor. Cross-list: CLAS 301, MDEM 301. Graduate/Undergraduate Equivalency: PHIL 501. Mutually Exclusive: Cannot register for PHIL 301 if student has credit for MDEM 481. Repeatable for Credit.

PHIL 302 - MODERN PHILOSOPHY
Short Title: MODERN PHILOSOPHY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Examination of themes or authors in 17th- and 18th-century philosophy. Topics vary from year to year. Normally offered every year. Graduate/Undergraduate Equivalency: PHIL 502. Recommended Prerequisite(s): Majors should take PHIL 202 before PHIL 302. For non-majors one previous course in philosophy is recommended. Mutually Exclusive: Cannot register for PHIL 302 if student has credit for PHIL 502. Repeatable for Credit.

PHIL 303 - THEORY OF KNOWLEDGE
Short Title: THEORY OF KNOWLEDGE
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines the question: What is knowledge, and how is it possible that we have it? Topics include: analysis of knowledge, justification and evidence, skeptical challenges, and relativism.

PHIL 304 - METAPHYSICS
Short Title: METAPHYSICS
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Examination of metaphysical theories in the works of historical and contemporary thinkers. Topics may include: free will, the identity of persons over time, causation, possibility and necessity, design and chance, the nature of existence, the nature of time. Recommended prerequisite(s): A previous course in philosophy.

PHIL 305 - MATHEMATICAL LOGIC
Short Title: MATHEMATICAL LOGIC
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: We study formal languages and methods for assessing correctness of arguments, including a brief look at modal and many-valued logics. We also consider their relations to natural languages and reflect on the techniques required to prove theorems about languages. A previous logic course is helpful, though the course is self-contained. Graduate/Undergraduate Equivalency: PHIL 505. Mutually Exclusive: Cannot register for PHIL 305 if student has credit for PHIL 505.
PHIL 306 - ETHICS
Short Title: ETHICS
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course deals with fundamental questions of value and morality-questions such as: What sort of life is best? What kind of person is it best to be? What does morality require of us? It also deals with important second-order questions about these fundamental questions-for example: Can morality be justified? How can we know what's right or good? Is there moral truth? What is the relation between morality and self-interest? Readings are drawn from both classical and contemporary sources.

PHIL 307 - SOCIAL AND POLITICAL PHILOSOPHY
Short Title: SOCIAL & POLITICAL PHILOSOPHY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines some philosophical problems raised by society and the state. Topics to be discussed include the sources of political authority, the justification of punishment, the significance of national boundaries, and the distribution of wealth.

PHIL 308 - CONTINENTAL PHILOSOPHY
Short Title: CONTINENTAL PHILOSOPHY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course treats topics of central importance to general philosophy of science. We ask what makes something a scientific explanation, what is required for observations to support (confirm) scientific theories, the nature of evidence, and how experiments relate to theories and models of the world. Topics covered include logical empiricism, the problem of induction, theory-laden observation, relativism, and the role of social values in science. Repeatable for Credit.

PHIL 309 - PHILOSOPHY OF BIOLOGY
Short Title: PHILOSOPHY OF BIOLOGY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines philosophical issues that emerge in biological science, with emphasis on evolutionary theory, genetics and development, and systems biology. Recommended Prerequisite(s): BIOS 201 and BIOS 202.

PHIL 311 - PHILOSOPHY OF RELIGION
Short Title: PHILOSOPHY OF RELIGION
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Examination of God's existence, the problem of evil, the relation between faith and reason, the meaning of death, the relation between religion and morality, and tolerance/respect for differing religions.

PHIL 312 - PHILOSOPHY OF MIND
Short Title: PHILOSOPHY OF MIND
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Inquiry into the nature of mind. Questions include: how should we conceive of the relationship of mind and body? What is consciousness, and how might it be explained? How can mental states be causes? Can one's mind and its contents die outside one's brain? Recommended Prerequisite(s): One course in philosophy or permission of the instructor.

PHIL 313 - PHILOSOPHY OF SCIENCE
Short Title: PHILOSOPHY OF SCIENCE
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course treats topics of central importance to general philosophy of science. We ask what makes something a scientific explanation, what is required for observations to support (confirm) scientific theories, the nature of evidence, and how experiments relate to theories and models of the world. Topics covered include logical empiricism, the problem of induction, theory-laden observation, relativism, and the role of social values in science. Repeatable for Credit.
PHIL 314 - THE PHILOSOPHY OF MEDICINE
Short Title: THE PHILOSOPHY OF MEDICINE
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The biomedical sciences, the practice of medicine, and health care policy employ concepts of health, disease, disability, and defect in explanatory accounts, intermixing factual claims with moral and other evaluations. This course explores the interplay of evaluation and explanation in medicine's models of disease and health.

PHIL 315 - ETHICS, MEDICINE, AND PUBLIC POLICY
Short Title: ETHICS, MEDICINE & PUB POLICY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The relationship between theories of justice and accounts of the proper allocation of health care is explored. The first half examines Rawls' 'Theory of Justice', Nozick's 'Anarchy, State, and Utopia', and other accounts of justice and health care. The second addresses specific problems in the allocation of health care resources.

PHIL 316 - PHILOSOPHY OF LAW
Short Title: PHILOSOPHY OF LAW
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Examination of fundamental philosophical problems in criminal law, property law, contract law and the law of torts.

PHIL 317 - ETHICS AND EXISTENCE
Short Title: ETHICS AND EXISTENCE
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An examination of the concept of ethical obligation from an existential point of view. Readings from Kierkegaard, Husserl, Heidegger, Sartre, Derrida, Levinas, and Apel.

PHIL 319 - FEMINIST PHILOSOPHY
Short Title: FEMINIST PHILOSOPHY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Feminism investigates every kind of boundary and identity, including sex, race, and class, finding and questioning them. We will explore how feminists have reshaped traditional philosophical debates about knowledge, ethics, science, politics, and technology. Class will tend away from traditional lectures and exams, and toward active independent thinking. Cross-list: SWGS 319. Recommended Prerequisite(s): Either one previous philosophy course, or enrollment in the CSWG&S minor, or instructor approval.

PHIL 326 - HISTORY OF ETHICS
Short Title: HISTORY OF ETHICS
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An introduction to the major issues of ethical theory through the reading and discussion of such classical figures as Plato, Aristotle, the Stoics, the Epicureans, St. Augustine, St. Thomas, Maimonides, Bishop Butler, David Hume, Adam Smith, J.S. Mill, and I. Kant. Graduate/Undergraduate Equivalency: PHIL 526. Recommended Prerequisite(s): One previous course in Philosophy. Mutually Exclusive: Cannot register for PHIL 326 if student has credit for PHIL 526.

PHIL 327 - HISTORY OF SOCIAL AND POLITICAL PHILOSOPHY
Short Title: HIST SOCIAL & POLITICAL PHILOS
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A survey of classic texts in the history of social and political philosophy, from Plato to Machiavelli to Mill.

PHIL 331 - MORAL PSYCHOLOGY
Short Title: MORAL PSYCHOLOGY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An examination of the role of intellect, emotion, and character as they contribute to the moral (and immoral) life, and as they pertain to rationality and moral responsibility.
PHIL 334 - ACHIEVEMENT AND THE MEANING OF LIFE
Short Title: ACHIEVEMENT & MEANING OF LIFE
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course looks at the value of achievements in a rigorous philosophical manner. We examine approaches to the meaning of life and the value of achievement in the works of great philosophers, current philosophy, and draw from literature, history, current events, and psychology.

PHIL 335 - ADVANCED TOPICS IN VALUE THEORY
Short Title: ADV TOPICS IN VALUE THEORY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Intensive examination of a topic of contemporary or historical interest in ethics or social and political philosophy. Graduate/Undergraduate Equivalency. PHIL 535. Recommended prerequisite(s): One course in philosophy or permission of the instructor. Mutually Exclusive: Cannot register for PHIL 335 if student has credit for PHIL 535.

PHIL 336 - TOPICS IN MEDICAL ETHICS
Short Title: TOPICS IN MEDICAL ETHICS
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A philosophical examination of some of the fundamental issues in clinical ethics, including informed consent, competency, confidentiality, end of life decision making, the definition of death, allocating scarce medical resources, and the role of economic analysis in clinical decision making. Readings drawn from the clinical and philosophical literature. Effective May 15, 2019, this course does not carry D1 credit. Graduate/Undergraduate Equivalency: PHIL 536. Mutually Exclusive: Cannot register for PHIL 336 if student has credit for PHIL 536.

PHIL 338 - METAETHICS
Short Title: METAETHICS
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Metaethics studies higher-order questions about morality. Its questions include: What reasons do we have to do the right thing? What do claims about rightness and goodness mean? Can those claims be true or false? Are there objective moral truths, and if so, how can we know them?

PHIL 339 - DEATH AND DYING: METAPHYSICS AND ETHICS
Short Title: DEATH AND DYING
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: How are we to respond to the fact of death? This course examines the moral, metaphysical and personal issues surrounding the death of persons. Readings from analytic philosophy and the bioethics literature.

PHIL 341 - TOPICS IN PHILOSOPHY OF MIND
Short Title: TOPICS IN PHILOSOPHY OF MIND
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A focused examination of a selected topic in the philosophy of mind. Topics vary each semester and might include the nature of consciousness, mental representation, rationality, and/or the various interconnections between perception, emotion, thought and action. For details in a specific year, consult with the instructor and/or department. Repeatable for Credit.

PHIL 352 - PHILOSOPHY OF PSYCHOLOGY
Short Title: PHILOSOPHY OF PSYCHOLOGY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course covers a selection of central issues in the philosophy of psychology. Questions include: Can the mind be studied scientifically? What role, if any, does introspection play in gathering data? Are there any psychological laws? How does psychological evidence bear on philosophical issues - such as the existence of free will and moral responsibility? Repeatable for Credit.

PHIL 353 - PHILOSOPHY OF LANGUAGE
Short Title: PHILOSOPHY OF LANGUAGE
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Philosophical investigation of relations among language, thought, and reality with emphasis on what makes a string of symbols and sounds meaningful. Recommended prerequisite(s): One course in philosophy or permission of the instructor.
PHIL 355 - PHILOSOPHICAL TOPICS IN ADVANCED LOGIC

Short Title: PHILOSOPHICAL TOPICS IN ADVANCED LOGIC
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PHIL 305 or PHIL 505
Description: Various systems of formalization for modalities, tenses and other intentional concepts are studied syntactically and semantically. Students use and compare these systems and evaluate their strengths and limits. These provide examples for discussion of questions such as: What is a logical constant? What is the scope of logic?
Course URL: www.owlnet.rice.edu/~phil355

PHIL 357 - INCOMPLETENESS, UNDECIDABILITY, AND COMPUTABILITY

Short Title: INCOMPL, UNDECIDED&COMPUTBLTY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Proofs of Godel's Incompleteness Theorems for number theory in several forms and by various methods, as well as development of several definitions of computability for number-theoretic functions, which are then shown to be equivalent. Includes proof of the unsolvability of the Halting Problem and analysis of Church's thesis, as well as exploration of the extension of the concept of computability to real-valued functions. Frequent misunderstandings and misrepresentations of the theorems are analyzed.

PHIL 358 - PHILOSOPHY OF NEUROSCIENCE

Short Title: PHILOSOPHY OF NEUROSCIENCE
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores various philosophical questions raised by neuroscience. How do we investigate and explain the brain? Do psychological explanations ultimately ‘reduce’ to neuroscience? Are mental states nothing more than electro-chemical states of the brain? Does the brain literally perform computations on internal representations? Could neuroscience ever explain consciousness? Repeatable for Credit.

PHIL 359 - ANIMAL MINDS

Short Title: ANIMAL MINDS
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will examine various philosophical questions raised by the science of animal cognition: What is it to have a mind? How can we learn about animal minds? Are animals conscious? Do they have beliefs or concepts? What does this tell us about the nature and value of animal minds? Repeatable for Credit.

PHIL 390 - TOPICS IN PHILOSOPHY

Short Title: TOPICS IN PHILOSOPHY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics may vary. Please consult with department for additional information. Repeatable for credit with consent of the instructor. Instructor Permission Required. Repeatable for Credit.

PHIL 401 - INDEPENDENT READING I

Short Title: INDEPENDENT READING I
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Course for undergraduate students to pursue independent research projects under direction of a philosophy department faculty member. Instructor Permission Required. Repeatable for Credit.

PHIL 402 - INDEPENDENT READING II

Short Title: INDEPENDENT READING II
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: See PHIL 401. Instructor Permission Required. Repeatable for Credit.
PHIL 407 - UNDERGRADUATE RESEARCH SEMINAR
Short Title: UG RESEARCH SEMINAR
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Emphasis is on the skills of critical reading, careful discussion, writing clear and well-argued essays, and making lucid and engaging oral presentations. The course is organized around a family of topics: students also, in consultation with the instructor, select issues for independent research, and produce a final essay and presentation. Repeatable for Credit.

PHIL 411 - SENIOR THESIS
Short Title: SENIOR THESIS
Department: Philosophy
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Independent research course for undergraduate philosophy majors who wish to write a senior thesis and become eligible for honors in the major. Students may enroll in PHIL 411 only with consent of a faculty advisor and the department, and only if they intend to enroll in PHIL 412 as well. Senior Thesis is a year-long research course. Instructor Permission Required.

PHIL 412 - SENIOR THESIS
Short Title: SENIOR THESIS
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Independent research course for undergraduate philosophy majors who wish to write a senior thesis and become eligible for honors in the major. Students may enroll in PHIL 412 only with consent of a faculty advisor and the department, and only if they intend to enroll in PHIL 411 as well. Senior Thesis is a year-long research course. Instructor Permission Required.

PHIL 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

PHIL 501 - ANCIENT AND MEDIEVAL PHILOSOPHY
Short Title: ANCIENT & MEDIEVAL PHILOSOPHY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics in the history of philosophy from the 4th century B.C. through the 14th century. Graduate/Undergraduate Equivalency: PHIL 301. Repeatable for Credit.

PHIL 502 - SEMINAR IN MODERN PHILOSOPHY
Short Title: SEMINAR IN MODERN PHILOSOPHY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate level examination of topics and figures of 17th and 18th century history of philosophy. Topics vary from year to year. Graduate/Undergraduate Equivalency: PHIL 302. Mutually Exclusive: Cannot register for PHIL 502 if student has credit for PHIL 302. Repeatable for Credit.

PHIL 503 - SEMINAR IN EPISTEMOLOGY
Short Title: SEMINAR IN EPISTEMOLOGY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

PHIL 504 - SEMINAR IN METAPHYSICS
Short Title: SEMINAR IN METAPHYSICS
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

PHIL 505 - MATHEMATICAL LOGIC
Short Title: MATHEMATICAL LOGIC
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Philosophy. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A version of PHIL 305 for philosophy graduate students which includes further reading of material on philosophy of logic. Graduate/Undergraduate Equivalency: PHIL 305. Mutually Exclusive: Cannot register for PHIL 505 if student has credit for PHIL 305.
PHIL 506 - SEMINAR IN ETHICS
Short Title: SEMINAR IN ETHICS
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

PHIL 507 - SEMINAR IN SOCIAL AND POLITICAL PHILOSOPHY
Short Title: SEM SOCIAL & POLITICAL PHILO
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

PHIL 508 - SEMINAR IN CONTINENTAL PHILOSOPHY
Short Title: SEM CONTINENTAL PHILOSOPHY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The study of selected topics and figures in 20th and 21st century European philosophy. Repeatable for credit with consent of the instructor. Repeatable for Credit.

PHIL 510 - SEMINAR IN PHENOMENOLOGY
Short Title: PHENOMENOLOGY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar devoted to selected historical and contemporary work in the phenomenological tradition, focused each year on a specific philosophical topic such as meaning, truth, action, embodiment, ethics, other minds, etc. Repeatable for Credit.

PHIL 512 - SEMINAR PHILOSOPHY OF MIND
Short Title: SEMINAR PHILOSOPHY OF MIND
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

PHIL 513 - SEMINAR IN PHILOSOPHY OF SCIENCE
Short Title: SEM PHILOSOPHY OF SCIENCE
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Focused consideration of either core issues in general philosophy of science (e.g. explanation, experiment, confirmation, realism vs. anti-realism, values in science) or special topics of current interest in the field.

PHIL 516 - SEMINAR IN PHILOSOPHY OF LAW
Short Title: SEMINAR IN PHILOSOPHY OF LAW
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The seminar will concentrate on one or more of such central topics in the philosophy of law as the normative foundations of contracts, criminal responsibility, theories of corrective justice, and the right to property ownership.

PHIL 523 - SEMINAR IN KANT
Short Title: SEMINAR IN KANT
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

PHIL 524 - SEMINAR IN HEGEL
Short Title: SEMINAR IN HEGEL
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

PHIL 526 - HISTORY OF ETHICS
Short Title: HISTORY OF ETHICS
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate version of PHIL 326. Special graduate student requirements include additional readings and the writing of a term research paper. Graduate/Undergraduate Equivalency: PHIL 326. Mutually Exclusive: Cannot register for PHIL 526 if student has credit for PHIL 326.

PHIL 530 - SEMINAR IN HISTORY OF ANALYTIC PHILOSOPHY
Short Title: SEM HIST ANALYTIC PHILOSOPHY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Course URL: www.owlnet.rice.edu/~phil530 (http://www.owlnet.rice.edu/~phil530/)
PHIL 531 - SEMINAR IN MORAL PSYCHOLOGY
Short Title: MORAL PSYCHOLOGY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A study of the philosophical issues raised by moral agency. Topics to be discussed may include reason and its relation to motivation and desire, character, responsibility, weakness of will, self-deception, and the nature of the self.

PHIL 534 - LIBERALISM
Short Title: LIBERALISM
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An examination of the philosophical foundations of liberalism, with emphasis on the thesis that government should be neutral toward competing conceptions of the good life.

PHIL 535 - ADVANCED TOPICS IN VALUE THEORY
Short Title: ADV TOPICS IN VALUE THEORY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Intensive examination of a topic of contemporary or historical interest in ethics or social and political philosophy. Graduate/Undergraduate Equivalency: PHIL 335. Mutually Exclusive: Cannot register for PHIL 535 if student has credit for PHIL 335.

PHIL 536 - TOPICS IN MEDICAL ETHICS
Short Title: TOPICS IN MEDICAL ETHICS
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An examination of the theoretical foundations of bioethics emphasizing principialism, utilitarianism, Kantianism, contractarianism, medicalism, post-modernism, and casuistry. Graduate/Undergraduate Equivalency: PHIL 336. Mutually Exclusive: Cannot register for PHIL 536 if student has credit for PHIL 336.

PHIL 542 - TOPICS IN PHILOSOPHY OF MIND
Short Title: TOPICS IN PHILOSOPHY OF MIND
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An in-depth look at different topics in contemporary philosophy of mind. Some sample topics: consciousness, mental representation, innateness, modularity, and the role of language in thought. Repeatable for credit with consent of the instructor. Repeatable for Credit.

PHIL 553 - SEMINAR IN PHILOSOPHY OF LANGUAGE
Short Title: SEM PHILOSOPHY LANGUAGE
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics may vary: Please consult with the department for additional information. Repeatable for Credit.

PHIL 598 - ADVANCED INDEPENDENT READING
Short Title: ADVANCED INDEPENDENT READING
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Enrollment is limited to students with a major in Philosophy. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Directed reading and research. Repeatable for Credit.

PHIL 599 - ADVANCED INDEPENDENT READING
Short Title: ADVANCED INDEPENDENT READING
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Enrollment is limited to students with a major in Philosophy. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Directed reading and research. Repeatable for Credit.
PHIL 652 - MASTERS THESIS RESEARCH
Short Title: MASTERS THESIS RESEARCH
Department: Philosophy
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to students with a major in Philosophy. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Research course for graduate students preparing a Masters thesis. Repeatable for Credit.

PHIL 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Philosophy
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

PHIL 701 - READING AND RESEARCH FOR QUALIFYING EXAMINATION AND THESIS PROPOSAL
Short Title: RESEARCH QUALIFYING & THESIS
Department: Philosophy
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to students with a major in Philosophy. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Reading course in preparation for the comprehensive examination and thesis proposal defense. Repeatable for Credit.

PHIL 702 - READING AND RESEARCH FOR QUALIFYING EXAMINATION AND THESIS PROPOSAL
Short Title: RESEARCH QUALIFYING & THESIS
Department: Philosophy
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to students with a major in Philosophy. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Reading course in preparation for the comprehensive examination and thesis proposal defense. Repeatable for Credit.

PHIL 800 - RESEARCH AND THESIS
Short Title: RESEARCH AND THESIS
Department: Philosophy
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to students with a major in Philosophy. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

Photography (FOTO)

FOTO 200 - PHOTOGRAPHY IN THE COMMUNITY
Short Title: PHOTOGRAPHY IN THE COMMUNITY
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course offers students the opportunity to use photography as a means to interact with the community through public schools and other institutions. After receiving instruction in digital photography, students will go into the community to conceive and execute original projects.

FOTO 202 - PHOTOGRAPHY IN THE COMMUNITY 2 - CULTURAL OUTREACH AND DOCUMENTATION
Short Title: PHOTOGRAPHY IN THE COMMUNITY 2
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Intensive Learning Experience
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course offers students opportunities to use photography as a means to interact with communities far beyond the Rice campus, even to communities outside the country. After receiving instruction in digital photography, students will execute original projects intended to bring quality instruction in photography and/or provide important photo documentation to foreign communities. Instructor Permission Required. Repeatable for Credit.

FOTO 205 - INTRODUCTION TO PHOTOGRAPHY
Short Title: INTRODUCTION TO PHOTOGRAPHY
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction to black and white photography through exploration of light-sensitive materials, film and digital cameras. Assignments include viewing analysis, discussion, and writing about pictures to improve visual awareness, technical skills, and understanding of meaning in photography's continuing history. Final roster to be determined by the instructor on the first day of class.
FOTO 206 - PHOTOGRAPHY II
Short Title: PHOTOGRAPHY II
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Continued exploration of the basic materials and processes of the photographic medium with an emphasis on digital processes. Includes viewing, analysis, and discussion of the medium's history and current trends. Space in studio class is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor.

FOTO 210 - BEGINNING DIGITAL PHOTOGRAPHY
Short Title: BEGINNING DIGITAL PHOTOGRAPHY
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction to digital photography through exploration of light, camera, and computer. Assignments include looking, taking, discussing, adjusting, printing and writing about photographs. The class is a balance of visual awareness, technical skills and meaning in the context of photography’s continuing history. Cross-list: HART 209.

FOTO 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

FOTO 263 - EPISODES IN THE HISTORY OF PHOTOGRAPHY: FROM INVENTION TO THE PRESENT
Short Title: HISTORY OF PHOTOGRAPHY
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This class aims to examine the history of photography in the nineteenth century as it develops within a number of specific thematics, from medium's conception in the late eighteenth-century through to debates in the twentieth century about photography's relationship to artistic and social issues. Instructor Permission Required. Cross-list: HART 263. Mutually Exclusive: Cannot register for FOTO 263 if student has credit for HART 363.

FOTO 295 - SPECIAL PROBLEMS IN PHOTOGRAPHY
Short Title: SPEC PROB PHOTOGRAPHY
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Study of problems at the introductory level in creative art. Topics may vary. Please consult with department for additional information. May be used in awarding transfer credit. Instructor Permission Required. Repeatable for Credit.

FOTO 310 - INTERMEDIATE DIGITAL PHOTOGRAPHY
Short Title: INTERMEDIATE DIGITAL PHOTO
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): FOTO 205 or FOTO 210
Description: A continuation of FOTO 210, which is a prerequisite for this course. The emphasis is on making photographs as distinct from taking them. The course explores the malleability of the digital medium through the use of digital tools in Adobe Photoshop, which is provided on the computers in the VADA Digital Lab in the Rice Media Center. Students must provide their own digital camera.

FOTO 332 - CRITICAL STUDIES OF MULTIMEDIA ARTS
Short Title: CRITICAL STU OF MULTIMEDIA ART
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Critical Studies for Multimedia Arts is a course designed to familiarize art and non-art majors with key theories and core concepts in modern and contemporary multimedia art. Students will examine a broad spectrum of specific topics in contemporary artwork related conceptually to: space/time; bodies and performance; 'sculptural' studies in an expanded field and video & film space. This is a multi-dimensional class consisting of guest lectures, artist-speakers, and field trips to local museums, galleries and alternative art spaces. This course will include discussions on readings, writings and special projects. This promises to be a fun and thought-provoking class and is designed to enhance studio practice and encourage interest in the visual arts. Cross-list: ARTS 332, FILM 332, THEA 332.
FOTO 366 - THE ROAD AS EXPERIENCE AND METAPHOR IN PHOTOGRAPHIC PRACTICE
Short Title: ROAD TRIP PHOTOGRAPHY
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): FOTO 205 or FOTO 210
Description: A search for America and the self through the written and visual literature of moving through the American landscape. This course will search for motifs to emulate in small formats and short distances, as preambles to the culmination recorded in a self-designed book of each personal odyssey. Repeatable for Credit.

FOTO 383 - PHOTOGRAPHY BOOKMAKING
Short Title: PHOTOGRAPHY BOOKMAKING
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARTS 205 or FOTO 205 or FOTO 210 or HART 209 or FOTO 310
Description: Intermediate problems in photography culminating in the production of an original book. Students will pursue a project involving either film-based or digital photography, edit, layout, and then produce their own book. Students will participate in scheduled critiques. Priority will be given to students who have taken two or more semesters of photography at Rice.

FOTO 385 - PHOTOGRAPHY SEMINAR
Short Title: PHOTOGRAPHY SEMINAR
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Advanced problems in photography including, but not limited to, color and black and white film-based photography, view camera, and alternative processes. Students will be given advanced assignments tailored to the format and medium they wish to pursue will participate in scheduled critiques of the full class. Space in the class is limited. Registration does not guarantee a place in the course. Priority will be given to students who have taken two or more semesters of photography at Rice. The class roster will be formulated by the instructor on the first day of class. Repeatable for Credit.

FOTO 390 - VISUALIZING NATURE
Short Title: VISUALIZING NATURE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An experimental course combining the scientific disciplines of the earth sciences with the artistic disciplines of creative photography to study the natural landscape and related ecosystems. The course will combine classroom lectures and laboratory demonstrations in geoscience with classes in the use of digital and film-based cameras and illustrated lectures on recognized achievements in landscape photography. Extensive field trips will be scheduled. Students will travel frequently, at times in pairs, other times in larger groups and as a full class, accompanied by one or both professors. The budget for the course includes funding both for travel and for photography expenses. Instructor Permission Required. Cross-list: ESCI 380.

FOTO 395 - SPECIAL PROBLEMS IN PHOTOGRAPHY
Short Title: SPEC PROB: PHOTOGRAPHY
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of problems in creative art. Topics may vary. Please consult with the department for additional information. May be used in awarding transfer credit. Prerequisite: permission of instructor. Instructor Permission Required. Repeatable for Credit.

FOTO 410 - ADVANCED DIGITAL PHOTOGRAPHY
Short Title: ADVANCED DIGITAL PHOTOGRAPHY
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A continuation of FOTO 310, this course offers advanced photo-art students a chance to develop a personal body of artwork supported by digital image processing. Student-driven projects will influence the choice of technical topics covered in class. For example, some techniques covered may include digital animation, digital painting, 3D compositing, or master printing. Students will be expected to critique their work and that of other artists shown on Rice campus and in Houston. Students entering the course should be proficient in the use of Adobe Photoshop. A semester-long project is due at the end of the class.
FOTO 454 - SPECIAL PROBLEMS - PHOTOGRAPHY
Short Title: SPECIAL PROBLEMS-PHOTOGRAPHY
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of advanced problems in creative art. Topics may vary. Please consult with the department for additional information. May be used in awarding transfer credit. Instructor Permission Required. Repeatable for Credit.

FOTO 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

**Physics (PHYS)**

PHYS 100 - EXPLORING PHYSICS
Short Title: EXPLORING PHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction to concepts, methods, debates, and discoveries of physics, with a theme to be chosen from one of many fields of modern physics research. Designed for students interested in understanding science. This includes both science and non-science majors.

PHYS 101 - MECHANICS (WITH LAB)
Short Title: MECHANICS (WITH LAB)
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Corequisite: PHYS 103
Description: A calculus-based introduction to mechanics. Includes classes and lab exercises on kinematics, Newton’s Laws, work and energy, conservation laws and rotational motion. Primarily for physical science and engineering students. May receive credit for only one of PHYS 101, 111, 125, AP-Physics-B (PHYS 141 and 142) and AP Physics-C MECH. Students must register for PHYS 103.

PHYS 102 - ELECTRICITY & MAGNETISM (WITH LAB)
Short Title: ELECTRICITY&MAGNETISM W/LAB
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Corequisite: PHYS 104
Description: A calculus-based introduction to electricity and magnetism. Includes classes and lab exercises on electric and magnetic fields, Maxwell’s equations in integral form, and AC and DC circuits. Primarily for physical science and engineering students. May receive credit for only one of PHYS 102, 112, 126, AP Physics-B (PHYS 141 and 142) and AP Physics-C E&M. Students must also register for PHYS 104.

PHYS 103 - MECHANICS DISCUSSION
Short Title: MECHANICS DISCUSSION
Department: Physics and Astronomy
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 0
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Corequisite: PHYS 101
Description: Small group discussion section to extend and reinforce concepts presented in PHYS 101. Students must also register for PHYS 101.

PHYS 104 - ELECTRICITY AND MAGNETISM DISCUSSION
Short Title: E & M DISCUSSION
Department: Physics and Astronomy
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 0
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Corequisite: PHYS 102
Description: Small group discussion section to extend and reinforce concepts presented in PHYS 102. Students must also register for PHYS 102.

PHYS 111 - HONORS MECHANICS (WITH LAB)
Short Title: HONORS MECHANICS (WITH LAB)
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A more intensive treatment of topics covered in PHYS 101, intended for physical science and engineering students with strong high school backgrounds in physics and particularly calculus. May receive credit for only one of PHYS 101, 111, 125, AP Physics-B (PHYS 141 and 142) and AP Physics-C MECH.
PHYS 112 - HONORS ELECTRICITY & MAGNETISM (WITH LAB)
Short Title: HONORS E&M (WITH LAB)
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A more intensive treatment of topics covered in PHYS 102, intended for physical science and engineering students with strong high school backgrounds in physics and particularly calculus. May receive credit for only one of PHYS 102, 112, 126, AP Physics-B (PHYS 141 and 142 ), and AP Physics-C, E&M.

PHYS 116 - SEMINAR IN PHYSICS AND ASTRONOMY AT RICE AND BEYOND
Short Title: SEMINAR IN PHYS & ASTRO @ RICE
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This half-semester seminar course will meet in the first half of the Spring semester to introduce prospective and current science and engineering majors to the exciting research in physics and astronomy at Rice and beyond. The course will provide students with the context to think about how the facts presented in physics and astronomy textbooks are applied to real-world research. Undergraduate students in a small group will meet weekly with a graduate student to explore a published research article by a local lab, learning about what was done and why it was important. Toward the end of the course, the group will tour the lab that produced the featured article. All students are eligible to enroll in PHYS 116 regardless of the intended area of study.

PHYS 125 - GENERAL PHYSICS (WITH LAB)
Short Title: GENERAL PHYSICS (WITH LAB)
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A calculus-based survey of mechanics primarily intended for bioscience and premedical students. Includes classes and lab exercises on kinematics, Newton's Laws, work and energy, rotational motion, fluids, oscillations and waves. May receive credit for only one of PHYS 101, 111, 125, AP Physics-B (PHYS 141 and 142), and AP Physics-C, MECH.

PHYS 126 - GENERAL PHYSICS II (WITH LAB)
Short Title: GENERAL PHYSICS II (WITH LAB)
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A calculus-based survey of E&M and optics primarily intended for bioscience and premedical students. Includes classes and lab exercises on wave and ray optics, electric field and potential, magnetic fields and induction, and DC circuits. May receive credit for only one of PHYS 102, 112, 126, AP Physics-B (PHYS 141 and 142), and AP Physics-C, E&M.

PHYS 141 - CONCEPTS IN PHYSICS I
Short Title: CONCEPTS IN PHYSICS I
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: For AP credit only. May receive credit for only one of PHYS 101, PHYS 111, PHYS 125, AP Physics-B, and AP Physics-C (Mech).

PHYS 142 - CONCEPTS IN PHYSICS II
Short Title: CONCEPTS IN PHYSICS II
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: For AP credit only. May receive credit for only one of PHYS 102, PHYS 112, PHYS 126, AP Physics-B, and AP Physics-C (E&M).

PHYS 143 - PHYSICS FOR CITIZENSHIP
Short Title: PHYSICS FOR CITIZENSHIP
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Physics is critical to our understanding of nuclear weapons, radiation, electronics, energy and global warming. The most interesting and important topics in physics, with applications to current events will be presented. Topics covered may include energy and conservation, radioactivity, nuclear physics, the Theory of Relativity, lasers, explosions and quantum physics.
PHYS 144 - THE PHYSICS OF MUSIC AND SOUND
Short Title: THE PHYSICS OF MUSIC AND SOUND
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course explores our scientific understanding of sound and music by studying the properties of sound and its production by a variety of musical instruments. Additional topics include an analysis of musical scales, the physiology of hearing, and the technology of sound reproduction. For non-science and non-engineering majors.

PHYS 201 - WAVES, LIGHT, AND HEAT
Short Title: WAVES, LIGHT, AND HEAT
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An introductory course in modern physics. Topics include special relativity, early quantum theory, quantum mechanics, atomic physics, statistical physics, nuclear and particle physics. The course is descriptive in nature with emphasis on phenomena rather than on calculations.

PHYS 202 - MODERN PHYSICS
Short Title: MODERN PHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): (PHYS 101 or PHYS 111 or PHYS 125 or PHYS 141) and (PHYS 102 or PHYS 112 or PHYS 126 or PHYS 142)
Description: An introductory course in modern physics. Topics include special relativity, early quantum theory, quantum mechanics, atomic physics, statistical physics, nuclear and particle physics. The course is descriptive in nature with emphasis on phenomena rather than on calculations.

PHYS 231 - ELEMENTARY PHYSICS LAB
Short Title: ELEMENTARY PHYSICS LAB
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Laboratory on waves, optics and modern physics.

PHYS 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory, Internship/Practicum, Independent Study, Laboratory, Lecture, Seminar
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

PHYS 301 - INTERMEDIATE MECHANICS
Short Title: INTERMEDIATE MECHANICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PHYS 201
Description: Classical mechanics and appropriate mathematical methods. Emphasis on problem solving.

PHYS 302 - INTERMEDIATE ELECTRODYNAMICS
Short Title: INTERMEDIATE ELECTRODYNAMICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PHYS 201
Description: Classical electrodynamics and appropriate mathematical methods. Emphasis on problem solving.

PHYS 311 - INTRODUCTION TO QUANTUM PHYSICS I
Short Title: INTRO TO QUANTUM PHYSICS I
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PHYS 202
Description: Fundamentals of quantum mechanics and applications to atomic and molecular structure.

PHYS 312 - INTRODUCTION TO QUANTUM PHYSICS II
Short Title: INTRO TO QUANTUM PHYSICS II
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Continuation of PHYS 311.
PHYS 331 - JUNIOR PHYSICS LAB I
Short Title: JUNIOR PHYSICS LAB I
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Lab exercises in electronics, noise reduction, statistics and particle counting.

PHYS 332 - JUNIOR PHYSICS LAB II
Short Title: JUNIOR PHYSICS LAB II
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Lab exercises illustrating topics in the upper-division physics curriculum.

PHYS 355 - INTRODUCTION TO BIOLOGICAL PHYSICS
Short Title: INTRO TO BIOLOGICAL PHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level

PHYS 311 - INTRODUCTION TO NUCLEAR & PARTICLE PHYSICS
Short Title: INTRO NUCLEAR&PARTIC PHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PHYS 311
Description: Survey of history and current state of nuclear and particle physics. The emphasis is on experimental results and how they led to our current understanding of the strong and electroweak interactions. Some recent advances are discussed in detail. Graduate/Undergraduate Equivalency: PHYS 542. Mutually Exclusive: Cannot register for PHYS 411 if student has credit for PHYS 542.

PHYS 312 - SOLID STATE PHYSICS
Short Title: SOLID STATE PHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (PHYS 311 and PHYS 425) or ELEC 361
Description: Introduction to topics in solid state physics, including crystal structure, lattice vibrations, electronic band structure and transport.

PHYS 416 - COMPUTATIONAL PHYSICS
Short Title: COMPUTATIONAL PHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Use of computational techniques to solve selected physics problems. Examine benefits and pitfalls of doing physics by computation. Graduate/Undergraduate Equivalency: PHYS 517. Mutually Exclusive: Cannot register for PHYS 416 if student has credit for PHYS 517.

PHYS 461 - INDEPENDENT RESEARCH
Short Title: INDEPENDENT RESEARCH
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Mentored research under the supervision of a Physics and Astronomy faculty member. To register, students must provide a research plan approved by the faculty mentor. Instructor Permission Required. Repeatable for Credit.
PHYS 462 - INDEPENDENT RESEARCH
Short Title: INDEPENDENT RESEARCH
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Mentored research under the supervision of a Physics and Astronomy faculty member. To register, students must provide a research plan approved by the faculty mentor. Instructor Permission Required. Repeatable for Credit.

PHYS 465 - REU RESEARCH IN PHYSICS AND ASTRONOMY
Short Title: REU RESEARCH IN PHYS & ASTR
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

PHYS 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

PHYS 480 - INTRODUCTION TO PLASMA PHYSICS
Short Title: INTRODUCTION TO PLASMA PHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PHYS 302
Description: Fundamental processes in cosmic and laboratory plasmas. Basic plasma characteristics, charged particle motion, waves in plasmas, magnetohydrodynamics, kinetic theory. Graduate/Undergraduate Equivalency. PHYS 580. Mutually Exclusive: Cannot register for PHYS 480 if student has credit for PHYS 580.

PHYS 491 - UNDERGRADUATE RESEARCH
Short Title: UNDERGRADUATE RESEARCH
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 2
Restrictions: Enrollment limited to students with a class of Junior or Senior. Enrollment is limited to students with a major in Astronomy, Astrophysics, Chemical Physics or Physics. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PHYS 301 and PHYS 302 and PHYS 311
Description: Research projects conducted under supervision of departmentally approved faculty. Open to juniors and seniors majoring in physics and astronomy. May be repeated for credit. PHYS 491/492 must be taken concurrently with PHYS 491/492 when used in partial fulfillment of B.S. degree requirements. Repeatable for Credit.

PHYS 492 - UNDERGRADUATE RESEARCH
Short Title: UNDERGRADUATE RESEARCH
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 2
Restrictions: Enrollment limited to students with a class of Junior or Senior. Enrollment is limited to students with a major in Astronomy, Astrophysics, Chemical Physics or Physics. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PHYS 491
Description: Research projects conducted under supervision of departmentally approved faculty culminating in a thesis. Open to juniors and seniors majoring in physics and astronomy. May be repeated for credit. PHYS 493/494 must be taken concurrently with PHYS 491/492 when used in partial fulfillment of B.S. degree requirements. Repeatable for Credit.

PHYS 493 - UNDERGRADUATE RESEARCH SEMINAR
Short Title: UNDERGRADUATE RESEARCH SEMINAR
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment limited to students with a class of Junior or Senior. Enrollment is limited to students with a major in Astronomy, Astrophysics, Chemical Physics or Physics. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PHYS 301 and PHYS 302 and PHYS 311
Description: Weekly seminar for juniors and seniors in which presentations on research topics and/or topics in the scientific literature will be given. Open to juniors and seniors majoring in physics and astronomy. Repeatable for Credit.
PHYS 494 - UNDERGRADUATE RESEARCH SEMINAR
Short Title: UNDERGRADUATE RESEARCH SEMINAR
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment limited to students with a class of Junior or Senior. Enrollment is limited to students with a major in Astronomy, Astrophysics, Chemical Physics or Physics. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PHYS 493
Description: Weekly seminar for juniors and seniors in which presentations on research topics and/or topics in the scientific literature will be given. Open to juniors and seniors majoring in physics and astronomy department. Repeatable for Credit.

PHYS 501 - PHYSICS OF HAM RADIO FOR TEACHERS
Short Title: PHYSICS OF HAM RADIO TEACHERS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Fundamentals of electromagnetic waves and propagation, the ionosphere and space weather. Basic electronics, antenna design and safety, magnetism. Provides information necessary to pass the 'Technician' level of ham radio license. Non-calculus mathematics. Other topics include: use of GPS, geocaching. Mutually Exclusive: Cannot register for PHYS 501 if student has credit for PHYS 401.

PHYS 510 - MAGNETOSPHERIC PHYSICS
Short Title: MAGNETOSPHERIC PHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Plasma physics of the earth's magnetosphere, including interactions of the magnetosphere with the solar wind and the ionosphere. The emphasis is on large-scale phenomena, but small scale (kinetic) physics is discussed in cases where it affects the large-scale phenomena.

PHYS 515 - CLASSICAL DYNAMICS
Short Title: CLASSICAL DYNAMICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Lagrangian and Hamiltonian mechanics.

PHYS 516 - MATHEMATICAL METHODS
Short Title: MATHEMATICAL METHODS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Survey of analytical methods used by research physicists and astronomers. Includes complex variables, ordinary differential equations, infinite series, evaluation of integrals, integral transforms, normal-mode analysis, special functions, partial differential equations, eigenfunctions, Green's functions, and variational calculus.

PHYS 517 - COMPUTATIONAL PHYSICS
Short Title: COMPUTATIONAL PHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Use of computational techniques to solve selected physics problems. Examine benefits and pitfalls of doing physics by computation. Requires completion of project using a low-level programming language. Graduate/Undergraduate Equivalency: PHYS 416. Mutually Exclusive: Cannot register for PHYS 517 if student has credit for PHYS 416.

PHYS 519 - PLASMA KINETIC THEORY
Short Title: PLASMA KINETIC THEORY
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Plasma kinetic equations (Klimontovich, Liouville, BBGKY, Balescu-Lenard, Fokker-Planck, Vlasov), Vlasov theory of waves and instabilities, connections to fluid plasma models.

PHYS 521 - QUANTUM MECHANICS I
Short Title: QUANTUM MECHANICS I
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate level course on non-relativistic quantum mechanics. Topics include early quantum theory, one-dimensional systems, matrix formulation, quantum dynamics, symmetries and conservation laws, bound states, scattering, spin, and identical particles, perturbation theory.

PHYS 522 - QUANTUM MECHANICS II
Short Title: QUANTUM MECHANICS II
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Continuation of PHYS 521.
PHYS 526 - STATISTICAL PHYSICS
Short Title: STATISTICAL PHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Selected topics in statistical mechanics, including phase transitions and transport phenomena.

PHYS 532 - CLASSICAL ELECTRODYNAMICS
Short Title: CLASSICAL ELECTRODYNAMICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Maxwell's equations, wave propagation, special relativity and covariant formulation, charged-particle dynamics, and radiation.

PHYS 533 - NANOSTRUCTURE AND NANOTECHNOLOGY I
Short Title: NANOSTRUCTURE/NANOTECHNOLOGY I
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Physics of structures and devices at the nanometer scale. After a review of solid state physics, topics include nanostructured materials, nanoelectronics, and nanomagnetism. Emphasis on relevance of nanophysics to current and future technologies.

PHYS 534 - NANOSTRUCTURE AND NANOTECHNOLOGY II
Short Title: NANOSTRUCTURE/NANOTECHNOLOGY II
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Physics of structures and devices at the nanometer scale. Topics include nanomechanics, bionanotechnology, advanced sensors and photonics. Continuation of PHYS 533.

PHYS 535 - CRYSTALLOGRAPHY AND DIFFRACTION
Short Title: CRYSTALLOGRAPHY & DIFFRACTION
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of crystals by diffraction techniques, focusing on x-ray, with an overview of electron and neutron diffraction as well as complementary techniques. Provides mathematical foundations and nomenclature for diffraction and related phenomena. Includes basics of crystallographic analysis and surface/point/group symmetry, experiment design (courses, geometry, detectors), and data analysis and interpretation. Required for undergraduate MSNE major. Meets with MSNE 435 (additional work for the graduate version). Cross-list: MSNE 535.

PHYS 537 - METHODS OF EXPERIMENTAL PHYSICS I
Short Title: METHODS EXPERIMENTAL PHYSICS I
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A course to familiarize students with basic experimental techniques that are common in academic and industrial laboratories. Topics will include lab safety, mechanical design, LabVIEW(TM) programming, statistics, laboratory electronics, particle detection and vacuum technology. PHYS 537 and PHYS 538 may be taken independently of each other.

PHYS 538 - METHODS OF EXPERIMENTAL PHYSICS II
Short Title: METHODS EXPERIMENTAL PHYSICS II
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A course to familiarize students with basic experimental techniques that are common in academic and industrial laboratories. Topic will include computer interfacing and data acquisition, charged particle optics, light optics, thermal measurement and control, and cryogenics. PHYS 537 and PHYS 538 may be taken independently of each other.

PHYS 539 - CHARACTERIZATION AND FABRICATION AT THE NANOSCALE
Short Title: CHARACTERIZATION & FABRICATION AT THE NANOSCALE
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to study and creation of nanoscale structures, emphasizing relevant physical principles. Techniques covered include optical, X-ray, electron-based and scanned-probe characterization, as well as patterning, deposition and removal of material.

PHYS 541 - RADIATIVE PROCESSES
Short Title: RADIATIVE PROCESSES
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Radiation processes and their applications to astrophysical phenomena and space science. The course treats radiative transfer, radiation from moving charges, relativistic covariance and kinematics, bremsstrahlung, synchrotron radiation, Compton scattering, some plasma effects, and radiative transitions in atoms and molecules.
PHYS 542 - INTRODUCTION TO NUCLEAR AND PARTICLE PHYSICS
**Short Title:** INTRO NUCLEAR&PARTIC PHYSICS
**Department:** Physics and Astronomy
**Grade Mode:** Standard Letter
**Course Type:** Lecture
**Credit Hours:** 3
**Restrictions:** Enrollment is limited to Graduate level students.
**Course Level:** Graduate
**Prerequisite(s):** PHYS 311
**Description:** Survey of history and current state of nuclear and particle physics with the emphasis on experimental results and how they led to our current understanding of the strong and electroweak interactions. Some recent advances are discussed in detail. Requires completion of a Monte Carlo simulation project. Graduate/Undergraduate Equivalency: PHYS 411. Mutually Exclusive: Cannot register for PHYS 542 if student has credit for PHYS 411.

PHYS 543 - PHYSICS OF QUARKS AND LEPTONS
**Short Title:** PHYSICS OF QUARKS AND LEPTONS
**Department:** Physics and Astronomy
**Grade Mode:** Standard Letter
**Course Type:** Lecture
**Credit Hours:** 3
**Restrictions:** Enrollment is limited to Graduate level students.
**Course Level:** Graduate
**Description:** A continuation of PHYS 542.

PHYS 551 - BIOLOGICAL PHYSICS
**Short Title:** BIOLOGICAL PHYSICS
**Department:** Physics and Astronomy
**Grade Mode:** Standard Letter
**Course Type:** Lecture
**Credit Hours:** 3
**Restrictions:** Enrollment is limited to Graduate level students.
**Course Level:** Graduate
**Description:** Introduction to biological physics. Review of basic physical concepts. Cells and their components. Diffusion and random walks. Entropy and energy concepts and their roles in biological systems. Modern experimental methods. Applications to biological macromolecules.

PHYS 552 - TOPICS IN BIOLOGICAL PHYSICS
**Short Title:** TOPICS IN BIOLOGICAL PHYSICS
**Department:** Physics and Astronomy
**Grade Mode:** Standard Letter
**Course Type:** Lecture
**Credit Hours:** 3
**Restrictions:** Enrollment is limited to Graduate level students.
**Course Level:** Graduate
**Description:** Topics will be selected based on special or current research interests.

PHYS 563 - INTRODUCTION TO SOLID STATE PHYSICS I
**Short Title:** INTRO SOLID STATE PHYSICS I
**Department:** Physics and Astronomy
**Grade Mode:** Standard Letter
**Course Type:** Lecture
**Credit Hours:** 3
**Restrictions:** Enrollment is limited to Graduate level students.
**Course Level:** Graduate
**Description:** Fundamental concepts of crystalline solids, including crystal structure, band theory of electrons, and lattice vibration theory. Cross-list: ELEC 563.

PHYS 564 - INTRODUCTION TO SOLID STATE PHYSICS II
**Short Title:** INTRO SOLID STATE PHYSICS II
**Department:** Physics and Astronomy
**Grade Mode:** Standard Letter
**Course Type:** Lecture
**Credit Hours:** 3
**Restrictions:** Enrollment is limited to Graduate level students.
**Course Level:** Graduate
**Description:** Continuation of PHYS 563, including scattering of waves by crystals, transport theory, and magnetic phenomena. Cross-list: ELEC 564.

PHYS 566 - SURFACE PHYSICS
**Short Title:** SURFACE PHYSICS
**Department:** Physics and Astronomy
**Grade Mode:** Standard Letter
**Course Type:** Lecture
**Credit Hours:** 3
**Restrictions:** Enrollment is limited to Graduate level students.
**Course Level:** Graduate
**Description:** An introduction to surface- and low-dimensional physics covering experimental surface physics and ultra-high vacuum technology, crystal structure, chemical analysis, epitaxy, nanoscale electronic and magnetic structures and devices, elementary excitations, optical properties and nanoscale sensitive magnetic and non-magnetic spectroscopies.

PHYS 567 - QUANTUM MATERIALS
**Short Title:** QUANTUM MATERIALS
**Department:** Physics and Astronomy
**Grade Mode:** Standard Letter
**Course Type:** Lecture
**Credit Hours:** 3
**Restrictions:** Enrollment is limited to Graduate level students.
**Course Level:** Graduate
**Prerequisite(s):** (PHYS 425 or PHYS 526) and (PHYS 311 or PHYS 521)
**Description:** This course uses real data on archetypal materials to illustrate the thermodynamic and transport properties of solids, and principles of materials synthesis. The goal is building a phenomenological understanding of topics including the origin of magnetism; interactions and long range order; phase transitions (magnetism; superconductivity); quantum oscillations and Landau levels.
PHYS 568 - QUANTUM PHASE TRANSITIONS
Short Title: QUANTUM PHASE TRANSITIONS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introductory course for graduate students. Topics include the concepts of classical and quantum phase transitions, mean field theory, renormalization group and quantum phase transitions in magnetic, fermionic, and bosonic systems.

PHYS 569 - ULTRAFAST OPTICAL PHENOMENA
Short Title: ULTRAFAST OPTICAL PHENOMENA
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers the generation, propagation, and measurement of short laser pulses, of duration less than one picosecond. Concepts include mode locking, the effects of dispersion, optical pulse amplification, and time-domain non-linear optical phenomena. Intended as an introduction to ultrafast phenomena for graduate students or advanced undergraduates; a basic understanding of electromagnetic waves and of quantum mechanics is assumed. Cross-list: ELEC 569. Course URL: www.ece.rice.edu/~daniel/569/569files.html (http://www.ece.rice.edu/~daniel/569/569files.html)

PHYS 571 - MODERN ATOMIC PHYSICS
Short Title: MODERN ATOMIC PHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is an introductory course at the graduate level. Topics to be discussed include: atomic structure, principles of lasers, fundamental interactions of atoms with electro-magnetic radiation, including coherent effects, laser spectroscopy, quantum optics, and laser cooling and trapping of atoms, and Bose-Einstein condensation.

PHYS 572 - FUNDAMENTALS OF QUANTUM OPTICS
Short Title: FUNDAMENTALS OF QUANTUM OPTICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Discussion of quantization and statistical properties of light fields; interaction between atoms and light; non-classical states; basic laser theory; quantum effects of nonlinear optics; introduction to atom optics.

PHYS 580 - INTRODUCTION TO PLASMA PHYSICS
Short Title: INTRODUCTION TO PLASMA PHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Fundamental processes in cosmic and laboratory plasmas. Basic plasma characteristics, charged particle motion, waves in plasmas, magnetohydrodynamics, kinetic theory. Includes a substantial computational project related to plasma physics. Graduate/Undergraduate Equivalency: PHYS 480. Mutually Exclusive: Cannot register for PHYS 580 if student has credit for PHYS 480.

PHYS 600 - ADVANCED TOPICS IN PHYSICS
Short Title: ADVANCED TOPICS IN PHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Lecture/seminars which treat topics of departmental interest. Repeatable for Credit.

PHYS 601 - FRONTIERS IN CONDENSED MATTER PHYSICS
Short Title: FRONTIERS IN CONDENSED MATTER
Department: Physics and Astronomy
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar will serve as an introduction to current research topics in modern condensed matter physics. Lectures will be given by experts in condensed matter physics at Rice, Columbia University, and other international locations. Repeatable for Credit.

PHYS 605 - COMPUTATIONAL ELECTRODYNAMICS AND NANOPHOTONICS
Short Title: ELECTRODYNAMICS & NANOPHOTONIC
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers computational and numerical methods for calculating electromagnetic fields and propagation in complex geometries on the nano and microscale. Methods include the finite difference time domain method, boundary element methods, Greens functions methods, finite element methods, the discrete dipole approximation and relaxation methods. Cross-list: ELEC 605. Repeatable for Credit.
PHYS 610 - BIOLOGICAL AND MOLECULAR SIMULATION
Short Title: METHODS OF MOLECULAR SIMUL
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): CHBE 611 or BIOC 589 or BIOE 589 or BIOS 589 or CHEM 520 or PHYS 526
Description: Modern simulation techniques for classical atomistic systems. Review of statistical mechanical systems. Monte Carlo and molecular dynamics simulation techniques. Extensions of the basic methods to various ensembles. Applications to simulations of large molecules such as proteins. Advanced techniques for simulation of complex systems, including constraint satisfaction, cluster moves, biased sampling, and random energy models. Cross-list: BIO 610.

PHYS 622 - QUANTUM FIELD THEORY
Short Title: QUANTUM FIELD THEORY
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An introduction to relativistic quantum field theory. Topics include: quantization of scalar, spinor, and vector fields; Feynman diagrams; gauge theories, including QED and QCD; renormalization; and functional-integral methods.

PHYS 643 - CELL MECHANICS, MECHANOTRANSDUCTION AND THE CELL MICROENVIRONMENT
Short Title: MECHANOTRANSDUCTION
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Mechanotransduction is a fundamental process essential for living systems and plays a fundamental role in cell signaling, cancer metastasis and stem cell differentiation. Additionally, fundamental biological processes such as endocytosis cell fusion and cell migration are driven by a coordinated interplay of molecular interactions that drive membrane deformation. This course will survey the current understanding of mechanotransduction and the mechanical properties of cells and their microenvironment, including membrane and cytoskeletal mechanics. Experimental approaches for measuring and manipulating the material properties of cells and their environment; including optical, electrical and magnetic techniques will be covered. A variety of application will be covered, including manipulation in engineering of mechanotransduction pathways to drive cell migration and stem cell differentiation. Instructor Permission Required. Cross-list: BIOC 643, BIOE 643.

PHYS 663 - CONDENSED MATTER THEORY: APPLICATIONS
Short Title: CONDENSED MATTER THRY:APPLICATN
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Applications of techniques developed in PHYS 664.

PHYS 664 - CONDENSED MATTER THEORY: MANY-BODY FORMALISM
Short Title: COND MATTR THRY:MANY BODY FORM
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Formal structure of many-body theory as used in condensed matter physics.

PHYS 665 - THEORETICAL TOPICS IN CONTEMPORARY QUANTUM PHYSICS
Short Title: CONTEMPORARY QUANTUM THEORY
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): PHYS 521
Description: The course covers advanced mathematical methods and techniques used in contemporary research in theoretical quantum physics. This course builds upon the foundations of many-body theory and focuses on its applications to more advanced problems. It may be useful for students pursuing theoretical research in CM or AMO physics, or anyone interested in modern theoretical developments.

PHYS 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

PHYS 700 - TEACHING PRACTICUM
Short Title: TEACHING PRACTICUM
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Supervised teaching for graduate students. Repeatable for Credit.
Political Science (POLI)

POLI 110 - AP/OTH CREDIT IN AMERICAN GOVERNMENT
Short Title: AP/OTH CREDIT AMER GOVERNMENT
Department: Political Science
Grade Mode: Standard Letter
Course Type: Transfer
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation.

POLI 112 - AP/OTH CREDIT IN COMPARATIVE GOVERNMENT
Short Title: AP/OTH CREDIT COMPAR GOVERNMENT
Department: Political Science
Grade Mode: Standard Letter
Course Type: Transfer
Credit Hours: 3
Course Level: Undergraduate Lower-Level
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation.

POLI 209 - INTRODUCTION TO CONSTITUTIONALISM AND MODERN POLITICAL THOUGHT
Short Title: INTRO TO CONST & POLI THOUGHT
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will examine constitutionalism and authoritarianism, including Plato, Machiavelli, and Marx, and introduce students to classical and contemporary political theories.

POLI 210 - INTRODUCTION TO AMERICAN POLITICS
Short Title: INTRO TO AMERICAN POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course introduces students to major topics in the subfield of American Politics, including public opinion, group politics, political parties, elections, congressional-presidential-bureaucratic politics, and judicial politics. This course helps students navigate upper division courses in American Politics and understand American government and politics.

POLI 211 - INTRODUCTION TO INTERNATIONAL RELATIONS
Short Title: INTRO TO INTERNAT'L RELATIONS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course introduces students to major topics in the subfield of International Relations, including the causes of war, political dimensions of the international economy, international organizations, and interstate cooperation to address contemporary global challenges. This course helps students navigate upper division courses in International Relations and explore the international world.
POLI 212 - INTRODUCTION TO COMPARATIVE POLITICS
Short Title: INTRO TO COMPARATIVE POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course introduces students to major topics in the subfield of Comparative Politics, including emergence and survival of democracy, authoritarian government, democratic institutions, and mass and elite political behavior in countries around the world. This course helps students navigate upper division courses in Comparative Politics and explore the political world.

POLI 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Independent Study, Internship/Practicum, Laboratory, Lecture/Laboratory, Seminar, Lecture
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

POLI 250 - SEX, MONEY, AND POWER AROUND THE WORLD
Short Title: SEX, MONEY, AND POWER
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An interdisciplinary course exploring lives and well-being in the context of gendered international and domestic politics and economic processes. Emphasis on the implications of power relations at levels from the household to the global for women and men around the world (with particular attention to Asia). Cross-list: ASIA 251, SWGS 250.

POLI 260 - ADVOCATING FOR IDEAS TO CHANGE THE WORLD
Short Title: ADVOCATING FOR CHANGE
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Advocating for change is an experiential learning course that teaches students how to engage in issue advocacy as a method of social change. Students work in teams with faculty mentors to develop and implement an advocacy plan for a particular cause or policy of interest. Cross-list: LEAD 260.

POLI 301 - STATE POLITICS
Short Title: STATE POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course comparatively examines state governments and political institutions in the U.S. states. We will also focus on how state political institutions and organizations influence the creation, adoption, and implementation of public policy.

POLI 305 - DIRECTED READING I
Short Title: DIRECTED READING I
Department: Political Science
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Independent reading under the supervision of a full-time member of the department. Instructor Permission Required.

POLI 306 - DIRECTED READING II
Short Title: DIRECTED READING II
Department: Political Science
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Independent reading under the supervision of a full-time member of the department. Instructor Permission Required.

POLI 307 - POLITICAL SCIENCE INTERNSHIP
Short Title: POLITICAL SCIENCE INTERNSHIP
Department: Political Science
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course provides credit for a student doing an internship related to political science. Instructor Permission Required. Repeatable for Credit.
POLI 310 - THE BIOLOGY OF POLITICS  
Short Title: THE BIOLOGY OF POLITICS  
Department: Political Science  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This course is an interdisciplinary survey of the role that human biology plays in our political behavior. The biology covered ranges from genes to neural structures to neuro-chemistry, while the political behavior covered ranges from levels of participation to political beliefs to left/right ideology.

POLI 315 - ELECTIONS AND VOTING BEHAVIOR  
Short Title: ELECTIONS AND VOTING BEHAVIOR  
Department: Political Science  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Exploration of voting behavior and elections. Includes considereation of both individual level behavior and aggregate level patterns of election results.

POLI 317 - THE CONGRESS  
Short Title: THE CONGRESS  
Department: Political Science  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Examines the role of Congress in the American political system. Attention is given to the historical development of Congress, the current status of the Congress, and the functions of Congress in the American political system.

POLI 321 - AMERICAN CONSTITUTIONAL LAW  
Short Title: AMER CONSTITUTIONAL LAW  
Department: Political Science  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Interpretation of the Constitution by the Supreme Court. (Juniors and Seniors preferred.)

POLI 322 - POLITICS OF INFLUENCE IN THE UNITED STATES  
Short Title: POLITICS OF INFLUENCE IN US  
Department: Political Science  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: The aim of this course is to acquaint students with the major influences upon who gets what, when and how from American government. Major issues (e.g., health care, immigration, agriculture) covered will vary by semester. One component of the course will be devoted to assessing the impact of money on elections and the policy process.

POLI 324 - FROM DECOLONIZATION TO GLOBALIZATION  
Short Title: FROM DECOLONI TO GLOBALIZATION  
Department: Political Science  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Taught in English. Novels, and films, from North and West Africa, and the immigrant population in France, from 1960 to 2010. Emphasis on the tensions between narratives of political emancipation, modernity, secularism, and religious fundamentalism and mysticism. Extra reading for graduate students in theories of colonialism, postcolonialism, globalization. Cross-list: FREN 324, RELI 476. Recommended Prerequisite(s): Any 200 level course or above in English or French, or HUMA 101 or HUMA 102, or a FWIS course. Mutually Exclusive: Cannot register for POLI 324 if student has credit for RELI 604.

POLI 325 - AFRICAN AMERICAN POLITICS  
Short Title: AFRICAN AMERICAN POLITICS  
Department: Political Science  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Examination of race in U.S. politics. Includes a discussion of the construction of black identity, historical and contemporary black political leaders and thinkers, and the influence of race in political attitudes and behaviors.
POLI 328 - LATINO POLITICS IN THE UNITED STATES
Short Title: LATINO POLITICS IN THE US
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Latinos and public policies affecting Latinos have become a major part of the discourse taking place in American politics as a result of current and projected demographic trends. After reviewing the demographic, historic, and social factors distinctive to the Latino population in the United States, this course examines how Latinos have interacted with political institutions to shape politics and public policy.

POLI 329 - HEALTH POLICY
Short Title: HEALTH POLICY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Applies an interdisciplinary approach to the study of health policy. Objectives are to provide students with a broad introduction to the healthcare system, identify stresses on the current system, and explore possible public policy decisions that may transform the healthcare system.

POLI 330 - MINORITY POLITICS
Short Title: MINORITY POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Examination of the political and social position of minority groups (African Americans, Asian Americans, Native Americans, Latinos, and women) in the U.S. This course explores the political power and behavior of these groups. The key concepts include racism, discrimination, resources, political power, culture, leadership, class, and inequality.

POLI 332 - URBAN POLITICS
Short Title: URBAN POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Exploration of issues of political behavior and public policy in urban and metropolitan areas. Includes urban decline, regional governance, revitalization, and issues of ethnic and racial conflict.

POLI 333 - LEGISLATURES AROUND THE WORLD
Short Title: LEGISLATURES AROUND THE WORLD
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will examine legislatures and parliaments in countries around the world, exploring their similarities and differences as well as the causes and consequences of these similarities and differences.

POLI 334 - AMERICAN POLITICAL PARTIES
Short Title: AMERICAN POLITICAL PARTIES
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Examination of the American political party system both historically and contemporarily, with important emphasis on the nomination, campaign, and election functions of political parties. Party organization in government will also be explored.

POLI 335 - POLITICAL ENVIRONMENT OF BUSINESS
Short Title: POLITICAL ENVIRONMENT OF BUSINESS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of the foundation of government involvement in public policy and the institutional process guiding executive, legislative, and bureaucratic officials. Includes theories of collective action and their application in the political world.

POLI 336 - POLITICS OF REGULATION
Short Title: POLITICS OF REGULATION
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will focus principally on government regulation of business and the political factors that shape its content.
POLI 337 - PUBLIC POLICY
Short Title: PUBLIC POLICY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Exploration of the role that public bureaucracy plays in national policy making. Includes an examination of sources of agency power, which are linked to different policy outcomes.

POLI 338 - POLICY ANALYSIS
Short Title: POLICY ANALYSIS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Familiarizes students with the analytical tools necessary for evaluating and analyzing public policies. Cross-list: SOSC 301. Mutually Exclusive: Cannot register for POLI 338 if student has credit for POST 338.

POLI 342 - POLITICS OF THE JUDICIARY
Short Title: POLITICS OF THE JUDICIARY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Explores the role of courts and judges in American politics. Will illustrate major characteristics of judicial institutions in the U.S. and provide understanding of forces influencing judicial decisions. Will cover federal and state organization of trial and appellate courts, judicial selection methods, and the politics of judicial decision-making.

POLI 343 - MEDIA AND POLITICS
Short Title: MEDIA AND POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Examines the role of media in politics. Attention is given to the media as a quasi-political institution. It elaborates the role the media plays in elections and the policy process.

POLI 348 - URBAN POLITICS LAB
Short Title: URBAN POLITICS LAB
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The lab course examines urban politics and policy by combining urban theory and methods with an intensive focus on one or more case studies. In addition to social, political and economic issues, the course focuses on history, culture, language, and architecture. The lab features a field research trip to one or more cities (e.g., Istanbul), typically during spring break. Instructor Permission Required. Repeatable for Credit.

POLI 349 - URBAN LAB ISTANBUL
Short Title: URBAN LAB ISTANBUL
Department: Political Science
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 355 (may be taken concurrently) or POLI 362 (may be taken concurrently) or POLI 464 (may be taken concurrently) or POLI 562 (may be taken concurrently)
Description: This course examines the dynamics of urban politics and policy in an emerging global city - Istanbul. In addition to social, political and economic issues, we will also focus on history, culture, language, architecture and the arts. Weekly class sessions will include lectures, case studies, guest lecturers, and group work on research projects. The lab also features an 8-day field research trip to Istanbul. Prerequisites may be taken the same semester as POLI 349/ASIA 349. Instructor Permission Required. Cross-list: ASIA 349.

POLI 350 - URBAN LAB HOUSTON
Short Title: URBAN LAB HOUSTON
Department: Political Science
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 332 (may be taken concurrently) or POLI 355 (may be taken concurrently) or POLI 362 (may be taken concurrently) or POLI 464 (may be taken concurrently) or POLI 562 (may be taken concurrently)
Description: This course examines the dynamics of urban politics and policy in an emerging global city - Houston. The lab is project-based and allows students to engage in hands-on, policy-focused research under the guidance of the faculty instructor. Weekly sessions will include lectures, case studies, guest lecturers, site visits, and work on research projects. POLI 350 requires either POLI 332 as a pre-requisite, which can be taken concurrently. POLI 337 may serve as a Co-Requisite for this course. Department Permission Required.
POLI 351 - ISLAM AND POLITICS
Short Title: ISLAM AND POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will venture to explore the “rich and diverse particularity” of Muslim political life at a time when Islam has become virtually synonymous with violence and hostility toward modernity. The topics include Islamic principles of government, relationship between political and religious authority, Islamism, Islam and democracy, jihad, and shariah.

POLI 352 - THE POLITICS AND CULTURE OF MEXICO
Short Title: POLITICS & CULTURE OF MEXICO
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Mexico entered the 21st Century as one of the most dynamic societies in Latin America. But Mexico’s fast-paced and chaotic transformation cannot be understood without a look at its past and its diverse cultural makeup. This course explores the weight of Mexico’s history and culture as it seeks to forge ahead economically, socially, and politically.

POLI 353 - EAST ASIAN DEMOCRACIES
Short Title: EAST ASIAN DEMOCRACIES
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines the functioning of the political system in the three principal East Asian democracies: Japan, South Korea, and Taiwan. Particular focus is paid to each country’s democratic institutions, electoral politics, and political party system. Cross-list: ASIA 353.

POLI 354 - LATIN AMERICAN POLITICS
Short Title: LATIN AMERICAN POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of the political process in contemporary Latin America, with emphasis on selected major countries.

POLI 355 - GOVERNMENT AND POLITICS OF THE MIDDLE EAST
Short Title: GOVERNMENT&POLITICS MID EAST
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Provides an introduction to politics in the Middle East. Brief historical overview is combined with detailed description of political systems in the area. The region is then used to examine empirically, critique, and revise theories of comparative politics. Emphasis on whether the region would be considered unique or exceptional.

POLI 356 - REPRESENTATION AND POLICY MAKING
Short Title: REPRESENTATION & POLICY MAKING
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The course seeks to understand the relationship between political institutions and the representation of social interests in the policy-making process across a variety of national contexts. The course focuses on the politics behind policy choices and how policy-makers are held accountable in democratic contexts. Case studies will draw upon examples in the United States, Latin America, Europe and Asia.

POLI 357 - DEMOCRACY AND DEMOCRATIZATION
Short Title: DEMOCRACY AND DEMOCRATIZATION
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will examine the theory of democracy and the functioning of democratic institutions around the world. Themes covered in the course will include: What is democracy? How does democracy arise? Can institutions influence the survival and consolidation of democracy?

POLI 360 - WESTERN EUROPEAN DEMOCRACIES
Short Title: WESTERN EUROPEAN DEMOCRACIES
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A survey of government and politics in Western European democracies, with primary emphasis on Great Britain, France, and Germany.
POLI 362 - COMPARATIVE URBAN POLITICS AND POLICY
Short Title: COMPARATIVE URBAN POL & PLCY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Description: This course offers a broad overview of urban politics and policies in cities around the world. We will examine how national, regional and local forces shape the processes and outcomes governance within and across cities and metropolitan areas, paying particular attention to critical problems and policies that affect urban centers: growth, immigration, class conflict, public order, service management, education, housing transportation, environmental protection, sustainability, land-use planning and spatial competition.

POLI 365 - BRITISH POLITICS
Short Title: BRITISH POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An examination of British politics and government, with emphasis on both the contemporary and historical setting. This course also emphasizes a comparison of the British political system with the American political system.

POLI 371 - CIVIL WARS
Short Title: CIVIL WARS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course seeks to examine the origins and dynamics of civil war, including civil war onset, duration, outcome, termination, why people join rebellions, the effectiveness of various forms of civil war management and resolution, and more. It aims to impart to students a solid understanding of theories and empirical evidence regarding the causes, conduct, and termination of civil wars in general.

POLI 372 - AMERICAN FOREIGN POLICY
Short Title: AMERICAN FOREIGN POLICY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Examination of internal and external aspects of foreign policy leadership, presidential initiative, congressional control, press, public opinion, and crisis management. Not a Managerial Studies elective.

POLI 373 - WAR AND POLITICS
Short Title: WAR AND POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Exploration of the theoretical basis of, and empirical evidence for, a number of explanations for interstate war. Includes contemporary theories dealing with dispute escalation, arms races, deterrence, crisis management, and low-intensity conflict.

POLI 374 - STRATEGIC INTERACTIONS IN INTERNATIONAL RELATIONS
Short Title: STRATEGIC INTERACT INTNL REL
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Introduction to the uses of game theory in the study of international relations.

POLI 375 - INTERNATIONAL ORGANIZATION
Short Title: INTERNATIONAL ORGANIZATION
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of the development and role of international organizations in world politics. Topics include the history and evolution of international organizations, the effects of international law on behavior, and the extent to which international cooperation has been effective at resolving global problems.

POLI 376 - POLITICS OF AMERICAN NATIONAL SECURITY
Short Title: POLITICS OF AMER NATL SECURITY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The primary focus on this course is the use of military force in pursuit of the national security of the US. A wide variety of topics are covered including the people in the military, weapons of mass destruction, and various types of conflict that have involved (or might involve) the United States.
POLI 380 - POLITICAL BEHAVIOR
Short Title: POLITICAL BEHAVIOR
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Examines basic concepts in political behavior including political socialization, models of voting behavior, public opinion, and political participation.

POLI 395 - APPLIED RESEARCH METHODS IN POLITICAL SCIENCE
Short Title: APPLIED RESEARCH METHODS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): SOSC 302
Description: This course uses a lecture/lab combination to introduce students to research design, applied research methods, and statistical software in political science. Students will learn key skills and tools to conduct research in political science and have an opportunity to apply those in an individual or group project.

POLI 401 - STATE POLITICS RESEARCH SEMINAR
Short Title: STATE POLITICS RESEARCH SEM
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: A research seminar in state politics and policy with an emphasis on state institutions.

POLI 405 - THESIS I
Short Title: THESIS I
Department: Political Science
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This is the first course in the Political Science Honors Program. Students will conduct independent research and prepare a formal research proposal for their planned thesis by the end of the semester. Students must complete both POLI 405 and 406 to get Honors in Political Science. Instructor Permission Required.

POLI 406 - SENIOR THESIS
Short Title: THESIS II
Department: Political Science
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This is the second course in the Political Science Honors Program. Students will conduct independent research and write a thesis paper by the end of the semester. Students must complete both POLI 405 and 406 to get Honors in Political Science. Instructor Permission Required.

POLI 416 - SURVEY RESEARCH IN AMERICAN POLITICS
Short Title: SURVEY RSRCH AMERICAN POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: The major objectives of this course are to introduce students to the skills and resources needed to design and conduct a survey. The principle substantive focus of the course will be public opinion surveys on topics of politics, public policy and individual political behavior.

POLI 418 - MODERN AMERICAN PRESIDENCY
Short Title: MODERN AMERICAN PRESIDENCY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: The course examines the modern presidency since World War II with a focus on the extent to which the Trump presidency has influenced the office and been influenced by it. It specifically studies the ways in which a single president can change the office and the government. The examination considers the expansion of presidential power especially during war and its relation to the Constitution. It assesses the public presidency through television, the internet and social media. It investigates the organization of the White House and the nature of presidential decision-making. The central question is how much of a difference do individual presidents make to the office they hold.
POLI 419 - POLITICAL PARTIES AND INTEREST GROUPS IN AMERICAN POLITICS
Short Title: PARTIES AND INTEREST GROUPS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: The goal of this seminar is to provide the student with knowledge of the formation, organization, activity, and impact of political parties and interest groups in the United States. Special attention will be given to changes in the operation of these two types of organizations over the last 20 years.

POLI 420 - ELECTION SYSTEMS, TECHNIQUES, AND ADMINISTRATION
Short Title: ELECTION SYSTEMS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This multidisciplinary course will consider how elections are conducted to enhance participation, to accurately measure the will of the electorate, and to be sufficiently rigorous to convince all parties that the results are legitimate. This course will consider the design and evaluation of election technologies, ranging from voter registration through the polling booth and vote tabulation. This course will consider three questions: how do individual voters interact with the voting technology, how are voting technologies engineered to be accurate and secure, and how do the social aspects of voting fulfill democratic goals for elections? A central requirement for this course will be group research projects, many operating in our community, built around the November election. Cross-list: COMP 435, PSYC 420.

POLI 421 - CONTEMPORARY ISSUES IN AMERICAN POLITICS
Short Title: CONTMPRY ISSUES AMER POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: This seminar will focus on major issues (e.g., immigration, voting rights, budget deficits, healthcare) in American society. After examining the history of national and state policies, seminar participants will discuss social science contributions to the ongoing policy discussions. Specific topics covered will vary by semester.

POLI 429 - BIOLOGICAL FOUNDATIONS OF POLITICS
Short Title: BIOLOGICAL FOUNDATIONS OF POLI
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: This course is an introduction to the biological underpinnings of political behavior. The influence of genes and evolution are covered, as well as the relevance of neural structures, brain organization, and neuro-chemistry for both universal political traits and individual variation in political orientations. NOTE: This seminar is in the theory and methods field. It is not an American politics seminar.

POLI 430 - SEMINAR IN TEXAS POLITICS
Short Title: SEMINAR IN TEXAS POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Research seminar in the history of Texas politics.

POLI 431 - ELECTORAL CAMPAIGNS
Short Title: ELECTORAL CAMPAIGNS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Examines the role of campaigns in determining the outcome of political races.

POLI 432 - URBAN POLITICS
Short Title: URBAN POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Research seminar on political behavior and public policy in urban and metropolitan areas.
POLI 433 - COMPARATIVE LEGISLATURES
Short Title: COMPARATIVE LEGISLATURES
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: The course aims to understand current challenges related to the US Congress–such as party polarization and gridlock–using the experience of the policy-making processes of other nations. In addition to recent discourse on failures of representation in Congress, the course covers politics in Europe, Latin America and Asia. Graduate/Undergraduate Equivalency: POLI 532.

POLI 434 - PUBLIC POLICY AND METROPOLITAN AREA GOVERNANCE
Short Title: PUBLIC POLICY&METRO AREA GOV'T
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: This course will examine the market-like relationship among metropolitan area governments. It will address questions of urban/suburban relationships as well as policy topics such as education and local service provision.

POLI 435 - SEMINAR ON MONEY AND POLITICS
Short Title: SEMINAR ON MONEY AND POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: This course provides students an opportunity to conduct original research on wide range of public policy questions. Students will be provided specific research questions to investigate over the course of the semester for which they will design and complete an original program of research.

POLI 436 - POLITICS OF REGULATION
Short Title: POLITICS OF REGULATION
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Study of the government’s regulation of business and the political factors that shape its content.

POLI 437 - EDUCATION POLICY
Short Title: EDUCATION POLICY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Examines educational politics and policy from micro and macro perspectives. We will focus on school governance, structure, and finance at the federal, state, and local levels and examine the design, implementation and effects of various school reform initiatives in U.S., and to a more limited extent in other countries.

POLI 438 - RACE AND PUBLIC POLICY
Short Title: RACE AND PUBLIC POLICY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Study of minority group politics and how race structures contemporary U.S. politics. Includes myths and realities of minority groups, symbolic politics and race, pluralism as a model of U.S. democracy, the intersection of class, race, and gender, civil rights movements, group consciousness, public opinion regarding minorities, and responses of national institutions to race issues.

POLI 440 - RESEARCH SEMINARY ON PUBLIC POLICY
Short Title: RESEARCH SEM ON PUBLIC POLICY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395 and (POLI 335 or POLI 336 or POLI 337 or POLI 338)
Description: This course provides students an opportunity to conduct original research on wide range of public policy questions. Students will be provided specific research questions to investigate over the course of the semester for which they will design and complete an original program of research.
POLI 441 - GOVERNING THE ENVIRONMENTAL COMMONS
Short Title: GOVERNING ENVIRONMNTL COMMONS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Common Property Resources (CPRs), such as fisheries, aquifers, and the Internet, appear in many guises and pose a fundamental problem for governing. Exploration of theoretical underpinnings for CPRs, their growing literature, and the political and economic institutions mediating CPR dilemmas. Included is an original research project in conjunction with the instructor. Cross-list: ENST 441.

POLI 445 - SEMINAR IN JUDICIAL PROCESS AND BEHAVIOR
Short Title: SEM JUDICIAL PROCESS & BEHAVR
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Thinking about law school? This seminar explores social scientific literature in judicial process and behavior and examines selected controversies in the study of judicial processes. Learning is based on active participation in seminars covering assigned readings and a research project on a related topic selected by the student.

POLI 450 - ELECTIONS IN THE AMERICAS
Short Title: ELECTIONS IN THE AMERICAS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: The course examines the electoral process in Latin America. Students will follow, discuss, and analyze campaigns and elections in a selected group of countries while developing an expertise in the general functioning of the respective countries' political systems.

POLI 457 - CONDITIONS OF DEMOCRACY
Short Title: CONDITIONS OF DEMOCRACY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: This course starts with definitions and theories/preconditions of democracy and then looks at specific cases of democratic transition throughout the world, democratic consolidation, reaction, and the prospects for the future.

POLI 459 - SEX, GENDER, AND POLITICAL REPRESENTATION IN LATIN AMERICA
Short Title: GENDER & REP IN LATIN AMERICA
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Latin American countries have elected surprisingly large numbers of women to presidencies, cabinets, and legislatures in recent years. This seminar explores how this happened in a region long known for its culture of cachismo and weak democracy and what the consequences of gender diversity are for politics.

POLI 462 - COMPARATIVE PUBLIC POLICY
Short Title: COMPARATIVE PUBLIC POLICY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Seminar examining the process and substance of public policy across nations, with emphasis on social policy in industrialized democracies. Instructor Permission Required.

POLI 465 - MAKING AND BREAKING GOVERNMENTS: THE POLITICS OF COALITION IN EUROPE
Short Title: MAKING & BREAKING GOVERNMENTS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Seminar examining the politics of coalition formation, coalition governance, and coalition breakup in the European multi-party democracies in which coalition governments are the norm.

POLI 466 - POLITICAL PARTIES AND VOTING BEHAVIOR IN WESTERN DEMOCRACIES
Short Title: PARTIES & VOTING BEHAVIOR
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Seminar on the determinants of party systems, the structure and functions of parties, and theories of voting behavior in Western democracies.
POLI 468 - THE GLOBAL SPREAD OF POLICY AND IDEAS
Short Title: GLOBAL SPREAD POLICY & IDEAS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: This course explores the spatial nature of politics. It examines how policies, ideas and behaviors spread globally among political actors. Topics covered include: government and parties’ policy diffusion. The contagion of civil war and terrorism, the spread of protests and social movements, and the dynamics of economic globalization.

POLI 469 - CIVIL WAR AND TERRORISM
Short Title: CIVIL WAR AND TERRORISM
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Seminar on causes, consequences and dynamics of civil wars. Will analyze why they break out, how sustained, how ended, thinking conceptually, theoretically, empirically about conflict dynamics and processes. Explores transnational dynamics, terrorism, roles of groups, organizations, insurgency-counterinsurgency dynamics and how these affect the evolution of civil conflicts. Graduate/Undergraduate Equivalency. POLI 571. Mutually Exclusive: Cannot register for POLI 469 if student has credit for POLI 571.

POLI 470 - INTERNATIONAL RELATIONS
Short Title: INTERNATIONAL RELATIONS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Topic varies from year to year. Instructor Permission Required. Repeatable for Credit.

POLI 472 - AMERICAN FOREIGN POLICY
Short Title: AMERICAN FOREIGN POLICY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: The content of American foreign policy, its sources, and the process of policy formulation.

POLI 474 - INTERNATIONAL ORGANIZATIONS: THEORIES AND PRACTICE
Short Title: INTERNATIONAL ORGANIZATIONS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: This course has two goals: First to introduce students to the current theoretical debates in the field of international organizations and to assess the value and limitations of these theories; second, to understand the working of important world organizations, including (but not limited to) the UN, the WTO, and IMF. The course assumes some basic knowledge of IR theory and previous debates about the origin and impact of international organizations on world politics. It is designed for students at an advanced stage in the study of political science and International Relations.

POLI 475 - INTERNATIONAL COOPERATION
Short Title: INTERNATIONAL COOPERATION
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Research seminar on theories and evidence of international cooperation. The course will explore conditions conducive to establishing and maintaining cooperation in international politics, the design of international agreements and institutions, and the influence of international agreements and institutions on international relations. Graduate/Undergraduate Equivalency: POLI 541.

POLI 476 - INTERNATIONAL RESEARCH EXPERIENCE
Short Title: INTRNTL RESEARCH EXPERIENCE
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: In this research seminar, students explore key concepts and debates in political science such as power, authority, democratization, globalism, national security, and representation, as they emerge in a specific part of the world. The course includes a faculty-led site visit to another country in which students conduct their research first hand. Students learn how to conduct research in an international setting. Instructor Permission Required. Repeatable for Credit.
POLI 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

POLI 478 - US - CHINA: CONFLICT AND COOPERATION
Short Title: US-CHINA: CONFLICT & COOPRTN
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: This is a research seminar for advanced undergraduate students to read and discuss international relations theories in the context of US-China relations. Students are expected to read cutting edge IR research, follow current events, think critically of the applicability of the existing IR theories on the issues surrounding the bilateral relationship.

POLI 480 - SEMINAR IN POLITICAL BEHAVIOR
Short Title: SEM IN POLITICAL BEHAVIOR
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Undergraduate research seminar covering the field of political behavior with special emphasis on the application of social and cognitive psychology to the study of mass political behavior. Topics include political socialization, models of voting behavior, and political participation.

POLI 481 - UNDERSTANDING WAR AND PEACE
Short Title: UNDERSTANDING WAR AND PEACE
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Understanding War and Peace: Why do countries resort to the use of military force, and how can such conflicts be resolved? This course will introduce students to current research on the causes and consequences of international conflict. In addition to reading and discussing current scholarship, students will have the opportunity to engage in their own research.

POLI 489 - CHINESE POLITICS IN COMPARATIVE PERSPECTIVE
Short Title: CHINESE POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores the range of theories and empirical research methodologies from comparative political science, political-economy and Asian studies commonly applied to understanding Chinese politics: political participation, political organizations, collective action and popular protest, political culture and political institutional change. This course will be a seminar requiring weekly presentations extensive readings at the graduate level in social science, and an original research paper. There is no prerequisite for this course but participants are assumed to already possess extensive knowledge of Chinese history, culture and society. Cross-list: ASIA 489.

POLI 490 - POLITICS AND THE ARTS
Short Title: POLITICS AND THE ARTS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Study of the development of modern political theory and its relevance to contemporary problems. NOTE: This seminar is in the theory and methods field. It is not an American politics seminar.

POLI 500 - SOCIAL SCIENTIFIC THINKING I
Short Title: SOCIAL SCIENTIFIC THINKING I
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course introduces students to the practice of social science research including empirical description, theoretical development, and hypothesis generation and testing. It includes projects on the design and implementation of surveys, controlled experiments, archival data collection, fieldwork, case studies, and qualitative analysis.

POLI 501 - SOCIAL SCIENTIFIC THINKING II
Short Title: SOCIAL SCIENTIFIC THINKING II
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): POLI 500
Description: This course is a continuation of POLI 500. Students will plan and execute an original research project and write a paper reporting the results.
POLI 502 - INTRODUCTION TO STATISTICS
Short Title:  INTRODUCTION TO STATISTICS
Department:  Political Science
Grade Mode:  Standard Letter
Course Type:  Seminar
Credit Hours:  3
Restrictions:  Enrollment is limited to Graduate level students.
Course Level:  Graduate
Description:  This course aims at providing students with a working knowledge of statistics in political science. It involves the study of descriptive and inferential statistics, as well as hands-on experience with computer statistical packages.

POLI 503 - TOPICS IN METHODS AND DATA ANALYSIS
Short Title:  TOPICS METHODS & DATA ANALYSIS
Department:  Political Science
Grade Mode:  Standard Letter
Course Type:  Seminar
Credit Hours:  3
Restrictions:  Enrollment is limited to Graduate level students.
Course Level:  Graduate
Description:  Applications of least squares and general linear mode. Cross-list: STAT 503.

POLI 504 - INTRODUCTION TO MAXIMUM LIKELIHOOD ESTIMATION
Short Title:  INTRO MAX LIKELIHOOD EST
Department:  Political Science
Grade Mode:  Standard Letter
Course Type:  Seminar
Credit Hours:  3
Restrictions:  Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level:  Graduate
Description:  Study of applications of maximum likelihood estimation.

POLI 505 - ADVANCED MAXIMUM LIKELIHOOD ESTIMATION
Short Title:  ADV MAXIMUM LIKELIHOOD EST
Department:  Political Science
Grade Mode:  Standard Letter
Course Type:  Seminar
Credit Hours:  3
Restrictions:  Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level:  Graduate
Prerequisite(s):  POLI 504
Description:  Special topics in political methodology. Instructor Permission Required. Repeatable for Credit.

POLI 506 - ADVANCED TOPICS IN POLITICAL METHODOLOGY I
Short Title:  ADV TOPICS POL METHODS I
Department:  Political Science
Grade Mode:  Standard Letter
Course Type:  Seminar
Credit Hours:  3
Restrictions:  Enrollment is limited to Graduate level students.
Course Level:  Graduate
Prerequisite(s):  POLI 505
Description:  This course provides an analytic and quantitative framework to design and implement causal analysis, especially in observational studies. It focuses on understanding the logic, mathematical foundations and implications of causal reasoning using diverse frameworks, and covers tools for its implementation such as randomization, weighting, difference-in-difference, matching, and others.

POLI 507 - ADVANCED TOPICS IN POLITICAL METHODOLOGY II
Short Title:  ADV TOPICS POL METHODS II
Department:  Political Science
Grade Mode:  Standard Letter
Course Type:  Seminar
Credit Hours:  3
Restrictions:  Enrollment is limited to Graduate level students.
Course Level:  Graduate
Prerequisite(s):  POLI 505
Description:  This course explains how machine learning methods can be used to facilitate discovery, measurement, and predictions of variables relevant to the social sciences. It introduces and illustrates the implementation of several methods and tools such as Bayesian models, classifiers, latent dimension discovery methods, text and image analysis, and others.

POLI 511 - MEASUREMENT AND RESEARCH DESIGN
Short Title:  MEASUREMENT & RESEARCH DESIGN
Department:  Political Science
Grade Mode:  Standard Letter
Course Type:  Seminar
Credit Hours:  3
Restrictions:  Enrollment is limited to Graduate level students.
Course Level:  Graduate
Description:  Study of advanced topics in research design and measurement theory.

POLI 512 - EXPERIMENTAL DESIGN AND SOCIAL BEHAVIOR
Short Title:  EXPERIMENTAL DESIGN & SOCIAL BEHAVIOR
Department:  Political Science
Grade Mode:  Standard Letter
Course Type:  Seminar
Credit Hours:  3
Restrictions:  Enrollment is limited to Graduate level students.
Course Level:  Graduate
Description:  This seminar develops tools for the design and conduct of experiments in the social sciences. At the conclusion of the course each student will have developed and implemented an experiment testing some aspect of human social behavior.

POLI 513 - SURVEY RESEARCH
Short Title:  SURVEY RESEARCH
Department:  Political Science
Grade Mode:  Standard Letter
Course Type:  Seminar
Credit Hours:  3
Restrictions:  Enrollment is limited to Graduate level students.
Course Level:  Graduate
Description:  The major objectives of this course are to introduce graduate students to the skills and resources needed to design and conduct a survey.

POLI 520 - APPROACHES TO COMPARATIVE GOVERNMENT
Short Title:  APPROACHES TO COMPARATIVE GOVERNMENT
Department:  Political Science
Grade Mode:  Standard Letter
Course Type:  Seminar
Credit Hours:  3
Restrictions:  Enrollment is limited to Graduate level students.
Course Level:  Graduate
Description:  Core graduate course analyzing basic approaches to the study of comparative government.
POLI 527 - INSTITUTIONAL ANALYSIS
Short Title: INSTITUTIONAL ANALYSIS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Theories of institutional analysis and design.

POLI 530 - APPROACHES TO AMERICAN GOVERNMENT
Short Title: APPROACHES TO AMERICAN GOV'T
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Core graduate course. Includes an analysis of basic approaches to the study of American politics.

POLI 531 - STATE POLITICS
Short Title: STATE POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Examines similarities and differences in the organization of state politics. Major issues include state legislative organization, state elite behavior, and policy implementation.

POLI 532 - COMPARATIVE LEGISLATURES
Short Title: COMPARATIVE LEGISLATURES
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Provides the student with the basic concepts and theories necessary to understand the functions and organization of legislatures/parliaments/assemblies in democratic societies. This course takes a broad-based perspective, including research that focuses on national parliaments and U. S. state legislatures. Graduate/Undergraduate Equivalency: POLI 433.

POLI 533 - ADVANCED TOPICS IN POLITICAL BEHAVIOR
Short Title: ADV TOPIC POLITICAL BEHAVIOR
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate seminar in the subfield of political behavior. Content varies from year to year. Instructor Permission Required. Repeatable for Credit.

POLI 534 - INTEREST GROUPS AND POLITICAL PARTIES
Short Title: INTEREST GROUP&POLITICAL PARTY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate research seminar in the subfields of interest groups and political behavior.

POLI 535 - RACE, ETHNICITY, AND AMERICAN POLITICS
Short Title: RACE,ETHNICITY&AMER POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate seminar that examines the role of race and ethnicity in American politics. This course provides an examination of the behavioral and electoral implications of racial and ethnic diversity.

POLI 536 - WOMEN AND MINORITY REPRESENTATION
Short Title: WOMEN & MINORITY REPRESENTATN
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Women and minority groups have long been underrepresented in politics. Course explores patterns of, explanations for representation of women and minority groups in many world countries, including the US. Evaluates the vast theoretical and empirical research on underrepresented group representation. Maps future paths for the study of group representation in politics.

POLI 537 - PUBLIC POLICY AND BUREAUCRACY
Short Title: PUBLIC POLICY AND BUREAUCRACY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of the administration and implementation of public policies across federal, state, and substate governments.

POLI 538 - POLITICAL ECONOMY OF POLICY CHANGE
Short Title: POL ECONOMY OF POLICY CHANGE
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will explore policy and political change primarily, but not exclusively, in the United States. Using a political economy approach, we will explore different models of change and identify the actors, institutions, and conditions that facilitate stability in change in state, local and national policymaking.
POLI 539 - POLITICAL PSYCHOLOGY
Short Title: POLITICAL PSYCHOLOGY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Broad survey of the theoretical and methodological approaches used in political psychology. Topics include political information processing, knowledge, attitudes, political trust, emotions, and personality.

POLI 540 - INTERNATIONAL RELATIONS
Short Title: INTERNATIONAL RELATIONS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Core graduate course. Includes an analysis of basic approaches to the study of international relations.

POLI 541 - INTERNATIONAL COOPERATION
Short Title: INTERNATIONAL COOPERATION
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate seminar on theories and evidence of international cooperation. Discussion of the difficulties in establishing cooperation under anarchy and the conditions under which international cooperation is most likely to occur. Graduate/Undergraduate Equivalency: POLI 475.

POLI 542 - SUBNATIONAL POLITICS
Short Title: SUBNATIONAL POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Examines the role of subnational political institutions in the development and implementation of policy. It compares the myriad of subnational institutions. Mutually Exclusive: Cannot register for POLI 542 if student has credit for POLI 442.

POLI 544 - PRACTICUM IN LEGISLATIVE RESEARCH
Short Title: LEGISLATIVE RESEARCH
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will teach graduate students how to design and conduct original empirical research on US, state, or world legislatures. Students will conduct original quantitative research and produce a publishable research paper. Instructor Permission Required.

POLI 562 - RESEARCH SEMINAR ON COMPARATIVE URBAN POLITICS AND POLICY
Short Title: SEM COMP URBAN POL & PLCY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course offers a broad overview of urban politics and policies in cities around the world. We will examine how national, regional and local forces shape the processes and outcomes governance within and across cities and metropolitan areas, paying particular attention to critical problems and politics that affect urban centers: growth, immigration, class conflict, public order, service management, education, housing transportation, environmental protection, sustainability, land-use planning and spatial competition. Mutually Exclusive: Cannot register for POLI 562 if student has credit for POLI 464.

POLI 563 - COALITION POLITICS AND PARLIAMENTARY GOVERNMENT
Short Title: COALITION POLI & PRLMTY GOVT
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines the extensive scholarship on coalition politics in parliamentary democracies. Topics include coalition formation, the allocation of government ministries, coalition termination, coalition policymaking, and the interaction between coalition governance, party competition, and mass voting behavior.

POLI 564 - POLITICAL ECONOMY OF DEVELOPMENT
Short Title: POLI ECONOMY OF DEVELOPMENT
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A central priority developing nations face today concerns establishing economic growth; how best to achieve strong economic performance has both an economic and political dimension. This course seeks a rudimentary understanding of economic growth, concentrating on its political determinants.

POLI 565 - POLITICAL PROTEST
Short Title: POLITICAL PROTEST
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course looks at various theories of collective action and social movements. It will examine theoretical debates about why individuals and groups occasionally redress their grievances through protest and more often endure hardships passively. It will evaluate the relative merit of these theories in explaining cases of protest and passivity worldwide.
POLI 566 - POLITICAL PARTIES
Short Title: POLITICAL PARTIES
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate seminar that examines the theoretical and empirical literature on party development, organization, and change.

POLI 567 - COMPARATIVE POLITICAL BEHAVIOR
Short Title: COMPARATIVE POLITICAL BEHAVIOR
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this course we will explore the nature and sources of cross-national differences in mass political behavior. Mutually Exclusive: Cannot register for POLI 567 if student has credit for POLI 358.

POLI 568 - COMPARATIVE POLITICAL INSTITUTIONS
Short Title: COMP POLITICAL INSTITUTIONS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Examines the design of political institutions in democracies, and their effect on elections, governance, and representation. Explores topics such as the presidential-parliamentary debate, electoral laws and party systems, political parties, electoral institutions and the election of women and minorities, institutional engineering, and U.S. experiences with alternative electoral systems.

POLI 569 - REPRESENTATION IN CONTEMPORARY DEMOCRACIES
Short Title: REP. CONTEMPORARY DEMOCRACIES
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this course, we explore the conceptual meanings of democracy and representation, and then examine the theoretical and empirical linkages between citizen preferences, electoral systems, executive and legislative institutions, policymaking and advance industrial democracies. The aim of the course is to understand how citizen preferences ultimately get translated into policy outcomes and how political institutions shape this relationship.

POLI 570 - SEMINAR IN INTERNATIONAL CONFLICT
Short Title: SEM IN INTERNATIONAL CONFLICT
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar in international conflict. Emphasis on formal theories and quantitative analysis of the causes of war.

POLI 571 - CIVIL WAR AND TERRORISM
Short Title: CIVIL WAR AND TERRORISM
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar on causes, consequences and dynamics of civil wars. Will analyze why they break out, how sustained, how ended, thinking conceptually, theoretically, empirically about conflict dynamics and processes. Explores transnational dynamics, terrorism, roles of groups, organizations, insurgency-counterinsurgency dynamics and how these affect the evolution of civil conflicts. More work will be required of the Graduate level. Graduate/Undergraduate Equivalency: POLI 469. Mutually Exclusive: Cannot register for POLI 571 if student has credit for POLI 469.

POLI 572 - FOREIGN POLICY DECISION MAKING
Short Title: FOREIGN POLICY DECISION MAKING
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of foreign policy, its sources, and the process of policy formulation.

POLI 574 - COLLECTIVE SOCIAL CHOICE
Short Title: COLLECTIVE SOCIAL CHOICE
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to a growing body of literature on how and why individual preferences dominate those of others. Includes the relationship between decision-making structures and the nature of decisional outcomes.

POLI 575 - GAME THEORY
Short Title: GAME THEORY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Examination of current developments in game theory with application to political science.
POLI 576 - INTERNATIONAL POLITICAL ECONOMY
Short Title: INTERNATL POLITICAL ECONOMY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar surveying some of the primary theoretical perspectives and analytical approaches for studying international political economy. Includes a survey of contemporary literature, with special emphasis on theory and research, as well as instructions in how to critically evaluate research and set up a research project.

POLI 577 - DOMESTIC POLITICS AND INTERNATIONAL RELATIONS
Short Title: DOMESTIC POLITICS & INT'L RELA
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate research seminar on the influence of domestic politics on international relations. The course will explore when, why, and how the political structures and conditions within countries affect foreign policy and international relations.

POLI 580 - SEMINAR IN AMERICAN POLITICS
Short Title: SEM IN AMERICAN POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics vary from year to year. Instructor Permission Required. Repeatable for Credit.

POLI 581 - SEMINAR IN COMPARATIVE POLITICS
Short Title: SEMINAR IN COMPARATIVE POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics vary from year to year. Instructor Permission Required. Repeatable for Credit.

POLI 591 - DIRECTED READING-METHODOLOGY
Short Title: DIRECTED READING METHODOLOGY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

POLI 592 - DIRECTED READING METHODOLOGY
Short Title: DIRECTED READING METHODOLOGY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

POLI 593 - DIRECTED READING-AMERICAN POLITICS
Short Title: DIRECTED READING-AMER POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

POLI 594 - DIRECTED READING-AMERICAN POLITICS
Short Title: DIR READING AMERICAN POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

POLI 595 - DIRECTED READING-INTERNATIONAL RELATIONS
Short Title: DIR READ-INTERNATIONAL RELATIONS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

POLI 596 - DIRECTED READING-INTERNATIONAL RELATIONS
Short Title: DIR READ-INTERNATIONAL RELATIONS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

POLI 597 - DIRECTED READING-COMPARATIVE POLITICS
Short Title: DIR READ-COMPARATIVE POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.
POLI 598 - DIRECTED READING-COMPARATIVE POLITICS
Short Title: DIR READ-COMPARATIVE POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

POLI 599 - TEACHING POLITICAL SCIENCE
Short Title: TEACHING POLITICAL SCIENCE
Department: Political Science
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course prepares graduate students to design and teach classes at the college level. Repeatable for Credit.

POLI 600 - MA RESEARCH AND THESIS
Short Title: MA RESEARCH AND THESIS
Department: Political Science
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Research and thesis for resident students. Repeatable for Credit.

POLI 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Laboratory, Lecture, Seminar, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

POLI 800 - PH.D. RESEARCH AND THESIS
Short Title: PH.D. RESEARCH AND THESIS
Department: Political Science
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

Politics, Law, Social Thought (PLST)

PLST 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Politics Law Social Thought
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Laboratory, Seminar
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

PLST 301 - MODERN POLITICAL THOUGHT: MACHIAVELLI TO RAWLS
Short Title: MODERN POLITICAL THOUGHT
Department: Politics Law Social Thought
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Introduction to political theory and political philosophy from the Renaissance to the present: Machiavelli, Hobbes, Pufendorf, Montesquieu, Kant, Hegel, Constant, Mill Marx, Nietzsche, Weber, Habermas, and Rawls. Topics include human rights, political power, citizenship, democracy, the modern state. Required core course for minor in Politics, Law, and Social Thought.

PLST 302 - CONTEMPORARY POLITICAL THEORY
Short Title: CONTEMPORARY POLITICAL THEORY
Department: Politics Law Social Thought
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Introduction to contemporary political theory. Topics include freedom, democracy, empire, citizenship, human rights, radical democracy, protest and civil disobedience, multiculturalism, cosmopolitanism, postcolonial political thought, transnational and global governance.

PLST 303 - HOW DEMOCRACY FAILS
Short Title: HOW DEMOCRACY FAILS
Department: Politics Law Social Thought
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Course examines the conditions under which democracies and republics can fail. Draws on political theory, constitutional debates, and historical examples. Topics include: constitutional crises, states of emergency, popular sovereignty, populism, nationalism, revolution, political violence, civil disobedience, post-democracy, illiberal democracy, and neoliberalism.
PLST 305 - INTRODUCTION TO LAW
Short Title: INTRODUCTION TO LAW
Department: Politics Law Social Thought
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Course introduces students to the U.S. legal system and provides them with a preview of the first year of law school, including the basic principles of Tort, Contract, Criminal, and Criminal Procedure Law. Additionally, the class will teach students how to conduct appellate argument and to write briefs. Mutually Exclusive: Cannot register for PLST 305 if student has credit for COLL 201.

PLST 316 - DEMOCRACY AND POLITICAL THEORY IN ANCIENT GREECE
Short Title: DEMOCRACY & POLITICAL THEORY
Department: Politics Law Social Thought
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The Greeks created political society and studied political society in order to understand and improve it. One particular form of political society, democracy, reached its pinnacle in Athens. We shall attempt to understand how ancient Greeks thought about politics from the rudimentary beginnings in Homer to the complex, incisive arguments of Aristotle. Cross-list: CLAS 316.

PLST 401 - LAW, JUSTICE AND SOCIETY SCHOLARS LEGAL PRACTICUM
Short Title: LJSS LEGAL PRACTICUM
Department: Politics Law Social Thought
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course focuses on the public and private practice sectors of the legal profession through a work experience coupled with classroom instruction at Rice. The goal is to expose undergraduates to the field of law through structured on-site experiences, relevant coursework, and professional development opportunities. Instructor Permission Required. Mutually Exclusive: Cannot register for PLST 401 if student has credit for HUMA 404/SOSC 405. Repeatable for Credit.

PLST 402 - LAW, JUSTICE AND SOCIETY SCHOLARS JUDICIAL PRACTICUM
Short Title: LJSS JUDICIAL PRACTICUM
Department: Politics Law Social Thought
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Students will participate in a semester-long "practicum" with a sitting judge (federal, or Texas appellate) in Houston. This program is designed to give select Rice undergraduates a broad and practical introduction to what lawyers do in court and how judges and the law clerks who work with them think about the questions they are asked to resolve. Instructor Permission Required. Mutually Exclusive: Cannot register for PLST 402 if student has credit for HUMA 401/SOSC 406.

PLST 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Politics Law Social Thought
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

Portuguese (PORT)
PORT 106 - ACCELERATED FIRST YEAR PORTUGUESE FOR SPANISH SPEAKERS
Short Title: ACCEL FIRST YEAR PORTUGUESE
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Alternate first-year Portuguese for students who have a good command of Spanish. This is an intensive course covering the equivalents of PORT 141 and 142. Students will be prepared for PORT 206 upon completion of the course. Placement Test is required. Effective May 15, 2019, this course does not carry D1 credit. Mutually Exclusive: Cannot register for PORT 106 if student has credit for PORT 141/PORT 142.
PORT 141 - FIRST YEAR PORTUGUESE I
Short Title: FIRST YEAR PORTUGUESE I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Development of interactional competence in Portuguese (sociolinguistic and sociocultural knowledge) to communicate and interact with speakers of Portuguese. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. No prior knowledge of this language is necessary. Placement Test is required. Effective May 15, 2019, this course does not carry D1 credit. Mutually Exclusive: Cannot register for PORT 141 if student has credit for PORT 106.

PORT 142 - FIRST YEAR PORTUGUESE II
Short Title: FIRST YEAR PORTUGUESE II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): PORT 141
Description: Continuation of PORT 141. Development of interactional competence in Portuguese (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Portuguese. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Effective May 15, 2019, this course does not carry D1 credit. Mutually Exclusive: Cannot register for PORT 142 if student has credit for PORT 106/PORT 262.

PORT 206 - ACCELERATED SECOND YEAR PORTUGUESE FOR SPANISH SPEAKERS
Short Title: ACCEL SECOND YEAR PORTUGUESE
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): PORT 106
Description: Alternate second year Portuguese for students who have a very good command of Spanish. This intensive course covers the equivalent of PORT 263 and PORT 264. It will focus on the development of interactional competence in Portuguese to communicate satisfactorily with Portuguese speakers. Mutually Exclusive: Cannot register for PORT 206 if student has credit for PORT 263/PORT 264.

PORT 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Laboratory, Seminar
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

PORT 263 - SECOND YEAR PORTUGUESE I
Short Title: SECOND YEAR PORTUGUESE I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): PORT 142
Description: Continuation of PORT 142. Development of interactional competence in Portuguese (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Portuguese. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Cannot register for PORT 263 if student has credit for PORT 201/PORT 206.

PORT 264 - SECOND YEAR PORTUGUESE II
Short Title: SECOND YEAR PORTUGUESE II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): PORT 263
Description: Continuation of PORT 263. Development of interactional competence in Portuguese (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Portuguese. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Cannot register for PORT 264 if student has credit for PORT 202/PORT 206.

PORT 301 - THIRD YEAR PORTUGUESE I
Short Title: THIRD YEAR PORTUGUESE I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PORT 206 or PORT 264
Description: Continuation of PORT 206 or 264. Emphasis on developing reading and writing ability as more authentic materials and socio-cultural topics are introduced.
PORT 302 - BRASIL: CULTURA E SOCIEDADE
Short Title: BRASIL: CULTURE AND SOCIETY
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PORT 202 or PORT 364
Description: The purpose of this course is to develop speaking, reading, and writing skills via the analysis of Brazilian literary and cultural texts. Through a multidisciplinary approach, students will be introduced to cultural analysis using a broad range of sources such as literature, film, and other audio-visual materials.

PORT 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

Psychology (PSYC)

PSYC 101 - INTRODUCTION TO PSYCHOLOGY
Short Title: INTRODUCTION TO PSYCHOLOGY
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Survey of topics, problems, and approaches in contemporary psychology. Includes the biological basis of behavior, sensation, perception, attention, learning and memory, thinking, language, abnormal behavior and therapies, personality, and individual differences. Required for psychology majors.

PSYC 102 - READINGS IN INTRODUCTORY PSYCHOLOGY
Short Title: READINGS IN INTRO PSYCHOLOGY
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Corequisite: PSYC 101
Description: This is an accompaniment to PSYC 101 and provides the opportunity for students to delve deeper into various topics through reading and discussion of research. This course will expand on the topics discussed in PSYC 101 and help students to develop the skills necessary for reading, evaluating, and discussing psychological research. Distribution Credit for PSYC 102 no longer eligible beginning Fall 2019.

PSYC 202 - INTRODUCTION TO SOCIAL PSYCHOLOGY
Short Title: INTRO TO SOCIAL PSYCHOLOGY
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): PSYC 101
Description: Overview of topics in social psychology. Includes conformity and social influence, attitude formation and change, aggression, altruism, relationships, liking and loving, and prejudice and stereotyping, as well as applications to other disciplines (e.g. law, marketing, the workplace, etc.). Required for psychology majors.

PSYC 203 - INTRODUCTION TO COGNITIVE PSYCHOLOGY
Short Title: INTRO TO COGNITIVE PSYCHOLOGY
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An introduction to topics in cognitive psychology, including perception, attention, language, memory, and decision making. Required for psychology majors.

PSYC 231 - INDUSTRIAL AND ORGANIZATIONAL PSYCHOLOGY
Short Title: INDUS & ORGANIZATIONAL PSYC
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): PSYC 101
Description: An overview of the principles, techniques, and theories of psychology applied in the industrial setting.

PSYC 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.
PSYC 260 - UNDERGRADUATE PROFESSIONAL ISSUES IN PSYCHOLOGY
Short Title: UNDERGRAD PROF ISSUES IN PSYC
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This seminar will provide students interested in psychology with an opportunity to explore psychology as a major and a career. Through guest lecturers, group discussions, and class projects, students will learn about diverse fields and potential career paths in psychology. Instructor Permission Required.

PSYC 308 - MEMORY
Short Title: MEMORY
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 203
Description: Critical review of traditional and contemporary approaches to the study of remembering and forgetting.

PSYC 309 - PSYCHOLOGY OF LANGUAGE
Short Title: PSYCHOLOGY OF LANGUAGE
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 203
Description: Study of human and other animal communication. Includes the structure of human language, word meaning and semantic memory, psychological studies of syntax, bilingualism, language and thought, and language errors and disorders. Cross-list: LING 309.

PSYC 310 - PSYCHOLOGY OF AGING
Short Title: PSYCHOLOGY OF AGING
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 202 or PSYC 203
Description: This course focuses on the psychology of aging through a biological, cognitive, and socio-emotional framework. Topics to be covered include how mental capacities change over time, especially memory processing, differences between normal and pathological aging, neurobiological changes with age, dementias such as Alzheimer's disease, and individual differences in aging. There will be an emphasis on discussion of recent literature and developing research ideas in the field of psychology of aging.

PSYC 315 - INTRODUCTION TO SEMANTICS
Short Title: INTRODUCTION TO SEMANTICS
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Introduction to basic approaches to the study of meaning in linguistics and related fields. Includes the cognitive representation of meaning, lexical categorization, conceptual structures, metaphor/metonymy, meaning change, pragmatic inference, and the relation of language and mind. Cross-list: LING 315. Recommended Prerequisite(s): LING 200 or ANTH 200.

PSYC 321 - DEVELOPMENTAL PSYCHOLOGY
Short Title: DEVELOPMENTAL PSYCHOLOGY
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 202 or PSYC 203
Description: Study of behavioral changes with age in both human and nonhuman species. Recommended Prerequisite(s): PSYC 202 and PSYC 203.

PSYC 325 - LANGUAGE ACQUISITION
Short Title: LANGUAGE ACQUISITION
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 101
Description: The aim of this course is to explore language development closely through a variety of theories and research findings. Students will become familiar with different theories concerning language development, and develop an understanding of relevant issues, theoretical positions and relevant methodologies in language development using critical thinking skills. Cross-list: LING 325.
PSYC 329 - PSYCHOLOGICAL TESTING
Short Title: PSYCHOLOGICAL TESTING
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 202 or PSYC 203
Description: Study of the diagnosis and treatment of mental disorders.

PSYC 330 - PERSONALITY THEORY AND RESEARCH
Short Title: PERSONALITY THEORY & RESEARCH
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 339 or SOSC 302
Description: Offers a detailed examination of psychological test development and analysis. Topics include an exploration of different forms of psychological tests (e.g. intelligence, attitudes, personality, clinical), reliability and validity of tests, and practical issues in testing such as test bias (e.g. gender differences).

PSYC 331 - PSYCHOLOGY OF GENDER
Short Title: PSYCHOLOGY OF GENDER
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Examination of those aspects of personality emphasized by major theorists past and present.

PSYC 333 - MULTICULTURAL PSYCHOLOGY
Short Title: MULTICULTURAL PSYCHOLOGY
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 101
Description: This seminar examines psychological research and theories that address important issues in the lives of diverse individuals. Readings, discussions, and films will be used to explore the acculturation process; stereotyping, prejudice, discrimination and racism; racial/ethnic identity development; and multicultural competence. Students are required to participate in a service learning project. Recommended Prerequisite(s): PSYC 202 and PSYC 321.

PSYC 339 - STATISTICAL METHODS-PSYCHOLOGY
Short Title: STATISTICAL METHODS-PSYCHOLOGY
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to students with a major in Cognitive Sciences or Psychology. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 101 or PSYC 203
Description: Introduction to quantitative and computer methods applicable to the analysis of experimental and correlational data. Required for psychology majors. Psychology and Cognitive Science Majors only or Permission of Instructor(s).

PSYC 340 - RESEARCH METHODS - PSYCHOLOGY
Short Title: RESEARCH METHODS - PSYCHOLOGY
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to students with a major in Cognitive Sciences or Psychology. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 101 and (PSYC 339 or SOSC 302)
Description: A continuation of PSYC 339/SOSC 302, with emphasis on individual student experiments and the writing of research reports. Required for psychology majors. Psychology and Cognitive Science Majors only or Permission of Instructor(s).
PSYC 341 - HUMAN-COMPUTER INTERACTION
Short Title: HUMAN-COMPUTER INTERACTION
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 101 and PSYC 203
Description: Study of the design and evaluation of interactive computing systems for human use and the major phenomena surrounding them. Equivalency: PSYC 441. Mutually Exclusive: Cannot register for PSYC 341 if student has credit for PSYC 441/PSYC 541.

PSYC 342 - COMPUTER APPLICATIONS IN PSYCHOLOGY
Short Title: COMPUTER APPLICATIONS IN PSY
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 203
Description: The use of computers in psychological research and in usability engineering. The emphasis will be on dynamic HTML and JavaScript. Topics will include designing and running web-based psychology experiments and the use of web-based video. Graduate/Undergraduate Equivalency: PSYC 504. Mutually Exclusive: Cannot register for PSYC 342 if student has credit for PSYC 504.

PSYC 345 - HEALTH PSYCHOLOGY
Short Title: HEALTH PSYCHOLOGY
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 101 and PSYC 202 and PSYC 203
Description: Contemporary theory and research in health psychology, including topics such as health behaviors, stress and coping, pain and its management, heart disease, psychoneuroimmunology, chronic illness, and dying. Recommended Prerequisite(s): PSYC 332 and PSYC 340.

PSYC 346 - STRESS AND HEALTH ACROSS THE LIFESPAN
Short Title: STRESS/HEALTH ACROSS LIFESPAN
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This is an introductory course on psychobiological processes in animals and humans as they pertain to the development of stress responses and disease. In this course, we will review models of stress as well as the physiological processes implicated in bodily diseases. We will also review behavioral, psychological and pharmacological variables involved in stress processes. Recommended Prerequisite(s): PHYS 345.

PSYC 351 - PSYCHOLOGY OF PERCEPTION
Short Title: PERCEPTION
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 101 and PSYC 203
Description: An introductory survey of sensation and perception, both human and animal. Covers all sensory systems but focuses on vision and audition. Includes the philosophy of perception; measurement and methods; neuroanatomy of visual and auditory systems; computational models of vision, motion, depth, and color; illusions and perceptual organization; and perceptual development. Graduate/Undergraduate Equivalency: PSYC 521.

PSYC 353 - PSYCHOLOGY OF EMOTION AND MOTIVATION
Short Title: PSYC OF EMOTION & MOTIVATION
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 101 and PSYC 202
Description: Study of motives and emotions as causes of human behavior; includes biological motives, aggression, emotions and emotional expression, and individual differences in motivation. Recommended Prerequisite(s): PSYC 203.
PSYC 354 - INTRODUCTION TO SOCIAL AND AFFECTIVE NEUROSCIENCE
Short Title: INTRO TO SOC/AFFECTIVE NEURO
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 202
Description: Overview of social and affective neuroscience research, including examination of the neurobiological mechanisms supporting social cognition; inter-personal processes; emotion and motivation; and emotion regulation. These topics will be examined in both healthy and affectively-disordered populations, with links made to the fields of health psychology and clinical neuroscience.

PSYC 362 - COGNITIVE NEUROSCIENCE: EXPLORING THE LIVING BRAIN
Short Title: COGNITIVE NEUROSCIENCE
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 202
Description: Survey of theory and research on how mental processes are carried out by the human brain, with an emphasis on relating measures of brain activity to cognitive functioning, methods surveyed included electro physiological recording techniques, functional imaging techniques and methods that involve lessoning or disrupting neural activity. Cross-list: NEUR 362.

PSYC 364 - COGNITIVE NEUROSCIENCE LAB
Short Title: COGNITIVE NEUROSCIENCE LAB
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 362 (may be taken concurrently) or NEUR 362 (may be taken concurrently)
Description: The objective is to equip the students of PSYC/NEUR 362 the tools on how to apply cognitive neuroscience techniques to health or clinical topics and to investigate sensorimotor and cognitive measures in a human model. The prereq may be taken the same semester as this class. Instructor Permission Required. Cross-list: NEUR 364. Graduate/Undergraduate Equivalency: PSYC 564. Mutually Exclusive: Cannot register for PSYC 364 if student has credit for PSYC 564.

PSYC 366 - METHODS IN SOCIAL COGNITIVE AND AFFECTIVE NEUROSCIENCE
Short Title: METHODS IN SOC COG AFF NEURO
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (PSYC 202 or PSYC 203) and (PSYC 354 (may be taken concurrently) or PSYC 362 (may be taken concurrently))
Description: This course will give students hands-on training in the research methods of social cognitive and affective neuroscience. Students will learn about the theoretical underpinnings of these allied fields; acquire, preprocess, and analyze human functional neuroimaging data (i.e. using fMRI); and interpret and write-up results. PSYC 354 or PSYC 362 may be taken concurrently.

PSYC 370 - INTRODUCTION TO HUMAN FACTORS AND ERGONOMICS
Short Title: INTRO TO HUMAN FACTORS & ERGO
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 101 and PSYC 203
Description: Application of principles of psychology and human performance to the design of modern systems.

PSYC 375 - NEUROPSYCHOLOGY OF LANGUAGE AND MEMORY
Short Title: NEUROPSYC OF LANGUAGE/MEMORY
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 203 and (PSYC 390 or LING 390 or LING 200 or ANTH 200) and (PSYC 362 or NEUR 362 or NEUR 380 or BIOE 380 or PSYC 380)
Description: An introduction to the neural basis of language and memory, covering patient-based and neuroimaging approaches. Topics include the neural basis of speech perception, language comprehension, language production, short-term memory, working memory, semantic and episodic memory, and domain-specific memory (e.g., verbal, spatial, and emotional memory).
PSYC 380 - FUNDAMENTAL NEUROSCIENCE SYSTEMS  
**Short Title:** NEUROSYSTEMS  
**Department:** Psychological Sciences  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course will provide a broad overview of the brain's neural systems that subserve perception, learning, and behavior. The course will be highly integrative with thematic content including functional organization of the nervous system, neural encoding and decoding, sensory systems, motor systems, and high-level concept processing. Cross-list: BIOC 380, NEUR 380. Graduate/Undergraduate Equivalency: PSYC 584. Recommended Prerequisite(s): PSYC 101. Mutually Exclusive: Cannot register for PSYC 380 if student has credit for PSYC 584.  

PSYC 409 - METHODS IN HUMAN-COMPUTER INTERACTION  
**Short Title:** METHODS HUMAN-COMP INTERACTION  
**Department:** Psychological Sciences  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** PSYC 101 and PSYC 203  
**Description:** Introduction to methods for developing and testing user interfaces to computer systems. The focus is on web-based applications. Graduate/Undergraduate Equivalency: PSYC 609. Recommended Prerequisite(s): PSYC 370. Mutually Exclusive: Cannot register for PSYC 409 if student has credit for PSYC 609.  

PSYC 411 - HISTORY OF PSYCHOLOGY  
**Short Title:** HISTORY OF PSYCHOLOGY  
**Department:** Psychological Sciences  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** PSYC 101 and PSYC 202 and PSYC 203  
**Description:** Survey of evolution of psychological theory from the Greeks to the present. Includes development of scientific approaches to the study of human thought and behavior. Graduate/Undergraduate Equivalency: PSYC 511. Mutually Exclusive: Cannot register for PSYC 411 if student has credit for PSYC 511.  

PSYC 420 - ELECTION SYSTEMS, TECHNOLOGIES, AND ADMINISTRATION  
**Short Title:** ELECTION SYSTEMS  
**Department:** Psychological Sciences  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This multidisciplinary course will consider how elections are conducted to enhance participation, to accurately measure the will of the electorate, and to be sufficiently rigorous to convince all parties that the results are legitimate. This course will consider the design and evaluation of election technologies, ranging from voter registration through the polling booth and vote tabulation. This course will consider three questions: how do individual voters interact with the voting technology, how are voting technologies engineered to be accurate and secure, and how do the social aspects of voting fulfill democratic goals for elections? A central requirement for this course will be group research projects, many operating in our community, built around the November election. Cross-list: COMP 435, POLI 420.  

PSYC 430 - COMPUTATIONAL MODELING OF COGNITIVE PROCESSES  
**Short Title:** COMP MODELING OF COG PROCESSES  
**Department:** Psychological Sciences  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** A survey of computational approaches to modeling cognitive processes. The emphasis will be on recent production system models, but other approaches will also be covered. The course will involve evaluation of existing models and hands-on experience in modeling. Graduate/Undergraduate Equivalency: PSYC 543. Recommended Prerequisite(s): PSYC 203 and COMP 200 (or equivalent). Mutually Exclusive: Cannot register for PSYC 430 if student has credit for PSYC 543.  

PSYC 431 - ADVANCED INDUSTRIAL/ORGANIZATIONAL PSYCHOLOGY SEMINAR  
**Short Title:** ADVANCED I/O PSYCHOLOGY  
**Department:** Psychological Sciences  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** PSYC 231  
**Description:** An emphasis on reading original published research. Topics covered include personnel selection, training, motivation, job attitudes, and groups. Instructor Permission Required. Mutually Exclusive: Cannot register for PSYC 431 if student has credit for PSYC 530.
PSYC 432 - BRAIN AND BEHAVIOR  
**Short Title:** BRAIN AND BEHAVIOR  
**Department:** Psychological Sciences  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** PSYC 101 and PSYC 203 and PSYC 362  
**Description:** An in-depth examination of the neural basis of higher mental functions in humans, including perception, attention, memory, motor skill, and language. Claims and controversies in cognitive neuroscience will be discussed. Recommended Prerequisite(s): PSYC 339 and PSYC 340.

PSYC 435 - POLLUTION AND PSYCHOLOGICAL DEVELOPMENT  
**Short Title:** POLLUTION & PSYCHOLOGICAL DEV  
**Department:** Psychological Sciences  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** In this course, we will consider research on the effects of various pollutants and toxic substances on the cognitive, social, and emotional development of children. Expert guest speakers will contribute to the course as well. Recommended Prerequisite(s): PSYC 339 and PSYC 340.

PSYC 436 - ADVANCED ORGANIZATIONAL PSYCHOLOGY  
**Short Title:** ADVANCED ORGANIZATIONAL PSYC  
**Department:** Psychological Sciences  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** PSYC 231 and PSYC 431  
**Description:** Contemporary theory and research in organizational psychology, including topics such as motivation, leadership, job satisfaction, occupational stress, social cognition in work organizations, and group processes. Graduate/Undergraduate Equivalency: PSYC 636. Mutually Exclusive: Cannot register for PSYC 436 if student has credit for PSYC 636.

PSYC 438 - GROUP DYNAMICS  
**Short Title:** GROUP DYNAMICS  
**Department:** Psychological Sciences  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course examines current psychological theory and literature concerning intra- and inter-group phenomena within organizational contexts. This course will cover topics such as the unique methodological challenges of studying group-level phenomena; individual-, group-, and organizational-level inputs; group processes; and the assessment of group-level outcomes. Graduate/Undergraduate Equivalency: PSYC 551. Recommended Prerequisite(s): PSYC 339 and PSYC 340 and should be majoring in Psychology or Business. Mutually Exclusive: Cannot register for PSYC 438 if student has credit for PSYC 551.

PSYC 439 - ADVANCED STATISTICAL METHODS FOR PSYCHOLOGY UNDERGRADUATES  
**Short Title:** ADV STATISTICAL METHODS-PSYC  
**Department:** Psychological Sciences  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** PSYC 339 or SOSC 302  
**Description:** This course is intended as a second course in statistics for psychology and the social sciences. It builds on PSYC 339/SOSC 302. Advanced factorial ANOVA designs, mixed between- and within-subject designs, and multiple regression will be covered. This course is primarily for advanced psychology undergraduates contemplating enrollment in graduate school.

PSYC 440 - RESEARCH SEMINAR: INDUSTRIAL/ORGANIZATIONAL PSYCHOLOGY  
**Short Title:** RESEARCH IN I/O PSYCHOLOGY  
**Department:** Psychological Sciences  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** PSYC 231  
**Description:** An examination of selected topics in industrial/organizational psychology, focusing on published and ongoing research by contemporary scholars. Topics will vary. Instructor Permission Required.
PSYC 441 - HUMAN-COMPUTER INTERACTION
Short Title: HUMAN-COMPUTER INTERACTION
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 203
Description: Study of the design and evaluation of interactive computing systems for human use and the major phenomena surrounding them. Equivalency: PSYC 341. Graduate/Undergraduate Equivalency: PSYC 541. Mutually Exclusive: Cannot register for PSYC 441 if student has credit for PSYC 341/PSYC 541.

PSYC 445 - ADVANCED SEMINAR IN HEALTH PSYCHOLOGY
Short Title: ADV SEM IN HEALTH PSYCHOLOGY
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Junior or Senior. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 202 and PSYC 332 and (PSYC 339 or SOSC 302) and PSYC 340
Description: Consideration of research on psychological factors and health, with special consideration to the role of health beliefs in people's practice and nonpractice of health, illness, and sick-role behaviors. Topics will vary. Repeatable for credit with Permission of Department.

PSYC 452 - EMOTION REGULATION
Short Title: EMOTION REGULATION
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Review of contemporary psychology research on emotion regulation, including conceptual foundations, neurobiological bases, individual differences, involvement in psychopathology, and links to translational research approaches relevant to health psychology. Graduate/Undergraduate Equivalency: PSYC 552. Mutually Exclusive: Cannot register for PSYC 452 if student has credit for PSYC 552.

PSYC 455 - ADVANCED SEMINAR IN CLINICAL PSYCHOLOGY
Short Title: ADV SEM IN CLINICAL PSYCHOLOGY
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 332
Description: Topics will vary. Repeatable for credit with Permission of Department.

PSYC 461 - REASONING, DECISION MAKING, PROBLEM SOLVING
Short Title: DECISION MAKING/PROB SOLVING
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 203 and (PSYC 339 or SOSC 302 or STAT 280 or STAT 300 or STAT 305 or STAT 310 or ECON 307)
Description: Study of the higher mental processes. Includes problem solving, judgment, decision making, and reasoning. Graduate/Undergraduate Equivalency: PSYC 527. Mutually Exclusive: Cannot register for PSYC 461 if student has credit for PSYC 360/PSYC 527.

PSYC 462 - NON-TRADITIONAL INTERFACES
Short Title: NON-TRADITIONAL INTERFACES
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Advanced coverage of human computer interfaces that are not necessarily graphical in nature. The course covers haptic, gesture, locomotion, auditory, voice olfactory, taste interfaces. Impoverished GUIs (small screen) are investigated, as are interactive voice response systems and complex interfaces that are multi-model. Graduate/Undergraduate Equivalency: PSYC 662. Recommended Prerequisite(s): PSYC 370. Mutually Exclusive: Cannot register for PSYC 462 if student has credit for PSYC 662.

PSYC 463 - MEDICAL HUMAN FACTORS
Short Title: MEDICAL HUMAN FACTORS
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Advanced coverage of the human factors that are specific to medical systems. Topics include medical decision making and diagnosis errors, surgical human factors, medical robots, surgical simulators, and general medical equipment design. Macro-ergonomics of hospital systems, electronic medical records and computerized physician order entry systems are also covered. Graduate/Undergraduate Equivalency: PSYC 663. Recommended Prerequisite(s): PSYC 370. Mutually Exclusive: Cannot register for PSYC 463 if student has credit for PSYC 663.
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<tr>
<th>Course Code</th>
<th>Short Title</th>
<th>Description</th>
<th>Prerequisite(s)</th>
<th>Grade Mode</th>
<th>Course Type</th>
<th>Credit Hours</th>
<th>Restrictions</th>
<th>Course Level</th>
<th>Department</th>
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<tr>
<td>PSYC 464</td>
<td>USABILITY ASSESSMENT</td>
<td>This course covers all of the aspects of specifying, planning, executing, and reporting usability assessments on products, services and systems. Formative and summative assessments are covered, as are 'discount' usability methods. This course is project based, with students performing usability assessments as part of an engineering team that is developing products for deployment.</td>
<td>PSYC 664</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Upper-Level</td>
<td>Psychological Sciences</td>
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<tr>
<td>PSYC 465</td>
<td>OLFACTORY PERCEPTION</td>
<td>This is an advanced human factors course aimed at students who have taken a basic course in human factors or human-computer interaction and are looking for greater depth.</td>
<td>PSYC 101</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Upper-Level</td>
<td>Psychological Sciences</td>
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<tr>
<td>PSYC 470</td>
<td>ENGINEERING PSYCHOLOGY</td>
<td>Special topics include olfactory memory, the effect of emotion and cognition on olfaction, olfaction as a channel of communication, sensory integration, and ERP and fMRI studies on olfaction and its relationship with other sensory systems.</td>
<td>PSYC 565</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Upper-Level</td>
<td>Psychological Sciences</td>
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<tr>
<td>PSYC 475</td>
<td>STEREOTYPING AND PREJUDICE</td>
<td>Consideration of modern research on stereotypes of, prejudice against, and discrimination toward racial, gender, and stigmatized groups.</td>
<td>PSYC 202</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Upper-Level</td>
<td>Psychological Sciences</td>
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<tr>
<td>PSYC 477</td>
<td>SPECIAL TOPICS</td>
<td>Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.</td>
<td>PSYC 203 and 340</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>1-4</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Upper-Level</td>
<td>Psychological Sciences</td>
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<tr>
<td>PSYC 480</td>
<td>ADVANCED TOPICS</td>
<td>Topics will vary. Please see individual instructor for prerequisite requirements. Repeatable for different topics. Repeatable for Credit.</td>
<td>PSYC 202</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Upper-Level</td>
<td>Psychological Sciences</td>
</tr>
<tr>
<td>PSYC 485</td>
<td>UNDERGRADUATE SUPERVISED RESEARCH</td>
<td>Supervised empirical research. Research paper required. Sponsorship by faculty member required. Instructor Permission Required.</td>
<td>PSYC 339, PSYC 340</td>
<td>Standard Letter</td>
<td>Research</td>
<td>1-6</td>
<td>Enrollment is limited to students with a major in Cognitive Sciences or Psychology. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Upper-Level</td>
<td>Psychological Sciences</td>
</tr>
</tbody>
</table>
PSYC 488 - SUPERVISED READING
Short Title: SUPERVISED READING
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Enrollment is limited to students with a major in Cognitive Sciences or Psychology. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Supervised reading of books and empirical papers on a topic of mutual interest to students and faculty. Term paper required. Sponsorship by faculty member required. Instructor Permission Required. Recommended Prerequisite(s): PSYC 339 and PSYC 340. Repeatable for Credit.

PSYC 495 - SUMMER INTERNSHIP
Short Title: SUMMER INTERNSHIP
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Psychology. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Provides enrollment for various department summer internships. Instructor Permission Required. Repeatable for Credit.

PSYC 499 - HONORS THESIS
Short Title: HONORS THESIS
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Enrollment is limited to students with a major in Psychology. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (PSYC 339 or SOSC 302) and PSYC 340
Description: Sponsorship by faculty member required. Students must apply for the Honors Program. Instructor Permission Required. Repeatable for Credit.

PSYC 502 - ADVANCED PSYCHOLOGICAL STATISTICS I
Short Title: ADVANCED PSYC STATISTICS I
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to inferential statistics, with emphasis on analysis of variance. Students who do not meet registration requirements as Graduate and Psychology Majors must receive instructor permission to register. Cross-list: STAT 509.

PSYC 503 - ADVANCED PSYCHOLOGICAL STATISTICS II
Short Title: ADVANCED PSYC STATISTICS II
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): PSYC 502 or STAT 509
Description: A continuation of PSYC 502, focusing on multiple regression. Other multivariate techniques and distribution-free statistics are also covered. Cross-list: STAT 510.

PSYC 504 - COMPUTER APPLICATIONS IN PSYCHOLOGY
Short Title: COMPUTER APPLICATIONS IN PSYC
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The use of computers in psychological research and in usability engineering. The emphasis will be on dynamic HTML and JavaScript. Topics will include designing and running web-based psychology experiments and the use of web-based video. Graduate/Undergraduate Equivalency: PSYC 342. Mutually Exclusive: Cannot register for PSYC 504 if student has credit for PSYC 342.

PSYC 507 - RESEARCH METHODS
Short Title: RESEARCH METHODS
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate level treatment of a wide range of laboratory and field research methodologies.

PSYC 511 - HISTORY AND SYSTEMS OF PSYCHOLOGY
Short Title: HISTORY & SYSTEMS OF PSYC
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Survey of the evolution of psychological theory from the Greeks to the present. Includes development of scientific approaches to the study of human thought and behavior. Graduate/Undergraduate Equivalency: PSYC 411. Mutually Exclusive: Cannot register for PSYC 511 if student has credit for PSYC 411.
**PSYC 520 - FOUNDATIONS OF COGNITIVE PSYCHOLOGY**  
**Short Title:** FOUNDATIONS OF COGNITIVE PSYC  
**Department:** Psychological Sciences  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** An introduction to the basic topics in cognitive psychology, including perception, memory, psycholinguistics, concept formation, problem solving, and decision making.  

**PSYC 521 - PSYCHOLOGY OF PERCEPTION**  
**Short Title:** PERCEPTION  
**Department:** Psychological Sciences  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** An introductory survey of sensation and perception, both human and animal. Covers all sensory systems but focuses on vision and audition. Includes the philosophy of perception; measurement and methods; neuroanatomy of visual and auditory systems; computational models of vision, motion, depth, and color; illusions and perceptual organization; and perceptual development. Graduate/Undergraduate Equivalency. PSYC 351.  

**PSYC 522 - INFORMATION PROCESSING AND ATTENTION**  
**Short Title:** INFO PROCESSING & ATTENTION  
**Department:** Psychological Sciences  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** An exploration of topics in attention, including information overload, selective attention, response conflict, and automatic/unconscious and controlled/conscious processes. The neural mechanisms underlying these processes will also be discussed.  

**PSYC 524 - MEMORY**  
**Short Title:** MEMORY  
**Department:** Psychological Sciences  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Overview of issues and research in remembering and forgetting.  

**PSYC 525 - PSYCHOLINGUISTICS**  
**Short Title:** PSYCHOLINGUISTICS  
**Department:** Psychological Sciences  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Study of the psychology of language. Includes the study of speech production, reading, syntax, meaning, bilingualism, language and thought, and language errors and disorders.  

**PSYC 527 - REASONING, DECISION MAKING, PROBLEM SOLVING**  
**Short Title:** DECISION MAKING/PROB SOLVING  
**Department:** Psychological Sciences  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** The study of higher mental processes. Includes problem solving, judgment, decision making, and reasoning. Graduate/Undergraduate Equivalency: PSYC 461. Mutually Exclusive: Cannot register for PSYC 527 if student has credit for PSYC 461.  

**PSYC 529 - COGNITIVE RESEARCH SEMINAR**  
**Short Title:** COGNITIVE RESEARCH SEMINAR  
**Department:** Psychological Sciences  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Seminar  
**Credit Hours:** 1-3  
**Restrictions:** Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** A weekly student-staff seminar on current and recent research about mental phenomena. Repeatable for Credit.  

**PSYC 530 - FOUNDATIONS OF I-O PSYCHOLOGY**  
**Short Title:** FOUNDATIONS OF I-O PSYCHOLOGY  
**Department:** Psychological Sciences  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Graduate-level introduction to the study of human behavior in the work setting. Instructor Permission Required. Mutually Exclusive: Cannot register for PSYC 530 if student has credit for PSYC 431.  

**PSYC 531 - HF/HCI RESEARCH SEMINAR**  
**Short Title:** HF/HCI RESEARCH SEMINAR  
**Department:** Psychological Sciences  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Seminar  
**Credit Hour:** 1  
**Restrictions:** Enrollment is limited to students with a major in Human-Comp Inter & Humn Factrs or Psychology. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** A weekly student-staff seminar on various human factors and human-computer interaction topics. Repeatable for Credit.
PSYC 532 - HEALTH RESEARCH SEMINAR
Short Title: HEALTH RESEARCH SEMINAR
Department: Psychological Sciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A weekly student-staff seminar on current and recent health and emotion-related research. Repeatable for Credit.

PSYC 533 - I-O PSYCHOLOGY RESEARCH SEMINAR
Short Title: I-O PSYCHOLOGY RESEARCH SEM
Department: Psychological Sciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A weekly student-staff seminar on various industrial-organizational psychology topics. Repeatable for Credit.

PSYC 535 - HUMAN FACTORS/ERGONOMICS
Short Title: HUMAN FACTORS/ERGONOMICS
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Broad overview of the science and profession of human factors/ergonomics. Emphasis is on discussion of literature and presentations of recommendations to applied problems.

PSYC 540 - FOUNDATIONS OF ENGINEERING PSYCHOLOGY
Short Title: ENGINEERING PSYCHOLOGY
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is an advanced human factors course aimed at students who have taken a basic course in human factors or human-computer interaction and are looking for greater depth. Graduate/Undergraduate Equivalency: PSYC 470. Mutually Exclusive: Cannot register for PSYC 540 if student has credit for PSYC 470.

PSYC 541 - HUMAN-COMPUTER INTERACTION
Short Title: HUMAN-COMPUTER INTERACTION
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A survey of computational approaches to modeling cognitive processes. The emphasis will be on recent production system models, but other approaches will also be covered. The course will involve evaluation of existing models and hands-on experience in modeling. Graduate/Undergraduate Equivalency: PSYC 441. Mutually Exclusive: Cannot register for PSYC 541 if student has credit for PSYC 341/PSYC 441.

PSYC 542 - ENGINEERING PSYCHOLOGY
Short Title: ENGINEERING PSYCHOLOGY
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Review of theories of social psychology with an emphasis on current empirical research. Instructor Permission Required.
PSYC 551 - GROUP DYNAMICS
Short Title: GROUP DYNAMICS
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): PSYC 530
Description: This course examines current psychological theory and literature concerning intra- and inter-group phenomena within organizational contexts. This course will cover topics such as the unique methodological challenges of studying group-level phenomena; individual-, group-, and organizational-level inputs; group processes; and the assessment of group-level outcomes. Graduate/Undergraduate Equivalency: PSYC 438. Mutually Exclusive: Cannot register for PSYC 551 if student has credit for PSYC 438.

PSYC 552 - EMOTION REGULATION
Short Title: EMOTION REGULATION
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Review of contemporary psychology research on emotion regulation, including conceptual foundations, neurobiological bases, individual differences, involvement in psychopathology, and links to translational research approaches relevant to health psychology. Graduate/Undergraduate Equivalency: PSYC 452. Mutually Exclusive: Cannot register for PSYC 552 if student has credit for PSYC 452.

PSYC 560 - PSYCHOLOGY PRESENTATIONS
Short Title: PSYCHOLOGY PRESENTATIONS
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Practicum on oral psychology presentation.

PSYC 561 - TEACHING IN PSYCHOLOGY
Short Title: TEACHING IN PSYCHOLOGY
Department: Psychological Sciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hours: 1
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Assistance in the teaching of undergraduate and occasionally graduate courses in psychology. Repeatable for Credit.

PSYC 563 - COGNITIVE PSYCHOLOGY INTERNSHIP
Short Title: COGNITIVE PSYC INTERNSHIP
Department: Psychological Sciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hours: 1-9
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Supervised internship in cognitive psychology. Instructor Permission Required. Repeatable for Credit.

PSYC 564 - COGNITIVE NEUROSCIENCE LAB
Short Title: COGNITIVE NEUROSCIENCE LAB
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment limited to Graduate level students.
Course Level: Graduate
Description: The objective is to equip the students of PSYC/NEUR 362 the tools on how to apply cognitive neuroscience techniques to health or clinical topics and to investigate sensorimotor and cognitive measures in a human model. Instructor Permission Required. Cross-list: NEUR 564. Graduate/Undergraduate Equivalency: PSYC 364. Mutually Exclusive: Cannot register for PSYC 564 if student has credit for PSYC 364.

PSYC 565 - HUMAN OLFACTION
Short Title: HUMAN OLFACTION
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Overview of theories and research related to olfaction. Special topics include olfactory memory, the effect of emotion and cognition on olfaction, olfaction as a channel of communication, sensory integration, and ERP and fMRI studies on olfaction and its relationship with other sensory systems. Graduate/Undergraduate Equivalency: PSYC 465. Mutually Exclusive: Cannot register for PSYC 565 if student has credit for PSYC 465.

PSYC 571 - FIRST-YEAR PROJECT
Short Title: FIRST-YEAR PROJECT
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Individual research project undertaken in the first year of the graduate program. Repeatable for Credit.
PSYC 572 - SECOND-YEAR PROJECT
Short Title: SECOND-YEAR PROJECT
Department: Psychological Sciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Individual research project undertaken during the second year of the graduate program. Repeatable for Credit.

PSYC 573 - NON-THESIS GRADUATE RESEARCH
Short Title: NON-THESIS GRADUATE RESEARCH
Department: Psychological Sciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-6
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Individual research not for first- or second-year project or thesis. Repeatable for Credit.

PSYC 574 - INTRODUCTION TO COGNITIVE NEUROSCIENCE
Short Title: Intro Cognitive Neuroscience
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An introductory graduate-level overview of cognitive neuroscience. The course will cover basics in history, neuroanatomy, methods of cognitive neuroscience, sensation and perception, control of action, learning and memory, emotion, language, attention, drugs and cognition, impulsivity, cognitive control, social cognition, and neurobiology of disease. This course is usually taught at the Texas Medical Center. Instructor Permission Required. Cross-list: NEUR 508.

PSYC 575 - ADVANCED COGNITIVE NEUROSCIENCE: ATTENTION AND PERCEPTION
Short Title: Attention and Perception
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Overview of neuropsychological and cognitive neuroscience approaches to higher mental functions including sensation and perception, attention, motor control, and neuropsychology. Other topics include basic neuroanatomy, experimental and clinical investigative methods, and the historical and philosophical context of contemporary neuroscience. Instructor Permission Required. Cross-list: NEUR 501.
Course URL: www.ruf.rice.edu/~neurosci (http://www.ruf.rice.edu/~neurosci/)

PSYC 576 - ADVANCED COGNITIVE NEUROSCIENCE: HIGHER MENTAL FUNCTIONS
Short Title: Higher Mental Functions
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Overview of neuropsychological and neuroimaging approaches to higher mental functions, including language, memory, executive functions, reasoning, and numerical processing. Instructor Permission Required. Cross-list: NEUR 502.
Course URL: www.ruf.rice.edu/~neurosci (http://www.ruf.rice.edu/~neurosci/)

PSYC 577 - INTRODUCTION TO FUNCTIONAL NEUROANATOMY
Short Title: Functional Neuroanatomy
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2-3
Restrictions: Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Anatomy and function of components of the nervous system with an emphasis on the central nervous system. Usually taught at the Texas Medical Center. Instructor Permission Required.

PSYC 578 - COGNITIVE NEUROPSYCHOLOGY: THEORIES AND METHODS
Short Title: COGNEURO: THEORIES AND METHODS
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course explores different approaches in the field of Cognitive Neuropsychology. Topics include single-case studies, case series, voxel-lesion symptom mapping and computational neuropsychology. We will discuss how to do research with each of these techniques, how to draw inferences from neuropsychological data and critiques of the methodology.

PSYC 580 - DEVELOPMENTAL COGNITIVE NEUROSCIENCE
Short Title: Developmental COG Neuroscience
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar focusing on the neural/biological bases of both normal and abnormal human development through a survey of recent research in developmental cognitive neuroscience. Topics include perceptual, motive, cognitive, and language development as well as experimental research methods for studying the developing brain.
PSYC 581 - VISION SCIENCE
Short Title: VISION SCIENCE
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: Advanced graduate seminar in the psychology of vision, covering the neural, psychophysical, and phenomenological approaches to visual perception.

PSYC 582 - EARLY SENSORY, PERCEPTUAL, AND ATTENTIONAL DEVELOPMENT
Short Title: EARLY SENSORY PERCEPTION
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: This is a survey course for graduate students interested in the development of sensory systems, perception, and attention. There will be original empirical and theoretical readings from the literature on the development of these functions primarily during infancy. Neurobiological underpinnings for these functions will be debated and discussed.

PSYC 583 - THEORY, CONTENT, AND EXECUTION IN COGNITIVE NEUROSCIENCE
Short Title: COGNEURO THEORY/CONTENT/EXECUT
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: The particular combination of issues in cognitive neuroscience in any one course will vary depending on the background and needs of the students registered for that course and the nature of the important articles in journals covering these areas. Instructor Permission Required. Repeatable for Credit.

PSYC 584 - FUNDAMENTAL NEUROSCIENCE SYSTEMS
Short Title: NEUROSYSTEMS
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: This course will provide a broad overview of the brain's neural systems that subserve perception, learning, and behavior. This course will be highly integrative with thematic content including functional organization of the nervous system, neural encoding and decoding, sensory systems, motor systems, and high-level concept processing. Graduate/Undergraduate Equivalency: PSYC 380. Mutually Exclusive: Cannot register for PSYC 584 if student has credit for PSYC 380.

PSYC 585 - FUNCTIONAL MAGNETIC RESONANCE IMAGING LABORATORY
Short Title: FMRI LABORATORY
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment limited to Graduate level students.

Course Level: Graduate
Description: Laboratory course that provides comprehensive introduction to the practical aspects of planning conducting and analyzing Blood Oxygen Dependent Functional Magnetic Resonance Imaging (BOLD fMRI) data. BOLD fMRI is a methodology that allows non-invasive measurements of the neural processing underlying human perception/cognition. Course taught at Baylor College of Medicine for Advanced fMRI.

PSYC 586 - SOCIAL AND AFFECTIVE NEUROSCIENCE
Short Title: SOCIAL AND AFFECTIVE NEURO
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a major in Psychology. Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: Review of the field of social and affective neuroscience, including conceptual foundations and methodology. Review and discussion of contemporary research on the neurobiological supporting social cognition and emotion in both healthy and affectively-disordered populations.

PSYC 590 - ADVANCED TOPICS IN NEUROSCIENCE
Short Title: ADVANCED TOPICS - NEUROSCIENCE
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: Topics will vary. Repeatable for Credit.

PSYC 595 - HUMAN-COMPUTER INTERACTION AND HUMAN FACTORS PROFESSIONAL MASTER'S INTERNSHIP
Short Title: HCI&HF PROF MASTERS INTERNSHIP
Department: Psychological Sciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: Supervised internship in Human-Computer Interaction and Human Factors Professional Master's Program. Instructor Permission Required.
PSYC 600 - HCI & HF PROFESSIONAL MASTER'S CAPSTONE PROJECT
Short Title: HCI&HF PROF MASTER'S CAPSTONE
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): PSYC 503
Description: This course allows students to integrate all of the knowledge they have gained in their HCI/HF professional master's coursework in the form of a capstone project in the area of human-computer interaction and human factors. The capstone may be either research focused or application focused. Department Permission Required.

PSYC 601 - MULTIVARIATE STATISTICS
Short Title: MULTIVARIATE STATISTICS
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course provides an overview of a wide range of concepts and skills for conducting data analysis on multivariate data sets encountered in psychology. Issues involve preparing the data set, selecting and conducting the appropriate analysis, interpreting the output from statistical programs, and presenting complex analyses and results in a clear manner.

PSYC 602 - PSYCHOMETRICS
Short Title: PSYCHOMETRICS
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Test theory, including reliability, validity, item response theory, and generalizability theory. In addition, the course offers hands-on experience with analysis software and discussion of practical issues such as test bias, item writing, and scale construction.

PSYC 609 - METHODS IN HUMAN-COMPUTER INTERACTION
Short Title: METHODS HUMAN-COMP INTERACTION
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to methods for developing and testing user interfaces to computer systems. The focus is on web-based applications. Graduate/Undergraduate Equivalency: PSYC 409. Mutually Exclusive: Cannot register for PSYC 609 if student has credit for PSYC 409.

PSYC 620 - ADVANCED TOPICS IN COGNITIVE PSYCHOLOGY
Short Title: ADV TOPICS - COGNITIVE PSYC
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics will vary. Repeatable for Credit.

PSYC 621 - TOPICS IN MEMORY
Short Title: TOPICS IN MEMORY
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics will vary. Repeatable for Credit.

PSYC 622 - TOPICS IN PSYCHOLINGUISTICS
Short Title: TOPICS IN PSYCHOLINGUISTICS
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In-depth, consideration of specialized topics in the psychology of language. Topics vary from year to year. Repeatable for Credit.

PSYC 624 - SOCIAL/ORGANIZATIONAL PSYCHOLOGY RESEARCH SEMINAR
Short Title: SOCIAL/ORG PSYC RESEARCH SEM
Department: Psychological Sciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Weekly seminar to discuss recent research in social/organizational psychology. Instructor Permission Required. Repeatable for Credit.

PSYC 625 - COGNITIVE NEUROSCIENCE RESEARCH SEMINAR
Short Title: COGNEURO RESEARCH SEMINAR
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Weekly seminar to discuss recent research in cognitive neuroscience. Instructor Permission Required. Repeatable for Credit.
PSYC 626 - HUMAN FACTORS/HUMAN-COMPUTER INTERACTION RESEARCH SEMINAR
Short Title: HF/HCI RESEARCH SEMINAR
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Weekly seminar to discuss recent research in human factors/human-computer interaction. Instructor Permission Required. Repeatable for Credit.

PSYC 627 - INDUSTRIAL/ORGANIZATIONAL PSYCHOLOGY RESEARCH SEMINAR
Short Title: I/O PSYC RESEARCH SEMINAR
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Weekly seminar to discuss recent research in industrial/organizational psychology. Instructor Permission Required. Repeatable for Credit.

PSYC 628 - MEMORY RESEARCH SEMINAR
Short Title: MEMORY RESEARCH SEMINAR
Department: Psychological Sciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Weekly seminar to discuss recent research in human memory. Repeatable for Credit.

PSYC 629 - PSYCHOLINGUISTICS RESEARCH SEMINAR
Short Title: PSYCHOLINGUISTICS SEMINAR
Department: Psychological Sciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Weekly seminar to discuss recent research in psycholinguistics. Repeatable for Credit.

PSYC 630 - ADVANCED TOPICS IN I/O
Short Title: ADVANCED TOPICS IN I/O
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): PSYC 530
Description: Topics will vary. Repeatable for different topics. Repeatable for Credit.

PSYC 631 - FOUNDATIONS OF INDIVIDUAL DIFFERENCES
Short Title: INDIVIDUAL DIFFERENCES
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Applied psychologists attempt to build theoretical and empirical models that effectively explain how variation in individual differences (e.g., cognitive ability, personality, motivation, interests) relates to variation in practically relevant outcomes (e.g., training effectiveness, job performance, response to clinical treatment). This course covers major theoretical and methodological approaches to this end.

PSYC 632 - LEADERSHIP
Short Title: LEADERSHIP
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Examination of the major psychological approaches to the study of leadership. Emphasis is on theory and practice in formal organizations.

PSYC 634 - PERSONNEL PSYCHOLOGY
Short Title: PERSONNEL PSYCHOLOGY
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): PSYC 530
Description: Examination of the theory, research, and applications in personnel selection, including job analysis, job performance, evaluation of performance, validation of selection methods, and training.
PSYC 635 - MULTILEVEL MODELING IN PSYCHOLOGICAL RESEARCH
Short Title: MULTILEVEL MODELING
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Psychological data often have a nested structure (e.g., students within classrooms, time points within individuals). Multilevel modeling of such data yields results that are more appropriate and interpretable than traditional statistical methods. Students will gain both practical and conceptual knowledge of this popular methodology.

PSYC 636 - ORGANIZATIONAL PSYCHOLOGY
Short Title: ORGANIZATIONAL PSYCHOLOGY
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): PSYC 530
Description: Contemporary theory and research in organizational psychology, including topics such as motivation, leadership, job satisfaction, occupational stress, social cognition in work organizations, and group processes. Graduate/Undergraduate Equivalency: PSYC 436. Mutually Exclusive: Cannot register for PSYC 636 if student has credit for PSYC 436.

PSYC 637 - META-ANALYSIS IN PSYCHOLOGICAL RESEARCH
Short Title: META-ANALYSIS
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): PSYC 530
Description: Meta-analysis is a popular tool for statistically aggregating effects across related psychological studies. Course topics traverse a wide range of issues, including developing and using a coding sheet, fixed- vs. random-effects models, analysis moderator effects, correcting for statistical artifacts, dealing with dependent outcomes and outliers, and detecting publication bias.

PSYC 638 - STRUCTURAL EQUATION MODELING
Short Title: STRUCTURAL EQUATION MODELING
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Structural equation modeling attempts to provide improved estimates of construct-level relationships. It also allows for complex hypothesis testing (e.g., mediation between groups, longitudinal) to find an appropriate balance between model parsimony and model fit. This course introduces students to basic concepts and applications of this popular research method.

PSYC 639 - INDUSTRIAL/ORGANIZATIONAL PSYCHOLOGY INTERNSHIP
Short Title: I/O PSYCHOLOGY INTERNSHIP
Department: Psychological Sciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hours: 1-9
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Supervised internship in organizational and/or personnel psychology. Instructor Permission Required. Repeatable for Credit.

PSYC 640 - TOPICS IN HUMAN-COMPUTER INTERACTION
Short Title: TOPICS IN HCI
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics will vary. Repeatable for Credit.

PSYC 641 - SPECIAL TOPICS IN HUMAN-COMPUTER INTERACTION
Short Title: SPECIAL TOPICS IN HCI
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-6
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics will vary. Repeatable for Credit.

PSYC 649 - HUMAN FACTORS/HUMAN-COMPUTER INTERACTION INTERNSHIP
Short Title: HF/HCI PSYC INTERNSHIP
Department: Psychological Sciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hours: 1-9
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Supervised internship in engineering psychology. Instructor Permission Required. Repeatable for Credit.
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<td>PSYC 651</td>
<td>TOPICS IN SOCIAL PSYCHOLOGY</td>
<td>TOPICS IN SOCIAL PSYCHOLOGY</td>
<td>Psychological Sciences</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>Topics will vary. Repeatable for Credit.</td>
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<tr>
<td>PSYC 660</td>
<td>PROFESSIONAL ISSUES</td>
<td>PROFESSIONAL ISSUES</td>
<td>Psychological Sciences</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>Discussion of selected topics on professional matters. Includes grant writing, licensing, and ethics in psychology.</td>
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<td>PSYC 662</td>
<td>NON-TRADITIONAL INTERFACES</td>
<td>NON-TRADITIONAL INTERFACES</td>
<td>Psychological Sciences</td>
<td>Standard Letter</td>
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<td>Enrollment limited to Graduate level students.</td>
<td>Graduate</td>
<td>Advanced coverage of human computer interfaces that are not necessarily graphical in nature. The course covers haptic, gesture, locomotion, auditory, voice olfactory, taste interfaces. Impoverished GUIs (small screen) are investigated, as are interactive voice response systems and complex interfaces that are multi-model. Graduate/Undergraduate Equivalency: PSYC 462. Recommended Prerequisite(s): PSYC 370. Mutually Exclusive: Cannot register for PSYC 662 if student has credit for PSYC 462.</td>
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<tr>
<td>PSYC 663</td>
<td>MEDICAL HUMAN FACTORS</td>
<td>MEDICAL HUMAN FACTORS</td>
<td>Psychological Sciences</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Enrollment limited to Graduate level students.</td>
<td>Graduate</td>
<td>Advanced coverage of the human factors that are specific to medical systems. Topics include medical decision making and diagnosis errors, surgical human factors, medical robots, surgical simulators, and general medical equipment design. Macro-ergonomics of hospital systems, electronic medical records and computerized physician order entry systems are also covered. Graduate/Undergraduate Equivalency: PSYC 463. Recommended Prerequisite(s): PSYC 370. Mutually Exclusive: Cannot register for PSYC 663 if student has credit for PSYC 463.</td>
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<tr>
<td>PSYC 664</td>
<td>USABILITY ASSESSMENT</td>
<td>USABILITY ASSESSMENT</td>
<td>Psychological Sciences</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Enrollment limited to Graduate level students.</td>
<td>Graduate</td>
<td>This course covers all of the aspects of specifying, planning, executing, and reporting usability assessments on products, services and systems. Formative and summative assessments are covered, as are 'discount' usability methods. This course is project based, with students performing usability assessments as part of an engineering team that is developing products for deployment. Graduate/Undergraduate Equivalency: PSYC 464. Recommended Prerequisite(s): PSYC 370. Mutually Exclusive: Cannot register for PSYC 664 if student has credit for PSYC 464.</td>
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<tr>
<td>PSYC 665</td>
<td>SEMINAR IN GENES AND COGNITION</td>
<td>SEMINAR IN GENES AND COGNITION</td>
<td>Psychological Sciences</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Enrollment limited to Graduate level students.</td>
<td>Graduate</td>
<td>This seminar will consist of reading and discussing papers on molecular genetic studies of various cognitive functions broadly construed. This will include studies of genes and attention, genes and working memory, and genes and executive function. Will also include readings on genes and disordered cognition (e.g., ADHD, Alzheimer’s).</td>
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<tr>
<td>PSYC 667</td>
<td>METHODS IN COGNITIVE NEUROSCIENCE</td>
<td>METHODS IN COGNITIVE NEUROSCIENCE</td>
<td>Psychological Sciences</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Enrollment limited to Graduate level students.</td>
<td>Graduate</td>
<td>Explores issues in functional neuroimaging and provides hands-on experience with experimental design, data acquisition, and analysis. Examines hemodynamic (PET, FMR), electrophysiologic (EEG, MEG), and other (e.g. neural stimulation, event-related optical) methods of measuring functional activation in the human brain related to cognitive operations. This course is usually offered at the University of Texas Medical School.</td>
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<tr>
<td>PSYC 677</td>
<td>SPECIAL TOPICS</td>
<td>SPECIAL TOPICS</td>
<td>Psychological Sciences</td>
<td>Standard Letter</td>
<td>Internship/Practicum, Lecture, Seminar, Laboratory</td>
<td>1-4</td>
<td>Enrollment limited to Graduate or Visiting Graduate level students.</td>
<td>Graduate</td>
<td>Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.</td>
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*Graduate/Undergraduate Equivalency: PSYC 462. Recommended Prerequisite(s): PSYC 370.*
PSYC 681 - PERCEPTUAL ORGANIZATION
Short Title: PERCEPTUAL ORGANIZATION
Department: Psychological Sciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): PSYC 581
Description: Advanced graduate course. Perceptual organization, primarily in human vision but in other senses too. We examine theoretical issues underlying perceptual organization; principal phenomena; methods used to reveal perception of structure; neural basis of perception organization; theories of perceptual organization; and remaining problems in the field.

PSYC 700 - THESIS RESEARCH
Short Title: THESIS RESEARCH
Department: Psychological Sciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Research for the master's thesis. Repeatable for Credit.

PSYC 800 - DISSERTATION RESEARCH
Short Title: DISSERTATION RESEARCH
Department: Psychological Sciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Research for the doctoral dissertation. Repeatable for Credit.

Religion (RELI)

RELI 101 - INTRODUCTION TO THE STUDY OF RELIGION
Short Title: INTRO TO THE STUDY OF RELIGION
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Comparative and interdisciplinary analysis of key elements (including scripture, religious experience, ideas of the divine, religious art and practices) of two Western and two non-Western religions, of the scholarly study of religion, and of the role of religion in the contemporary world.

RELI 104 - INTRODUCTION TO JEWISH MYSTICISM
Short Title: INTRO TO JEWISH MYSTICISM
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Surveys the historical development and central themes of Jewish mysticism. From the bible to ancient mysticism to medieval Kabbalah to modern expressions, we will critically reflection the ideas such as divine presence in the world, the cultivation of insight and magical powers, contemplative and restorative practices, and charismatic authority. Cross-list: MDEM 103.

RELI 105 - INTRODUCTION TO MEDIEVAL CHRISTIAN THOUGHT
Short Title: MEDIEVAL CHRISTIAN THOUGHT
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Survey of major medieval Christian thinkers. Primary focus on high and late middle ages (12th-15th century), with some attention to spiritual and apocalyptic writings and dissenting thought in this period. Cross-list: MDEM 105.

RELI 108 - INTRODUCTION TO JUDAISM
Short Title: INTRODUCTION TO JUDAISM
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Survey of post-biblical Judaism as reflected in the literature of the classical rabbinic tradition, mysticism, medieval biblical commentary, legal codes and philosophy, and modern movements such as Hasidism, denominational Judaism, Zionism, and feminist Judaism. Jewish material culture such as synagogue architecture, illuminated manuscripts and ritual artifacts will be included. Students will not receive credit for both RELI 108 and RELI 209. Mutually Exclusive: Cannot register for RELI 108 if student has credit for RELI 209.
RELI 109 - RELIGION AND LAW
Short Title: RELIGION AND LAW
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Law and religion: origins, differentiation, relation to legitimacy and stability of basic institutions. Law school, professional life, quest for a fitting career in the search for meaning and authentic selfhood. Required: willingness to share the personal roots of your interest in law and your take on the Big Picture.

RELI 110 - INTRODUCTION TO AFRICAN RELIGIONS
Short Title: INTRO AFRICAN RELIGIONS
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction to the structures of African religions through readings. Topics include community, cosmology, ritual, ethical values, magic, witchcraft, spirit possession, contribution to nationalism, social change, religion and art, and transplantation of African Religions in the Americas.

RELI 111 - INTRODUCTION TO CHRISTIANITY IN AFRICA
Short Title: INTRO TO CHRISTIANITY AFRICA
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course maps the pluralistic nature of early Christianity from its grassroots beginnings in a commune in Jerusalem to Rome and the conversion of Emperor Constantine, Different Christian movements include the Apostolic Christians, Ebionites, Marcionites, Thomasiants, Montanists, Monarchians, Modalists, Arians, and a variety of Gnostic Christians will be studied comparatively as well as historically.

RELI 112 - COMPARING CHRISTIANITIES
Short Title: COMPARING CHRISTIANITIES
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course maps the pluralistic nature of early Christianity from its grassroots beginnings in a commune in Jerusalem to Rome and the conversion of Emperor Constantine, Different Christian movements include the Apostolic Christians, Ebionites, Marcionites, Thomasiants, Montanists, Monarchians, Modalists, Arians, and a variety of Gnostic Christians will be studied comparatively as well as historically.

RELI 113 - INTRODUCTION TO CHRISTIANITY IN AFRICA
Short Title: INTRO TO CHRISTIANITY AFRICA
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An introductory reading course examining the dynamics of African Christianity from the early church to the present. Course will include studying the African church during the Patristic era, the Colonial period, Prophetic Movements, nationalism, racial tensions, the role of women, and the emergence of a distinct theological voice.

RELI 116 - MYSTICISM THROUGHOUT THE AGES
Short Title: MYSTICISM THROUGHOUT THE AGES
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course examines the historical development of mysticism in Western thought, placing the Christian experiential traditions in comparison with Jewish developments. Through mystical texts, we will explore key concepts, such as visions of God and spiritual journeys, as developed during late antiquity, the middle-ages, and into the early modern period. Cross-list: MDEM 116.

RELI 122 - THE BIBLE AND ITS INTERPRETERS
Short Title: THE BIBLE AND ITS INTERPRETERS
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level

RELI 123 - INTRODUCTION TO WORLD CHRISTIANITY
Short Title: INTRO TO WORLD CHRISTIANITY
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is designed to introduce students to world Christianity from historical and thematic perspectives. Readings and lectures for the course will draw from interdisciplinary research and scholarship to situate world Christianity as a dynamic spiritual, intellectual, cultural, and communal tradition. This course will introduce students to Christianity in the Americas, Europe, Asia, Africa, and the Pacific using historical analysis to probe the history of the Christian movement, its global distribution, its sacred texts and practices, social engagement, and roles it has a place in a changing world. Interdisciplinary texts will be used to probe selected topics including but not limited to proselytization, leadership, the dynamic competitive relations between mainline churches, emerging Christian communities, and the social and political dimensions of world Christianity.
REL 124 - RELIGION AND THE ART OF HAPPINESS  
Short Title: RELIGION & ART OF HAPPINESS  
Department: Religion  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: Students at Rice University consistently self-report as ‘happiest’ by rankings like the Princeton Review. Course analyzes what we mean when we talk about ‘happiness’ in the study of religion, assessing the role of community, habits, meaning, and positive thinking in religious and psychological texts, as well as lived experience.  

REL 125 - INTRODUCTION TO BIBLICAL HEBREW I  
Short Title: INTRO TO BIBLICAL HEBREW I  
Department: Religion  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: An introduction to Biblical Hebrew with emphasis on grammar and vocabulary. Cross-list: HEBR 125. Graduate/Undergraduate Equivalency: RELI 507. Mutually Exclusive: Cannot register for RELI 125 if student has credit for RELI 507.  

REL 126 - INTRODUCTION TO BIBLICAL HEBREW II  
Short Title: INTRO TO BIBLICAL HEBREW II  
Department: Religion  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: Continuation of RELI 125. We will finish the grammar in the second half of this semester and then read selections from the Hebrew Bible. Cross-list: HEBR 126. Graduate/Undergraduate Equivalency: RELI 511. Mutually Exclusive: Cannot register for RELI 126 if student has credit for RELI 511.  

REL 127 - INTERMEDIATE BIBLICAL HEBREW III  
Short Title: INTERM BIBLICAL HEBREW III  
Department: Religion  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Prerequisite(s): RELI 125 and RELI 126  
Description: Readings in the Hebrew Bible as well as in some unvocalized texts from the Dead Sea Scrolls. Review of grammar and vocabulary. Instructor Permission Required. Graduate/Undergraduate Equivalency: RELI 512. Mutually Exclusive: Cannot register for RELI 127 if student has credit for RELI 512.  

REL 157 - RELIGION AND HIP HOP CULTURE IN AMERICA  
Short Title: RELIGION AND HIP HOP  
Department: Religion  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: Hip Hop culture has changed how life is discussed and conducted. However, one of the under-explored dimensions of Hip Hop culture involves its religious sensibilities. Using lectures, discussions, films, and video presentations, this course explores Hip Hop culture’s religious dimensions through its musical language-rap music. Mutually Exclusive: Cannot register for RELI 157 if student has credit for RELI 311.  

REL 158 - LIBERATION THEOLOGIES  
Short Title: LIBERATION THEOLOGIES  
Department: Religion  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: This course seeks to acquaint students with examples of liberation theology, as they relate to the following issues: racism, sexism, classism, and environmental destruction. Attention is given to the context, construction, form, and aims of Latin American liberation theology, Black theology, Feminist theology, and Theology in the Intersections. Mutually Exclusive: Cannot register for RELI 158 if student has credit for RELI 548.  

REL 203 - JUDAISM OF JESUS AND HILLEL  
Short Title: JUDAISM OF JESUS AND HILLEL  
Department: Religion  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: This course examines the history and culture of Judaism during the Second Temple period, which produced such great religious leaders as Jesus and Hillel. Topics include: canonization, colonization, diaspora, economic and political instability, eschatology, Hellenization, imperialism, messianism, Pharisees, priesthood, Sadducees, Scribes, scriptures, sectarianism, synagogue and temple worship. Cross-list: HIST 201.
RELI 213 - THE PROPHET JEREMIAH: THE BIBLICAL BOOK AND ITS RECEPTION IN JUDAISM AND CHRISTIANITY
Short Title: THE PROPHET JEREMIAH
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A seminar on the book of Jeremiah and its reception. Topics to be explored: ancient Near Eastern prophecy and Israel’s cultures of revelation; the composition, production, and transmission of a biblical book; the life of the prophet; the transformation of Jeremiah’s message in later, post-biblical texts attributed to him.

RELI 215 - MYSTIC CINEMA: KABBALAH IN FILM
Short Title: MYSTIC CINEMA
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course explores uses by the film industry of ideas drawn from Jewish mysticism. We will examine themes such as monsters, spirits, numerology and the paranormal, as portrayed in classic film and through to contemporary Hollywood. Emphasis will be placed on the medieval textual and folkloric traditions behind such portrayals. Cross-list: FILM 215. Mutually Exclusive: Cannot register for RELI 215 if student has credit for FILM 114/FSEM 141/RELI 114.

RELI 219 - THE SUPERNATURAL AND RELIGION
Short Title: THE SUPERNATURAL AND RELIGION
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will treat the history of the supernatural from the biblical materials on the miraculous ‘sign’, through the birth of the ‘supernatural’ in medieval Christianity and the canonization of saints, to the mediating categories of the ‘preternatural’ and the modern ‘paranormal.’ Comparative categories and materials in other cultural and religious complexes will also be treated. Mutually Exclusive: Cannot register for RELI 219 if student has credit for RELI 519.

RELI 221 - THE LIFE OF THE PROPHET MUHAMMAD
Short Title: LIFE OF PROPHET MUHAMMAD
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will examine the life of the Prophet Muhammad, focusing on its significance for Muslims and for non-Muslims. Readings in The Qur’an, Ibn Hisham, and Haykal. Cross-list: ASIA 221.

RELI 223 - QUR’AN AND COMMENTARY
Short Title: QUR’AN AND COMMENTARY
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will examine the intersections of religion, politics, and social justice during the period of history marked by the emergence and activities of the Black Lives Matter Movement.

RELI 230 - ASIAN RELIGIONS IN AMERICA
Short Title: ASIAN RELIGIONS IN AMERICA
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Survey of the major themes of the Qur’an and selected types of commentary on it from the early Islamic period until the present day.
REL 231 - AMERICAN METAPHYSICAL RELIGION
Short Title: AMERICAN METAPHYSICAL RELIGION
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Beginning with a historical survey of the American metaphysical tradition, this course turns to a close study of the Esalen Institute in Big Sur, California, as a unique window into some of the different ways the tradition has appropriated Asian religions, psychological models of the unconscious, and contemporary scientific paradigms. Cross-list: ASIA 231. Mutually Exclusive: Cannot register for RELI 231 if student has credit for RELI 505.

REL 232 - RELIGIONS FROM INDIA
Short Title: RELIGIONS FROM INDIA
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will survey the religions of India, namely Hinduism, Buddhism, Jainism, Christianity, Islam, and Sikhism. Emphasis will be placed on the study of scriptures of these traditions and their continuing global relevance, particularly in American history and culture. Cross-list: ASIA 232. Graduate/Undergraduate Equivalency: RELI 500. Mutually Exclusive: Cannot register for RELI 232 if student has credit for RELI 500.

REL 233 - INTRODUCTION TO TIBETAN LANGUAGE, LITERATURE AND CULTURE
Short Title: INTRO TO TIBETAN LANG & LIT
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introducing the Tibetan alphabet and basics of grammar through reading section of a classic Tibetan text. In addition, readings in English in Indian and Tibetan Buddhist materials, also on the art, history, geography and /or modern era in those areas. Final includes a paper drawn from readings and class discussion. Cross-list: TIBT 233. Graduate/Undergraduate Equivalency: RELI 502. Mutually Exclusive: Cannot register for RELI 233 if student has credit for RELI 502.

REL 234 - INTERMEDIATE TIBETAN LANGUAGE, LITERATURE AND CULTURE
Short Title: INT TIBETAN LANG LIT & CULTURE
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Continued training in Tibetan language-extending vocabulary and facility with grammar. Final includes a paper drawn from readings and class discussion. Cross-list: TIBT 234. Graduate/Undergraduate Equivalency: RELI 564. Mutually Exclusive: Cannot register for RELI 234 if student has credit for RELI 564. Repeatable for Credit.

REL 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory, Internship/Practicum, Lecture, Laboratory, Seminar
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

REL 243 - THE BOOK OF GENESIS
Short Title: THE BOOK OF GENESIS
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A critical reading in English of the Book of Genesis with close attention to the narrative artistry and theological dimensions of the text. Compares pre-modern modes of interpretation and modern historical criticism.

REL 270 - INTRODUCTION TO THE BLACK CHURCH IN THE UNITED STATES
Short Title: INTRO BLACK CHURCH IN THE US
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Much of what has historically taken place within Black communities has been shaped by Black Christian churches. These churches are resources for those interested in understanding religious expression and activism within the Black community. This course provides an introduction into the history, thought, and worship of the major Black denominations.
RELI 271 - MEDIEVAL POPULAR CHRISTIANITY
Short Title: MEDIEVAL POPULAR CHRISTIANITY
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: For much of the Middle Ages, literacy was a luxury that ordinary people could not afford. How could peasants participate in Christian traditions? Course surveys devotional practices engaged by the laity, including penance, pilgrimage, plays, charms and spells, as well as traditions of lay interaction with dead saints and ghosts. Cross-list: MDEM 271.

RELI 282 - INTRODUCTION TO CHRISTIANITY
Short Title: INTRO TO CHRISTIANITY
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Multidisciplinary exploration of Christian religious experience, belief, and social reality with examples from Africa, the Americas, Asia, and Europe during the last two thousand years. Themes include search for lasting marks of identity amid change and diversity as well as the issue of Christianity's relation to processes of modernization and secularization. No prior background in religious studies required.

RELI 294 - RELIGION IN FICTION AND FILM
Short Title: RELIGION IN FICTION AND FILM
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The sacred in interreligious, international, and interdisciplinary encounter, approached via social sciences, theology, theories of literature and mythology. Authors and directors can include Waugh, Mishima, Mann, Proust, Hesse, Percy, Gardner, Updike, Gibson, Sterling, Coupland, Ray, Resnais, Fellini, Bergman, Anderson, Bunnel, and Nutley. Graduate/Undergraduate Equivalency: RELI 514. Mutually Exclusive: Cannot register for RELI 294 if student has credit for RELI 514.

RELI 300 - RELIGIONS IN AMERICA
Short Title: RELIGIONS IN AMERICA
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Examines the religions and religious practices of America from colonial encounter with native peoples to the contemporary period with a special focus on the morphing natures and historical complexities of American Christianities, religious pluralism and secularism. Graduate/Undergraduate Equivalency: RELI 504. Mutually Exclusive: Cannot register for RELI 300 if student has credit for RELI 504.

RELI 301 - NIETZSCHE AND RELIGIOUS THOUGHT
Short Title: NIETZSCHE & RELIGIOUS THOUGHT
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Nietzsche's thought and background: his impact on religious thinkers and cultural critics; his influence on understanding of God, faith, values, society; his connection with Schopenhauer, Wagner, Tillich, Mann, Barth, Buber, Freud, Jung, D.H. Lawrence, Heidegger, antibourgeois cultural criticism, environmentalism, feminism, and postmodernism. Graduate/Undergraduate Equivalency: RELI 515. Mutually Exclusive: Cannot register for RELI 301 if student has credit for RELI 515.

RELI 302 - PEOPLE OF THE BOOK: JUDAISM AND SCRIPTURE
Short Title: PEOPLE OF THE BOOK
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Examines Judaism as a 'People of the Book,' recognizing Judaism's dominant religious preoccupation for millennia to be the reading, study and performance of Jewish scripture, particularly the Torah or the first 5 books of the Hebrew Bible Topics: book culture, act of reading, canonization, revelation, and rabbinic, philosophical, mystical interpretations. All readings are in English. Graduate/Undergraduate Equivalency: RELI 526. Mutually Exclusive: Cannot register for RELI 302 if student has credit for RELI 526.
REL 307 - BASIC COPTIC 1
Short Title: BASIC COPTIC 1
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A first semester introduction to Coptic grammar and vocabulary. Graduate/Undergraduate Equivalency: RELI 591. Mutually Exclusive: Cannot register for RELI 307 if student has credit for RELI 591. Repeatable for Credit.

REL 308 - BASIC COPTIC 2
Short Title: BASIC COPTIC 2
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): RELI 307
Description: Second semester introduction to Coptic grammar and vocabulary, with selected readings from the Coptic New Testament, Nag Hammadi, and monastic literature. Prerequisite: Introduction to Coptic Language I. Graduate/Undergraduate Equivalency: RELI 592. Mutually Exclusive: Cannot register for RELI 308 if student has credit for RELI 592.

REL 309 - BASIC COPTIC 3
Short Title: BASIC COPTIC 3
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Varied readings in original language to include the New Testament, Nag Hammadi, and monastic literature. Prerequisite: Coptic 1 and 2. Graduate/Undergraduate Equivalency: RELI 593. Mutually Exclusive: Cannot register for RELI 309 if student has credit for RELI 593. Repeatable for Credit.

REL 311 - RELIGION AND HIP HOP CULTURE IN AMERICA
Short Title: RELIGION AND HIP HOP CULTURE IN AMERICA
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Hip Hop culture has changed how life is discussed and conducted. However, one of the under-explored dimensions of Hip Hop culture involves its religious sensibilities. Using lectures, discussions, films, and video presentations, this course explores Hip Hop culture's religious dimensions through its musical language-rap music. RELI 311 requires additional work above the RELI 157 counterpart, including a term paper, etc. Mutually Exclusive: Cannot register for RELI 311 if student has credit for RELI 157.

REL 312 - THE RELIGIOUS THOUGHT OF MARTIN L. KING, JR. AND MALCOLM X
Short Title: MLK AND MALCOLM X
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Although many figures played a prominent role during the Civil Rights Movement, Martin L. King, Jr. and Malcolm X made unique contributions. Their work sparked important conversation concerning the methods, goals, and consequences of struggle toward liberation. This course examines their religiosity, theological sensibilities, and the major themes which surface in their writings and public work. Graduate/Undergraduate Equivalency: RELI 546. Mutually Exclusive: Cannot register for RELI 312 if student has credit for RELI 546.

REL 315 - GENDER AND ISLAM
Short Title: GENDER AND ISLAM
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Explores the lives of Muslim women in Asia, the Middle East, Europe, and North America; analyze constructions of gender in the Islamic world over time, the challenges faced from such diverse quarters as colonial administrators, Western feminists, and states, as well as movements and individuals within the Muslim world. Cross-list: ASIA 315, SWGS 315.
RELI 318 - THE BIBLE: A BRIEF INTELLECTUAL HISTORY
Short Title: BIOGRAPHY OF THE BIBLE
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An investigation of how the perception of the Bible changed from antiquity to the 21st century. The course is structured chronologically. A close reading of the works of major thinkers from each period, together with specific examples of biblical exegesis. Graduate/Undergraduate Equivalency: RELI 518. Mutually Exclusive: Cannot register for RELI 318 if student has credit for RELI 518.

RELI 322 - INTRODUCTION TO BUDDHISM
Short Title: INTRODUCTION TO BUDDHISM
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Buddhist ideas, art, and meditation. Exploration of the Buddhism in India, China, and Japan and their impact in the USA today. Readings include Buddhists classics and contemporary responses from mediators and scientists. Cross-list: ASIA 322. Graduate/Undergraduate Equivalency: RELI 572. Mutually Exclusive: Cannot register for RELI 322 if student has credit for RELI 572.

RELI 328 - RELIGION AND GLOBAL POVERTY
Short Title: RELIGION & GLOBAL POVERTY
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Advanced study of religion and poverty in global context. Course materials will address religious, ethical anthropological theories of development, analyze specific themes economic and social development, examine the role of Faith Based Organizations and do specific case studies. Students will be graded on short reflections papers and a final term paper. Graduate/Undergraduate Equivalency: RELI 528. Mutually Exclusive: Cannot register for RELI 328 if student has credit for RELI 528.

RELI 329 - THE BIBLE IN POPULAR CULTURE
Short Title: THE BIBLE IN POPULAR CULTURE
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Even in today's seemingly secular pop culture landscape, the Bible is a strong artistic, social, and political influence. We will explore ways in which the Bible is used in contemporary pop culture by analyzing biblical references in music, film, art, and other media. We will show how pop culture shapes understandings of the Bible and vice versa. Grad students will write a 25-30 pp. research paper and lead at least one extended class discussion. Graduate/Undergraduate Equivalency: RELI 529. Mutually Exclusive: Cannot register for RELI 329 if student has credit for RELI 529.

RELI 332 - ADVANCED TIBETAN LANGUAGE & CULTURE
Short Title: ADV TIBETAN LANGUAGE & CULTURE
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): RELI 132 or TIBT 132
Description: This class builds on RELI 232 and 234, now including more challenging material in Tibetan, and continuing the trajectory of gaining familiarity with Buddhist philosophical systems as these touch on epistemology, ontology, and contemplative practice. Cross-list: TIBT 332. Graduate/Undergraduate Equivalency: RELI 532. Mutually Exclusive: Cannot register for RELI 332 if student has credit for RELI 532. Repeatable for Credit.

RELI 333 - KNOWING BODY/GLOWING MIND: BUDDHIST ARTS OF CONTEMPLATION AND ANALYSIS
Short Title: KNOWING BODY/GLOWING MIND
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Buddhism is a performing art engaging both mind and body. Our course investigates Buddhist and other literature, epistemology and rituals with an eye to how they speak to contemplative practice. Contemplative practice itself, in class and out, supplements our exploration of the interplay between traditional Asian and contemporary Western perspectives. Graduate/Undergraduate Equivalency: RELI 573. Recommended prerequisite(s): One course in Buddhism. Mutually Exclusive: Cannot register for RELI 333 if student has credit for RELI 573. Repeatable for Credit.
RELI 334 - PSYCHOLOGY OF RELIGION
Short Title: PSYCHOLOGY OF RELIGION
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An overview of the basic approaches in the psychological understanding of religious belief and practice. Topics to be addressed in religious systems East and West include: sex, religious experience, ritual, myth, saintliness, guilt, God and meditation.

RELI 335 - MEDICINE AND THE MUSEUM: CLINICAL AESTHETICS AND THE MUSEUM OF FINE ARTS, HOUSTON
Short Title: MEDICINE AND THE MUSEUM
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Through weekly visits to the Museum of Fine Arts, Houston, this class develops key skills and engages relevant themes relating to medicine and caregiving, including observation and description, embodiment and motion, eros and suffering, vulnerable populations, grief and loss, human mortality and spiritual transcendence.

RELI 336 - RELIGION & THE SOCIAL SCIENCES
Short Title: RELIGION & THE SOCIAL SCIENCES
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Designed to introduce the student to classic and contemporary texts in the social scientific study of religion. Topics include: mysticism, the social construction of gender, the guru-disciple relationship, secularization, healing traditions East and West, cross-cultural debates. Mutually Exclusive: Cannot register for RELI 336 if student has credit for RELI 260/RELI 609.

RELI 337 - SHAMANS, SAINTS, & SAGES
Short Title: SHAMANS, SAINTS, & SAGES
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Familiarize the student with diverse texts (secular and religious, East and West) found in mystical literature. Emphasis will be placed on psychological and comparative methods. Mutually Exclusive: Cannot register for RELI 337 if student has credit for RELI 262.

RELI 338 - THE CHURCH OF AFRICA
Short Title: THE CHURCH OF AFRICA
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An overview of the basic approaches in the psychological understanding of religious belief and practice. Topics to be addressed in religious systems East and West include: sex, religious experience, ritual, myth, saintliness, guilt, God and meditation.

RELI 339 - APOCALYPSE THEN AND NOW
Short Title: APOCALYPSE THEN AND NOW
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A reading course designed to examine Christianity in Africa. Course materials and readings will address the development of the church from the Patristic era to the present, paying attention to theological developments, missionization, colonialism, nationalism, prophetic movements, race relations, the role of women, and social issues. Graduate/Undergraduate Equivalency: RELI 540. Mutually Exclusive: Cannot register for RELI 338 if student has credit for RELI 540.

RELI 340 - THEOLOGY IN AFRICA
Short Title: THEOLOGY IN AFRICA
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Introductory readings on theological thinking in Africa. Course will address methodological issues as well as constructive theological work on enculturation, social and economic justice, gender, health, and liberation. Read 5 major texts, write a major review, lead class discussions, discuss texts used, and write 20 page research paper. Graduate/Undergraduate Equivalency: RELI 539. Mutually Exclusive: Cannot register for RELI 340 if student has credit for RELI 539.
RELI 341 - AMERICAN JUDAISM: RELIGION AND THOUGHT
Short Title: AMERICAN JUDAISM
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will examine the distinct character of Jewish religion and thought as it has taken shape in America, including its incorporation within secret societies and the occult. Topics to be examined are American Jewish denominationalism, interfaith relations, pluralism and individualism, and developments in American Jewish spirituality. Graduate/Undergraduate Equivalency: RELI 542. Mutually Exclusive: Cannot register for RELI 341 if student has credit for RELI 542.

RELI 342 - NEW RELIGIOUS MOVEMENTS IN AFRICA
Short Title: NEW RELIG MOVEMENTS IN AFRICA
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Discusses new religious movements and the religious, sociological, and political factors leading to their rise, also missionary and colonial reactions to them. Examines their relationship to indigenous religions, political praxis, and their focus on this-worldly salvation in the wake of political and economic marginality. Cross-list: ANTH 343.

RELI 343 - SEMINAR ON LOVE
Short Title: SEMINAR ON LOVE
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar explores the themes of love, sex, and spirit from the classical era through the postmodern age. We will examine literary, philosophical, and artistic expressions in painting, sculpture, cinema, novels, poetry, psychoanalysis, religion, and culture. Cross-list: HART 347.

RELI 344 - SEMINAR ON THE END OF LIFE
Short Title: END OF LIFE SEMINAR
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines themes associated with death and dying from the historical through the contemporary periods. The class will adopt highly multidisciplinary approach that combines the critical perspectives of biomedicine, religious studies, art history, philosophy, anthropology, bioethics, and cultural studies as we consider life at the end of life.

RELI 348 - CHRISTIANITY AND ISLAM IN AFRICA
Short Title: CHRISTIANITY & ISLAM IN AFRICA
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will focus upon the history and conflict of Christianity and Islam in Africa, with emphasis placed upon indigenous African developments, cultural and artistic themes, and conversion narratives as well as exploring the co-existence and conflict of the two major faiths of the continent. Mutually Exclusive: Cannot register for RELI 348 if student has credit for RELI 536.

RELI 350 - DEMONS, MENTAL ILLNESS AND MEDICINE
Short Title: DEMONS/MENTAL ILLNESS/MEDICINE
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Treats complex connections between religious beliefs/practices and formulation of human psychology in western tradition, through a historical reckoning with demonology. Consider the way demons are represented – from semi-corpooreal beings to marks of mental illness – by looking at texts from the ancient world to modern psychiatry. Cross-list: MDEM 350. Mutually Exclusive: Cannot register for RELI 350 if student has credit for RELI 605.
RELI 356 - MAJOR ISSUES IN CONTEMPORARY ISLAM
Short Title: MAJOR ISSUES CONTEMPORARY ISLAM
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will focus on the major issues confronting contemporary Islam including Islamic unity, the place of the Qur’an and traditions, human rights, Islamic feminism, da’wa, education, science and Islam, globalization and medical ethics.

RELI 357 - WHAT'S RELIGIOUS ABOUT BLACK RELIGION?
Short Title: IS BLACK RELIGION RELIGIOUS?
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines two questions: How is religion defined within the study of black religion? What constitutes the nature and meaning of blackness within black religion? These questions provide opportunity to explore how scholars explain what it has meant to be black and religious within the United States. Graduate/Undergraduate Equivalency: RELI 547. Mutually Exclusive: Cannot register for RELI 357 if student has credit for RELI 547.

RELI 359 - RELIGIOUS TOLERANCE IN THE CRUCIBLE OF GLOBALIZATION
Short Title: RELIGIOUS TOLERANCE
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Explores context and consequences of the concept of religious tolerance in the crucible of globalization politics. Background in settlement of Reformation-era religious wars; American attitudes; impetus for tolerance policies and their implementation, 1945 to present (including governmentality and surveillance); results for historically Christian populations, esp. in US and Europe. Graduate/Undergraduate Equivalency: RELI 580. Mutually Exclusive: Cannot register for RELI 359 if student has credit for RELI 580.

RELI 361 - THE HUMANITIES OF CARE & END OF LIFE
Short Title: THE HUMANITIES OF CARE
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Pairing the perspectives of medicine, bioethics, and the medical humanities with thematic case studies in art, literature, cinema, and visual culture, the class examines the humanities of care and the end of life. Cross-list: HURC 361.

RELI 362 - RELIGION AND SCIENCE
Short Title: RELIGION AND SCIENCE
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This advanced seminar analyzes interdisciplinary efforts by scholars of religion to engage scientific research in the cognitive and neuro- sciences. We assess the possibilities for collaboration, as well as conflict, between humanistic and scientific disciplines, asking how the tools of interpretation and empiricism might enrich our understanding of religious phenomena. Graduate/Undergraduate Equivalency: RELI 563. Mutually Exclusive: Cannot register for RELI 362 if student has credit for RELI 563.

RELI 363 - JEWISH PHILOSOPHY: GREAT THINKERS AND THEMES IN JEWISH THOUGHT
Short Title: JEWISH PHILOSOPHY
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An introduction to the main figures and themes in Jewish philosophy. Topics to be discussed include reason vs faith and prophetic revelation; Israel's choseness vs human universalism; creation vs eternity; divine providence and necessity vs free will; evil, justice, and divine omnipotence; prayer, contemplation, and divine and human perfection. Graduate/Undergraduate Equivalency: RELI 567. Mutually Exclusive: Cannot register for RELI 363 if student has credit for RELI 567.
RELI 365 - PAUL AND THE NEW TESTAMENT
Short Title: PAUL & THE NEW TESTAMENT
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Examines the growth of Christianity from its origins as a Jewish group to a religion in the mid-second century that distinguished itself from Judaism. Includes discussion of Acts, Paul's letters, Johannine corpus, Gospel of Thomas, Pastorals, Catholic letters, Hebrews, and Revelation.

RELI 367 - REPRESENTING THE DEVIL IN CHRISTIAN THEOLOGY AND ART
Short Title: REPRESENTING THE DEVIL
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course focuses on representations of the Devil, demons, and ambiguous spirits in Christian sources from the early medieval to early modern period. Students examine theological as well as ritual sources (blessings and exorcisms), and popular, narrative, dramatic, and artistic representations of evil. Mutually Exclusive: Cannot register for RELI 367 if student has credit for RELI 557.

RELI 368 - RISE OF THE NONES: HUMANISMS AND HUMANITIES
Short Title: RISE OF THE NONES
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will look at the rise of the "nones," that is, individuals who affiliate with no religious tradition, through both a history of secular thought in the West and a close reading of key texts and figures. Atheism, humanism, secularism and the "spiritual but not religious" will all be treated as key categories. Graduate/Undergraduate Equivalency: RELI 568. Mutually Exclusive: Cannot register for RELI 368 if student has credit for RELI 568. Repeatable for Credit.

RELI 369 - READING WRIGHT: THEISM AND ATHEISM IN THE WRITINGS OF RICHARD WRIGHT
Short Title: READING RICHARD WRIGHT
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Richard Wright's fiction and nonfiction are important resources for understanding the nature of radicalized life in the United States. This course explores his writings for what they tell us about the role of religion in the development of identity and life meaning, and we will juxtapose the role of religion with Wright's commentary on the nature and significance of atheism for countering injustice. Graduate/Undergraduate Equivalency: RELI 606. Mutually Exclusive: Cannot register for RELI 369 if student has credit for RELI 606.

RELI 371 - CHRISTIANITY IN THE GLOBAL SOUTH
Short Title: CHRISTIANITY IN GLOBAL SOUTH
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Readings on Christianity in the Global South analyzing historical developments, mission and colonial encounters, growth and expansion; diversity of expression, the development of local initiated Churches, Pentecostalism, and public role of the Church. Graduate/Undergraduate Equivalency: RELI 561. Mutually Exclusive: Cannot register for RELI 371 if student has credit for RELI 561.

RELI 375 - EPIPHANIES: SEEING IN A NEW LIGHT AND RECOGNIZING THE RADIANCE
Short Title: EPIPHANIES
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Epiphanies are events or objects that can note a striking appearance or manifestation, just as an epiphanic experience contains a significant moment of revelation. This course examines expressions of epiphanies in modernist art, literature, film, sacred experience, and in the mundane details of life itself. Cross-list: HART 328.
RELI 378 - MIND AND ART, FILM AND LITERATURE IN BUDDHISM  
**Short Title:** BUDDHIST ART AND LITERATURE  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** What is mind? What is self? What can a human being become? Drawing on a wealth of Buddhist-related art, film, and literature, this course introduces you to Tibetan and other Buddhist approaches to these crucial questions. Graduate/Undergraduate Equivalency: RELI 578.  
Mutually Exclusive: Cannot register for RELI 378 if student has credit for RELI 578.

RELI 381 - THE MESSIAH  
**Short Title:** THE MESSIAH  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Examines the historical origins of Messianism. The Hebrew Bible, the Dead Sea Scrolls, and other ancient texts reflect a surprising diversity of Messianic expectations in early Judaism. These form the background of early Christian depictions of Jesus of Nazareth.

RELI 382 - LOST JUDAISMS: THE APOCRYPHAL WRITINGS  
**Short Title:** LOST JUDAISMS  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** After the Hebrew Bible/Old Testament canon was closed, Jews and Christians continued to compose texts and attributed them to the biblical figures of the past. Seminar offers a close reading of some of these apocryphal/pseudepigraphic little known texts. Graduate/Undergraduate Equivalency: RELI 509. Mutually Exclusive: Cannot register for RELI 382 if student has credit for RELI 509.

RELI 383 - THE DEAD SEA SCROLLS  
**Short Title:** THE DEAD SEA SCROLLS  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** A survey of the Dead Sea Scrolls as a window into the Second Temple period. A close reading of the scrolls will lead to a discussion of the theological and historical issues of the time, a period pivotal for the formation of Rabbinic Judaism and Early Christianity. Graduate/Undergraduate Equivalency: RELI 553. Mutually Exclusive: Cannot register for RELI 383 if student has credit for RELI 553.

RELI 384 - PILGRIMAGE AND CRUSADE  
**Short Title:** PILGRIMAGE AND CRUSADE  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Focus on the pilgrimage to Jerusalem and Mecca by Jews, Christians, and Muslims within the context of the crusade period. Also covers the historical religious events of the crusades (approximately 1000-1300) from both a Muslim and a Christian perspective. Mutually Exclusive: Cannot register for RELI 384 if student has credit for RELI 608.

RELI 385 - GOD, TIME AND HISTORY  
**Short Title:** GOD, TIME AND HISTORY  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** How is the passage of time given meaning, and what role--if any--is assigned to divinity in shaping the direction of events? Course explores various forms of recording and interpreting events, drawing from ancient Mesopotamia, Israel, and the Greco-Roman world--the cultures in which modern ideas of history began. Cross-list: HIST 381. Mutually Exclusive: Cannot register for RELI 385 if student has credit for RELI 585.

RELI 387 - WESTERN ESOTERICISM: METHOD AND THEORY  
**Short Title:** WESTERN ESOTERICISM  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course explores the relation between esoteric texts and the idea of 'Western Esotericism.' We will look at primary writings from Agrippa to Madame Blavatsky and consider the historical and methodological approaches emerging as Esotericism is constructed as an academic area. Graduate/Undergraduate Equivalency: RELI 587. Mutually Exclusive: Cannot register for RELI 387 if student has credit for RELI 587.
RELI 388 - THE PSALMS AND THEIR POETIC AFTERLIFE
Short Title: PSALMS AND POETRY
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A seminar on the biblical Psalms. This course will situate the Psalms in their ancient Near Eastern context, explore their original liturgical function in ancient Israel, and trace their afterlife in postbiblical poetry. All texts will be studied in translation. Counts for the Minor in Jewish Studies. RELI 612: Additional readings and longer paper. Graduate/Undergraduate Equivalency: RELI 612. Mutually Exclusive: Cannot register for RELI 388 if student has credit for RELI 612.

RELI 390 - SEARCH FOR GOD IN THE POSTMODERN WORLD
Short Title: SEARCH FOR GOD
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Explore forms of theistic religious experience, concentrating on the Western Christian tradition; past and present cultural and philosophical challenges to traditional religious belief; the possibility of Christian faith and the struggle for justice and meaning. Mutually Exclusive: Cannot register for RELI 390 if student has credit for RELI 280.

RELI 391 - THE REFORMATION & ITS RESULTS
Short Title: THE REFORMATION & ITS RESULTS
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Theology and church-state issues from 16th-century Reformation to 17th-century; medieval background; Luther and Calvin, the Catholic Reformation; religious wars; Protestant orthodoxy; Pietist spirituality; Puritanism; and calls for toleration. Cross-list: MDEM 391. Mutually Exclusive: Cannot register for RELI 391 if student has credit for RELI 286.

RELI 392 - JERUSALEM: HOLY CITY IN TIME AND IMAGINATION
Short Title: JERUSALEM
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3,4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course on Jerusalem's past and present, its religious meanings in Judaism, Christianity, and Islam, and its role in the modern conflict in the Middle East. Instructor Permission Required.

RELI 393 - MUTANTS AND MYSTICS: RACE, SEXUALITY, AND THE FUTURE OF THE HUMANITIES
Short Title: MUTANTS AND MYSTICS
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This is a course about the deep historical and conceptual connections between the histories of science fiction, the paranormal, and social transformation around race, gender, sexuality, and the human. We will see that such events tend to erupt in the "gaps" or "fractures" of society and within both personal and historical traumatic contexts in order to both deconstruct the reigning social formations, epistemologies, and ontologies—usually of an objectivizing, colonizing, and scientific nature—but also supply the numinous foundations for the imagining of new humanities, or what queer theorist Ramzi Fawaz calls our emerging "mutanity." Graduate/Undergraduate Equivalency: RELI 589. Mutually Exclusive: Cannot register for RELI 393 if student has credit for RELI 589.

RELI 395 - LOSING YOUR RELIGION IN FILM & FICTION & MUSIC
Short Title: LOSING YOUR RELIGION IN FILM
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Doubt, sex, despair, obsession, ecstasy in directors, writers, musicians wanting spiritual reboot, 1890-2015: such as Allen Ginsberg, Oscar Wilde, D.H. Lawrence, T.S. Eliot, H.P. Lovecraft, John Updike, and Ingmar Bergman. Graduate/Undergraduate Equivalency: RELI 503. Mutually Exclusive: Cannot register for RELI 395 if student has credit for RELI 503.

RELI 396 - PENTECOSTALISM
Short Title: PENTECOSTALISM
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An introduction to Pentecostalism in a global context focusing historical developments, expansion in Europe, North America, Africa, Latin America and Asia. Graduate/Undergraduate Equivalency: RELI 595. Mutually Exclusive: Cannot register for RELI 396 if student has credit for RELI 595.
RELI 399 - CONTEMPLATIVE PRACTICE
Short Title: CONTEMPLATIVE PRACTICE
Department: Religion
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Literary and artistic creativity, religious experience, and textual interpretation often draw on focused states of consciousness made possible by contemplative practices. The practice will provide historical information about such practices and offer opportunities to participate in techniques ranging from meditation and observing breath to freeform writing and T'ai Chi. Graduate/Undergraduate Equivalency: RELI 597. Mutually Exclusive: Cannot register for RELI 399 if student has credit for RELI 597. Repeatable for Credit.

RELI 400 - SENIOR THESIS
Short Title: SENIOR THESIS
Department: Religion
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Consisting of the writing of a thesis of considerable length, depth, and research, this course will function as the capstone course on writing in the discipline. Required of all majors.

RELI 401 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Religion
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Multiple sections of this course are offered. Repeatable for Credit.

RELI 402 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Religion
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Multiple sections of this course are offered. Repeatable for Credit.

RELI 403 - SENIOR THESIS I
Short Title: SENIOR THESIS I
Department: Religion
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: For the duration of their senior year, qualified students can elect to write a senior thesis. To complete the thesis, the student elects RELI 403 'Senior Thesis I' in Fall semester and RELI 404 'Senior Thesis II' in Spring semester and works with a Religion faculty supervisor for the year. Instructor Permission Required.

RELI 404 - SENIOR THESIS II
Short Title: SENIOR THESIS II
Department: Religion
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): RELI 403
Description: For the duration of their senior year, qualified students can elect to write a senior thesis. To complete the thesis, the student elects RELI 403 'Senior Thesis I' in Fall semester and RELI 404 'Senior Thesis II' in Spring semester and works with a Religion faculty supervisor for the year. Instructor Permission Required.

RELI 406 - CHRISTIANITY AND LATE ANTIQUITY
Short Title: CHRISTIANITY & LATE ANTIQUITY
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This advanced seminar treats the formation of Christianity as an institutional power in relation to the Roman Empire. Starting with the Edict of Milan in 313 CE, which put an end to persecution of Christians, and closing with the Council of Chalcedon in 451 CE, which established normative Christian doctrine, we will move through this development in seven roughly chronological units. Graduate/Undergraduate Equivalency: RELI 506. Mutually Exclusive: Cannot register for RELI 406 if student has credit for RELI 506.

RELI 407 - ARCHIVES OF THE IMPOSSIBLE
Short Title: ARCHIVES OF THE IMPOSSIBLE
Department: Religion
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: After reading Prof. Kripal's Authors of the Impossible as a basic theoretical structure for the semester, this advanced archival research seminar will involve students engaging original historical documents contained in Rice University's archive on Paranormal Currents in American Culture toward the writing of a graduate or undergraduate thesis. Graduate/Undergraduate Equivalency: RELI 607. Mutually Exclusive: Cannot register for RELI 407 if student has credit for RELI 607.
REL 415 - SECRET RELIGION
Short Title: SECRET RELIGION
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Examines religious currents that operate in the margins of traditional religion: the gnostic, esoteric and mystical. Covers how these categories were theorized. Explores how they continue to identify contemporary religious currents that are considered transgressive and are rejected by conventional religious authorities. Class is grounded in antiquity and historical method. Graduate/Undergraduate Equivalency: RELI 615. Mutually Exclusive: Cannot register for RELI 415 if student has credit for RELI 615.

REL 416 - NEW TESTAMENT / CHRISTIAN ORIGINS
Short Title: NEW TESTAMENT/CHRISTIAN ORIG
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: How did Christianity emerge as a new religious movement in the Roman Empire? Covers the history and literature of the first generations of Christians, focusing on Post-Temple developments, issues of authority and leadership, rise of regional forms of Christianity, and formation of distinct Christian identities. Graduate/Undergraduate Equivalency: RELI 616. Mutually Exclusive: Cannot register for RELI 416 if student has credit for RELI 616.

REL 417 - Gnostic AMERICA
Short Title: Gnostic AMERICA
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Covers the rise of Gnostic spirituality in American religion and culture, from the Colonial period to the present. Explores the alpha conduits (Boehme, Blavatsky, Jung, academia). Examines the roles of revelatory experience, artifact migration, historical criticism, secularization, hybridity, heresy, and popularization. Case studies vary depending on students’ research goals. 5000-word research paper. Graduate/Undergraduate Equivalency: RELI 517. Mutually Exclusive: Cannot register for RELI 417 if student has credit for RELI 517.

REL 419 - MYSTERY RELIGIONS
Short Title: MYSTERY RELIGIONS
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Covers literature, practices, and archaeology of esoteric cults within the context of religion in Roman Empire (Demeter, the Great Gods, Cybele, Persephone, Dionysus, Isis, Mithras, Hermes, Qumran, Christianity, Gnostic groups). Case studies vary depending on students’ research goals, including comparison with Renaissance and modern esoteric initiatory groups. 5000-word research paper; GRAD equivalent: 7500-word paper. Graduate/Undergraduate Equivalency: RELI 619. Mutually Exclusive: Cannot register for RELI 419 if student has credit for RELI 619.

REL 421 - FOUCAULT & THE HERMENEUTICS OF SELF
Short Title: FOUCAULT & THE SELF
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Best known for analyzing domination and power, Michel Foucault shifts his attention to ethics and “technologies of the self” in 1976. In this advanced seminar, we study and critique Foucault’s turn to western antiquity through his lectures and volumes of foregrounding resistance to power through religion, politics and ethics. Graduate/Undergraduate Equivalency: RELI 569. Mutually Exclusive: Cannot register for RELI 421 if student has credit for RELI 569.

REL 423 - AFRICAN MYTHS AND RITUALS
Short Title: AFRICAN MYTHS AND RITUALS
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Explore and analyze specific myths and rituals which provide legitimation for community ceremonies and that serve as a basis for the negotiation of power and ideology for members within that community. Readings from classic theorists: Durkheim, Levi-Strauss, Edmond Leach, Gennap and Turner, and contemporary theorists: Weblner, Heusch, Comaroff, and Ray. Cross-list: ANTH 423. Graduate/Undergraduate Equivalency: RELI 537. Mutually Exclusive: Cannot register for RELI 423 if student has credit for RELI 537.
RELI 424 - RELIGION AND POLITICS IN AFRICA  
**Short Title:** RELIGION & POLITICS IN AFRICA  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Course explores interdisciplinary perspectives on religion and politics in Africa focusing on indigenous religious, Christianity, and Islam. Readings will reflect theoretical perspectives, historical developments, regional angels, and contemporary issues such as sharia, gender, and reconciliation as political options. Graduate/Undergraduate Equivalency: RELI 534. Mutually Exclusive: Cannot register for RELI 424 if student has credit for RELI 534. Repeatable for Credit.

RELI 426 - RELIGION AND LITERATURE IN AFRICA  
**Short Title:** RELI AND LITERATURE IN AFRICA  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Analysis of the religious imagination and gender issues in postcolonial literature in Africa focusing on Islam, Christianity, indigenous religions and African Initiated Churches. Religious and gender issues addressed include identity crises, power, clash of cultures, modernity, cosmology, community, and socio-religious conflicts in a postcolonial world. Mutually Exclusive: Cannot register for RELI 426 if student has credit for RELI 538.

RELI 427 - HISTORY AND METHODS: NINETEENTH CENTURY  
**Short Title:** HISTORY AND METHODS: 19TH CENT  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Focused discussion of the history and methods of the study of religion via close readings of classical texts and narratives of the field from 1800-1900. Graduate/Undergraduate Equivalency: RELI 527. Mutually Exclusive: Cannot register for RELI 427 if student has credit for RELI 527.

RELI 428 - HISTORY AND METHODS: TWENTIETH CENTURY  
**Short Title:** HISTORY AND METHODS: 20TH CENT  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Focused discussion of the history and methods of the study of religion via close readings of classical texts and narratives of the field from 1900-present. Graduate/Undergraduate Equivalency: RELI 559. Mutually Exclusive: Cannot register for RELI 428 if student has credit for RELI 559.

RELI 430 - RELIGION, PSYCHOLOGY & CULTURE  
**Short Title:** RELIGION, PSYCHOLOGY & CULTURE  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** A survey of the historical development of the psychology of religion and its conversation with theology, comparative studies, gender studies, sociology, and anthropology. Topics include: mysticism, eroticism, conversion, feminism, psychobiography. Examples drawn from a variety of religious traditions. Readings include: Freud, Jung, Tillich, Erikson, Kristeva, Kakar. Graduate/Undergraduate Equivalency: RELI 584. Mutually Exclusive: Cannot register for RELI 430 if student has credit for RELI 584.

RELI 431 - RELIGION AND COGNITIVE SCIENCE  
**Short Title:** RELIGION AND COGNITIVE SCIENCE  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Interdisciplinary approach founded on biological, cross-cultural, evolutionary, neurological and cognitive studies of religion. Explores extreme religious experiences, ritualized behaviors, shamanism and religious therapy, religious community, universality of religion, and transmission of religious ideas and practices. 5000 word research paper. Graduate/Undergraduate Equivalency: RELI 531. Mutually Exclusive: Cannot register for RELI 431 if student has credit for RELI 531.
RELI 433 - TIBETAN LANGUAGE AND CULTURE
Short Title: TIBETAN LANGUAGE & CULTURE
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Readings in Tibetan texts -- debates, philosophical treatises of various kinds, meditation texts for contemplative practice -- accompanied by supportive readings in English and discussion of the thematic issues raised by the material, with an emphasis on cultural awareness. Repeatable for Credit.

RELI 440 - ISLAM'S MYSTICAL AND ESOTERIC TRADITION
Short Title: ISLAM'S MYSTICAL TRADITION
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Explores the ascetic and Sufi aspects of Islam from the middle Islamic period until the present day. Readings from al-Ghazali, Ibn al-Arabi, Sa'di, Hafiz and Rumi. Graduate/Undergraduate Equivalency: RELI 522. Mutually Exclusive: Cannot register for RELI 440 if student has credit for RELI 522.

RELI 441 - MAGIC AND POPULAR RELIGION
Short Title: MAGIC & POPULAR RELIGION
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will examine the popular religion in the Middle East from Late Antiquity until the 19th century, focusing on healing practices, astrology, protection, amulets, seasonal/life-cycle rituals, and other popular beliefs common to Islam, Judaism and Christianity. Cross-list: ASIA 441. Graduate/Undergraduate Equivalency: RELI 525. Mutually Exclusive: Cannot register for RELI 441 if student has credit for RELI 525.

RELI 442 - CLASSICAL AND CONTEMPORARY ARABIC TEXTS
Short Title: ARABIC TEXTS
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study and read classical Arabic texts with the goal of learning the material as well as the syntax and grammar of Arabic. Graduate/Undergraduate Equivalency: RELI 541. Repeatable for Credit.

RELI 444 - VISIONS AND VISIONARY PRACTICES: MEDIEVAL TO MODERN
Short Title: VISIONS & VISIONARY PRACTICES
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines accounts of visions, comparing medieval and modern visionary techniques and processes and relating visionary writings to cultural and personal contexts. Includes some Christian theology along with other theoretical frameworks, but emphasis on praxis. Cross-list: MDEM 444. Graduate/Undergraduate Equivalency: RELI 644. Mutually Exclusive: Cannot register for RELI 444 if student has credit for RELI 644.

RELI 449 - EARLY CHRISTIAN CONTROVERSIES
Short Title: EARLY CHRISTIAN CONTROVERSIES
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Seminar examines controversies and debates among the early Christians as catholic Christianity emerged from a diversity of Christian movements. Literature reviewed will vary. Students will select to focus on one controversy and write a research paper (undergraduates, 5000 words; graduate students, 7500 words). Oral discussion and presentations will be required. Graduate/Undergraduate Equivalency: RELI 549. Mutually Exclusive: Cannot register for RELI 449 if student has credit for RELI 549. Repeatable for Credit.

RELI 458 - MYSTICISM: THEORIES AND METHODS
Short Title: MYSTICISM
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A history of the development of the modern category of 'mysticism' from the seventeenth century to today, with side studies of cognate terms like 'spirituality,' 'metaphysical religion,' and the 'paranormal,' as these forms of extreme religious experience are by social-scientific and humanistic methods. RELI 558: Additional readings and writing. Graduate/Undergraduate Equivalency: RELI 558. Mutually Exclusive: Cannot register for RELI 458 if student has credit for RELI 558.
RELI 470 - BUDDHIST WISDOM TEXTS

Short Title: BUDDHIST WISDOM TEXTS

Department: Religion

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: Indo-Tibetan analyses of the mind and its functions, especially differing views on the role of reasoning and the nature of the ‘ultimate’ in major philosophical schools of Tibet and India. Graduate/Undergraduate Equivalency: RELI 570. Mutually Exclusive: Cannot register for RELI 470 if student has credit for RELI 570. Repeatable for Credit.

RELI 472 - KABBALAH SEMINAR

Short Title: KABBALAH SEMINAR

Department: Religion

Grade Mode: Standard Letter

Course Type: Seminar

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: This seminar will delve into literature known as 'kabbalah.' through close readings of first-hand accounts of thinkers and mystics known as 'kabbalists,' will explore themes like secrecy and mystery, the nature of the divine, and religious ecstasy. Mutually Exclusive: Cannot register for RELI 472 if student has credit for RELI 582.

RELI 476 - FROM DECOLONIZATION TO GLOBALIZATION

Short Title: FROM DECOLONI TO GLOBALIZATION

Department: Religion

Grade Mode: Standard Letter

Course Type: Lecture

Distribution Group: Distribution Group I

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: Taught in English. Novels, and films, from North and West Africa, and the immigrant population in France, from 1960 to 2010. Emphasis on the tensions between narratives of political emancipation, modernity, secularism, and religious fundamentalism and mysticism. Extra reading for graduate students in theories of colonialism, postcolonialism, globalization. Cross-list: FREN 324, POLI 324. Graduate/Undergraduate Equivalency: RELI 604. Recommended Prerequisite(s): Any 200 level course or above in English or French, or HUMA 101 or HUMA 102, or a FWIS course. Mutually Exclusive: Cannot register for RELI 476 if student has credit for RELI 604.

RELI 477 - SPECIAL TOPICS

Short Title: SPECIAL TOPICS

Department: Religion

Grade Mode: Standard Letter

Course Type: Seminar, Lecture, Laboratory, Internship/Practicum

Credit Hours: 1-4

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: Topics and credit hours may vary each semester. Contact department for current semester’s topic(s). Mutually Exclusive: Cannot register for RELI 477 if student has credit for RELI 353. Repeatable for Credit.

RELI 481 - GNOSTICISM SEMINAR

Short Title: GNOSTICISM SEMINAR

Department: Religion

Grade Mode: Standard Letter

Course Type: Seminar

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: In depth examination of one (or more) Gnostic texts within its literary, social, historical, and religious landscapes. Graduate/Undergraduate Equivalency: RELI 581. Mutually Exclusive: Cannot register for RELI 481 if student has credit for RELI 581.

RELI 488 - THE HISTORY OF RELIGIONS SCHOOLS

Short Title: HISTORY OF RELIGIONS

Department: Religion

Grade Mode: Standard Letter

Course Type: Seminar

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: An historical survey of the History of Religions School that emerged in the 1960s and 70s at the University of Chicago and came to play such an important role in the comparative study of religion. Graduate/Undergraduate Equivalency: RELI 588. Mutually Exclusive: Cannot register for RELI 488 if student has credit for RELI 588.

RELI 490 - AFRICAN AMERICAN LITERATURE AND RELIGION

Short Title: AF/AM LITERATURE & RELIGION

Department: Religion

Grade Mode: Standard Letter

Course Type: Seminar

Distribution Group: Distribution Group I

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: In this seminar students will read and analyze African American literature in order to explore the various ways in which African Americans have understood and articulated the nature and meaning of African American religious experience and practice. Graduate/Undergraduate Equivalency: RELI 590. Mutually Exclusive: Cannot register for RELI 490 if student has credit for RELI 590.
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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Short Title</th>
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<td>RELI 500</td>
<td>RELIGIONS FROM INDIA</td>
<td>RELIGIONS FROM INDIA</td>
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<td>Graduate</td>
<td>Graduate/Undergraduate Equivalency: RELI 232. Mutually Exclusive: Cannot register for RELI 500 if student has credit for RELI 232.</td>
<td>Standard Letter</td>
<td>Enrollment is limited to Graduate level students.</td>
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<tr>
<td>RELI 502</td>
<td>INTRODUCTION TO TIBETAN LANGUAGE, LITERATURE AND CULTURE</td>
<td>INTRO TO TIBETAN LANG &amp; LIT</td>
<td>Religion</td>
<td>3</td>
<td>Graduate</td>
<td>Introducing the Tibetan alphabet and basics of grammar and Tibetan literary genres. Topics vary; Buddhist literature and art, personal narrative, core cultural characteristics. Readings in English and Tibetan. RELI 531: write a paper approximately one-third longer than the undergraduate equivalent (RELI 233) and complete a more substantial presentation. Graduate/Undergraduate Equivalency: RELI 233. Mutually Exclusive: Cannot register for RELI 502 if student has credit for RELI 233.</td>
<td>Standard Letter</td>
<td>Enrollment is limited to Graduate level students.</td>
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<td>RELI 503</td>
<td>LOSING YOUR RELIGION IN FILM &amp; FICTION &amp; MUSIC</td>
<td>LOSING YOUR RELIGION IN FILM</td>
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<td>3</td>
<td>Graduate</td>
<td>A close reading of some early Jewish and Christian apocalypse, a discussion of the apocalyptic worldview, and an examination of America’s fascination with the Apocalypse in media and science. Graduate/Undergraduate Equivalency: RELI 339. Mutually Exclusive: Cannot register for RELI 503 if student has credit for RELI 339.</td>
<td>Standard Letter</td>
<td>Enrollment is limited to Graduate level students.</td>
</tr>
<tr>
<td>RELI 504</td>
<td>RELIGIONS IN AMERICA</td>
<td>RELIGIONS IN AMERICA</td>
<td>Religion</td>
<td>3</td>
<td>Graduate</td>
<td>Examines the religions and religious practices of America from colonial encounter with native peoples to the contemporary period with a special focus on the morphing natures and historical complexities of American Christianities, religious pluralism and secularism. Graduate students will be required to read a standard and well-known two-volume, 1,200-page collection of primary historical sources. They will also write a research paper (25-30 pages) that is approximately twice as long as the undergraduate paper. Graduate/Undergraduate Equivalency: RELI 300. Mutually Exclusive: Cannot register for RELI 504 if student has credit for RELI 300.</td>
<td>Standard Letter</td>
<td>Enrollment is limited to Graduate level students.</td>
</tr>
<tr>
<td>RELI 506</td>
<td>CHRISTIANITY AND LATE ANTIQUITY</td>
<td>CHRISTIANITY &amp; LATE ANTIQUITY</td>
<td>Religion</td>
<td>3</td>
<td>Graduate</td>
<td>This advanced seminar treats the formation of Christianity as an institutional power in relation to the Roman Empire. Starting with the Edict of Milan in 313 CE, which put an end to persecution of Christians, and closing with the Council of Chalcedon in 451 CE, which established normative Christian doctrine, we will move through this development in seven roughly chronological units. Graduate/Undergraduate Equivalency: RELI 406. Mutually Exclusive: Cannot register for RELI 506 if student has credit for RELI 406.</td>
<td>Standard Letter</td>
<td>Enrollment is limited to Graduate level students.</td>
</tr>
<tr>
<td>RELI 507</td>
<td>INTRODUCTION TO BIBLICAL HEBREW I</td>
<td>INTRO TO BIBLICAL HEBREW I</td>
<td>Religion</td>
<td>3</td>
<td>Graduate</td>
<td>An introduction to Biblical Hebrew with emphasis on grammar and vocabulary. Write an exegetical paper on a Hebrew text of your choice. Instructor Permission Required. Graduate/Undergraduate Equivalency: RELI 125. Mutually Exclusive: Cannot register for RELI 507 if student has credit for RELI 125.</td>
<td>Standard Letter</td>
<td>Enrollment is limited to Graduate level students.</td>
</tr>
<tr>
<td>RELI 509</td>
<td>LOST JUDAISMS: THE APOCRYPHAL WRITINGS</td>
<td>LOST JUDAISMS</td>
<td>Religion</td>
<td>3</td>
<td>Graduate</td>
<td>After the Hebrew Bible/Old Testament canon was closed, Jews and Christians continued to compose texts and attributed them to the biblical figures of the past. Seminar offers a close reading of some of these apocryphal/pseudepigraphic little known texts. Students in RELI 509 will additionally conduct a research project. Graduate/Undergraduate Equivalency: RELI 382. Mutually Exclusive: Cannot register for RELI 509 if student has credit for RELI 382.</td>
<td>Standard Letter</td>
<td>Enrollment is limited to Graduate level students.</td>
</tr>
<tr>
<td>RELI 510</td>
<td>APOCALYPSE THEN AND NOW</td>
<td>APOCALYPSE THEN AND NOW</td>
<td>Religion</td>
<td>3</td>
<td>Graduate</td>
<td>A close reading of some early Jewish and Christian apocalypses, a discussion of the apocalyptic worldview, and an examination of America’s fascination with the Apocalypse in media and science. Graduate/Undergraduate Equivalency: RELI 339. Mutually Exclusive: Cannot register for RELI 510 if student has credit for RELI 339.</td>
<td>Standard Letter</td>
<td>Enrollment is limited to Graduate level students.</td>
</tr>
</tbody>
</table>

Rice University
RELI 511 - INTRODUCTION TO BIBLICAL HEBREW II
Short Title: INTRO TO BIBLICAL HEBREW II
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Continuation of RELI 507. We will finish the grammar in the second half of this semester and then read selections from the Hebrew bible. Write an exegetical paper on a Hebrew text of your choice. Graduate/Undergraduate Equivalency: RELI 126. Mutually Exclusive: Cannot register for RELI 511 if student has credit for RELI 126.

RELI 512 - INTERMEDIATE BIBLICAL HEBREW III
Short Title: INTERM BIBLICAL HEBREW III
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): RELI 125 and RELI 126
Description: Readings in the Hebrew Bible as well as some unvocalized texts from the Dead Sea Scrolls. Review of grammar and vocabulary. Write an exegetical paper on a Hebrew text. UG/GR Equivalent: RELI 127. Instructor Permission Required. Graduate/Undergraduate Equivalency: RELI 127. Mutually Exclusive: Cannot register for RELI 512 if student has credit for RELI 127.

RELI 514 - RELIGION IN FICTION AND FILM
Short Title: RELIGION IN FICTION AND FILM
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The sacred in interreligious, international, and interdisciplinary encounter, approached via social sciences, theology, theories of literature and mythology. Authors and directors can include Waugh, Mishima, Mann, Proust, Hease, Percy, Gardner, Updike, Gibson, Sterling, Coupland, Ray, Resnais, Fellini, Bergman, Anderson, Bunnel, and Nutley. Term paper twice as long as undergraduate requirement. Graduate/Undergraduate Equivalency: RELI 294. Mutually Exclusive: Cannot register for RELI 514 if student has credit for RELI 294.

RELI 515 - NIETZSCHE AND RELIGIOUS THOUGHT
Short Title: NIETZSCHE & RELIGIOUS THOUGHT
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate/Undergraduate Equivalency: RELI 301. Mutually Exclusive: Cannot register for RELI 515 if student has credit for RELI 301.

RELI 517 - GNOSTIC AMERICA
Short Title: GNOSTIC AMERICA
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Covers the rise of Gnostic spirituality in American religion and culture, from the Colonial period to the present. Examines the roles of revelatory experience, artifact migration, historical criticism, secularization, hybridity, heresy, and popularization. Case studies vary depending on students' research goals. 7500-word research paper. Graduate/Undergraduate Equivalency: RELI 417. Mutually Exclusive: Cannot register for RELI 517 if student has credit for RELI 417.

RELI 518 - THE BIBLE: A BRIEF INTELLECTUAL HISTORY
Short Title: BIOGRAPHY OF THE BIBLE
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An investigation of how the perception of the Bible changed from antiquity to the 21st century. The course is structured chronologically. A close reading of the works of major thinkers from each period, together with specific examples of biblical exegesis. Graduate students will have one extra reading assignment per week and complete a 14-15 page paper. Graduate/Undergraduate Equivalency: RELI 318. Mutually Exclusive: Cannot register for RELI 518 if student has credit for RELI 318.

RELI 521 - ADVANCED STUDY OF ISLAM
Short Title: ADVANCED STUDY OF ISLAM
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The purpose of this course will be to give graduate students a working knowledge of Islam historically and religiously.

RELI 522 - ISLAM'S MYSTICAL AND ESOTERIC TRADITION
Short Title: ISLAM'S MYSTICAL TRADITION
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate/Undergraduate Equivalency: RELI 440. Mutually Exclusive: Cannot register for RELI 522 if student has credit for RELI 440.
RELI 523 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Religion
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Multiple sections of this course are offered. Repeatable for Credit.

RELI 524 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Religion
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-9
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Multiple sections of this course are offered. Repeatable for Credit.

RELI 525 - MAGIC AND POPULAR RELIGION
Short Title: MAGIC & POPULAR RELIGION
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will examine the popular religion in the Middle East from Late Antiquity until the 19th century, focusing on healing practices, astrology, protection, amulets, seasoned/life-cycle rituals, and other popular beliefs common to Islam, Judaism and Christianity. Graduate/Undergraduate Equivalency: RELI 441. Mutually Exclusive: Cannot register for RELI 525 if student has credit for RELI 441.

RELI 526 - PEOPLE OF THE BOOK: JUDAISM AND SCRIPTURE
Short Title: PEOPLE OF THE BOOK
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Examines Judaism as a ‘People of the Book,’ recognizing Judaism’s dominant religious preoccupation for millennia to be the reading, study and performance of Jewish scripture, particularly the Torah or the first 5 books of the Hebrew Bible Topics: book culture, act of reading, canonization, revelation, and rabbinic, philosophical, mystical interpretations. All readings are in English. Graduate/Undergraduate Equivalency: RELI 302. Mutually Exclusive: Cannot register for RELI 526 if student has credit for RELI 302.

RELI 527 - HISTORY AND METHODS: 19TH CENTURY
Short Title: HISTORY AND METHODS: 19TH CENT
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Focused discussion of the history and methods of the study of religion via close readings of classical texts and narratives of the field from 1800-1900. Graduate course will require reading of more books and a longer paper to write. Graduate/Undergraduate Equivalency: RELI 427. Mutually Exclusive: Cannot register for RELI 527 if student has credit for RELI 427.

RELI 528 - RELIGION AND GLOBAL POVERTY
Short Title: RELIGION & GLOBAL POVERTY
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced study of religion and poverty in global context. Course materials will address religious, ethical anthropological theories of development, analyze specific themes economic and social development, examine the role of Faith Based Organizations and do specific case studies. Students will be graded on short reflections papers and a final term paper. Graduate students taking the course will be assigned 4 additional texts, do a major review of one of the texts, and do two class presentations on one of the texts. Graduate/Undergraduate Equivalency: RELI 328. Mutually Exclusive: Cannot register for RELI 528 if student has credit for RELI 328.

RELI 529 - THE BIBLE IN POPULAR CULTURE
Short Title: THE BIBLE IN POPULAR CULTURE
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Even in today’s seemingly secular pop culture landscape, the Bible is a strong artistic, social, and political influence. We will explore ways in which the Bible is used in contemporary pop culture by analyzing biblical references in music, film, art, and other media. We will show how pop culture shapes understandings of the Bible and vice versa. Grad students will write a 25-30 pp. research paper and lead at least one extended class discussion. Graduate/Undergraduate Equivalency: RELI 329. Mutually Exclusive: Cannot register for RELI 529 if student has credit for RELI 329.
RELI 530 - PEDAGOGY PRACTICUM
Short Title: PEDAGOGY PRACTICUM
Department: Religion
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: As an integral part of the department's apprenticeship program, this is a semester-long practicum through which a graduate student apprentices with a faculty member teaching an undergraduate course in order to be trained in all aspects of course design, lecturing, advising, and grading. Required of all graduate students. Repeatable for Credit.

RELI 531 - RELIGION AND COGNITIVE SCIENCE
Short Title: RELIGION AND COGNITIVE SCIENCE
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Interdisciplinary approach founded on biological, cross-cultural, evolutionary, neurological and cognitive studies of religion. Explores extreme religious experiences, ritualized behaviors, shamanism and religious therapy, religious community, universality of religion, and transmission of religious ideas and practices. GR: seminar leadership, 7500 word research paper. Graduate/Undergraduate Equivalency: RELI 431. Mutually Exclusive: Cannot register for RELI 531 if student has credit for RELI 431.

RELI 532 - ADVANCED TIBETAN LANGUAGE AND CULTURE
Short Title: ADV TIBETAN LANGUAGE & CULTURE
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): RELI 131
Description: This class builds on RELI 500 and 564, now including more challenging material in Tibetan, and continuing the trajectory of gaining familiarity with Buddhist philosophical systems as these touch on epistemology, ontology, and contemplative practice. Graduate/Undergraduate Equivalency: RELI 332. Recommended Prerequisite(s): Basic reading ability in Tibetan. Mutually Exclusive: Cannot register for RELI 532 if student has credit for RELI 132/RELI 332. Repeatable for Credit.

RELI 534 - RELIGION AND POLITICS IN AFRICA
Short Title: RELIGION & POLITICS IN AFRICA
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Course explores interdisciplinary perspectives on religion and politics in Africa focusing on indigenous religious, Christianity, and Islam. Readings will reflect theoretical perspectives, historical developments, regional angels, and contemporary issues such as sharia, gender, and reconciliation as political options. RELI 534 requires additional reading, review a book on the subject, and write a 25 page research paper. Graduate/Undergraduate Equivalency: RELI 424. Mutually Exclusive: Cannot register for RELI 534 if student has credit for RELI 424.

RELI 537 - AFRICAN MYTHS AND RITUALS
Short Title: AFRICAN MYTHS AND RITUALS
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: . Graduate/Undergraduate Equivalency: RELI 423. Mutually Exclusive: Cannot register for RELI 537 if student has credit for RELI 423.

RELI 539 - THEOLOGY IN AFRICA
Short Title: THEOLOGY IN AFRICA
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introductory readings on theological thinking in Africa. Course will address methodological issues as well as constructive theological work on enculturation, social and economic justice, gender, health, and liberation. RELI 539: read 5 major texts, write a major review, lead class discussions, discuss texts used. and write 20 page research paper. Graduate/Undergraduate Equivalency: RELI 340. Mutually Exclusive: Cannot register for RELI 539 if student has credit for RELI 340.

RELI 540 - THE CHURCH OF AFRICA
Short Title: THE CHURCH OF AFRICA
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: . Graduate/Undergraduate Equivalency: RELI 338. Mutually Exclusive: Cannot register for RELI 540 if student has credit for RELI 338.
RELI 541 - CLASSICAL AND CONTEMPORARY ARABIC TEXTS
Short Title: ARABIC TEXTS
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study and read classical Arabic texts with the goal of learning the material as well as the syntax and grammar of Arabic. Graduate students will have an additional assignment of a paper (15-20 pgs) analyzing their text. Instructor Permission Required. Graduate/Undergraduate Equivalency: RELI 442. Repeatable for Credit.

RELI 542 - AMERICAN JUDAISM: RELIGION AND THOUGHT
Short Title: AMERICAN JUDAISM
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will examine the distinct character of Jewish religion and thought as it has taken shape in America, including its incorporation within secret societies and the occult. Topics to be examined are American Jewish denominationalism, interfaith relations, pluralism and individualism, and developments in American Jewish spirituality. Grad students will write a 25-30pp research paper. Graduate/Undergraduate Equivalency: RELI 341. Mutually Exclusive: Cannot register for RELI 542 if student has credit for RELI 341.

RELI 546 - THE RELIGIOUS THOUGHT OF MARTIN L. KING, JR. AND MALCOLM X
Short Title: MLK AND MALCOLM X
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will address the study of the religious past through conjunctions of anthropology and history. Readings will include books and selections by Max Weber, Marshall Sahlins, Victor Turner, Jacques Le Goff, Aron Gurevich, and others. Cross-list: ANTH 550.

RELI 547 - WHAT'S RELIGIOUS ABOUT BLACK RELIGION?
Short Title: IS BLACK RELIGION RELIGIOUS?
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines two questions: How is religion defined within the study of lack religion? What constitutes the nature and meaning of blackness within black religion? These questions provide opportunity to explore how scholars explain what it has meant to be black and religious within the United States. Additional requirements for RELI 547: Write 5 reflection papers; lead at least two class discussions; complete a 30-page research paper; and complete additional readings. Graduate/Undergraduate Equivalency: RELI 357. Mutually Exclusive: Cannot register for RELI 547 if student has credit for RELI 357.

RELI 549 - EARLY CHRISTIAN CONTROVERSIES
Short Title: EARLY CHRISTIAN CONTROVERSIES
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar examines controversies and debates among the early Christians as catholic Christianity emerged from a diversity of Christian movements. Literature reviewed will vary. Students will select to focus on one controversy and write a research paper (undergraduates, 5000 words; graduate students, 7500 words). Oral discussion and presentations will be required. Graduate/Undergraduate Equivalency: RELI 449. Mutually Exclusive: Cannot register for RELI 549 if student has credit for RELI 449. Repeatable for Credit.

RELI 553 - THE DEAD SEA SCROLLS
Short Title: THE DEAD SEA SCROLLS
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate/Undergraduate Equivalency: RELI 383. Mutually Exclusive: Cannot register for RELI 553 if student has credit for RELI 383.

RELI 555 - HISTORICAL ANTHROPOLOGIES OF RELIGION
Short Title: HISTORICAL ANTHROPOLOGIES
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate/Undergraduate Equivalency: RELI 383. Mutually Exclusive: Cannot register for RELI 555 if student has credit for RELI 383.

RELI 557 - REPRESENTING THE DEVIL IN CHRISTIAN THEOLOGY AND ART
Short Title: REPRESENTING THE DEVIL
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course focuses on representations of the Devil, demons and ambiguous spirits in Christian theological, ritual, and narrative sources from the early medieval to early modern period. Graduate work includes added reading (30-50 pp weekly above undergraduate requirements), article length essay (8 to 10 thousand words) and two presentations. Mutually Exclusive: Cannot register for RELI 557 if student has credit for RELI 367.
RELI 558 - MYSTICISM: THEORIES AND METHODS
Short Title: MYSTICISM
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A history of the development of the modern category of 'mysticism' from the seventeenth century to today, with side studies of cognate terms like 'spirituality,' 'metaphysical religion,' and the 'paranormal,' as these forms of extreme religious experience are by social-scientific and humanistic methods. RELI 558: Additional readings and writing. Graduate/Undergraduate Equivalency: RELI 458. Mutually Exclusive: Cannot register for RELI 558 if student has credit for RELI 458.

RELI 559 - HISTORY AND METHODS: TWENTIETH CENTURY
Short Title: HISTORY AND METHODS: 20TH CENT
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Focused discussion of the history and methods of the study of religion via close readings of classical texts and narratives of the field from 1900-present. Graduate course will require reading of more books and a longer paper to write. Graduate/Undergraduate Equivalency: RELI 428. Mutually Exclusive: Cannot register for RELI 559 if student has credit for RELI 428.

RELI 560 - ADVANCED READINGS IN TIBETAN TEXTS
Short Title: READING TIBETAN TEXTS
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is to accommodate Grad students' requests to read more widely in Tibetan texts and genres. Our focus is reading and disciplined discussion of the texts. Repeatable for Credit.

RELI 561 - CHRISTIANITY IN THE GLOBAL SOUTH
Short Title: CHRISTIANITY IN GLOBAL SOUTH
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Readings on Christianity in the Global South analyzing historical developments, mission and colonial encounters, growth and expansion; diversity of expression, the development of local initiated Churches, Pentecostalism, and public role of the Church. Graduate students will lead class on a church in a country of their choice. Each graduate student will prepare and lead a seminar on one aspect of the region or country. Each graduate student will also present in class an in-depth study of a selected theme. Graduate students will read additional books selected from a list of texts discussed with instructor. They will also write a 25 page research paper on any topic in Global Christianity. Graduate/Undergraduate Equivalency: RELI 371. Mutually Exclusive: Cannot register for RELI 561 if student has credit for RELI 371.

RELI 563 - RELIGION AND SCIENCE
Short Title: RELIGION AND SCIENCE
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This advanced seminar analyzes interdisciplinary efforts by scholars of religion to engage scientific research in the cognitive and neuro- sciences. We assess the possibilities for collaboration, as well as conflict, between humanistic and scientific disciplines, asking how the tools of interpretation and empiricism might enrich our understanding of religious phenomena. Graduate students will lecture one course session and will engage additional secondary literature throughout the semester. Graduate/Undergraduate Equivalency: RELI 362. Mutually Exclusive: Cannot register for RELI 563 if student has credit for RELI 362.

RELI 564 - INTERMEDIATE TIBETAN LANGUAGE, LITERATURE AND CULTURE
Short Title: INT. TIBETAN LANG LIT & CULTUR
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Continued training in Tibetan language-extending vocabulary and facility with grammar. Final includes a paper drawn from readings and class discussion. RELI 564: Write a paper approximately one-third longer and complete a more substantial oral presentation. Graduate/Undergraduate Equivalency: RELI 234. Mutually Exclusive: Cannot register for RELI 564 if student has credit for RELI 234. Repeatable for Credit.

RELI 567 - JEWISH PHILOSOPHY: GREAT THINKERS AND THEMES IN JEWISH THOUGHT
Short Title: JEWISH PHILOSOPHY
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An introduction to the main figures and themes in Jewish philosophy. Topics to be discussed include reason vs faith and prophetic revelation; Israel's chosenness vs human universalism; creation vs eternity; divine providence and necessity vs free will; evil, justice, and divine omnipotence; prayer, contemplation, and divine and human perfection. Graduate students are required to write a research paper (25-30 pp.) and to prepare and lead at least one class. Graduate/Undergraduate Equivalency: RELI 363. Mutually Exclusive: Cannot register for RELI 567 if student has credit for RELI 363.
RELI 568 - RISE OF THE NONES: HUMANISMS AND HUMANITIES
Short Title: RISE OF THE NONES
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will look at the rise of the "nones," that is, individuals who affiliate with no religious tradition, through both a history of secular thought in the West and a close reading of key texts and figures. Atheism, humanism, secularism and the "spiritual but not religious" will all be treated as key categories. RELI 568 will require additional readings, 3 additional papers plus a longer research paper, leading discussions and teaching. Graduate/Undergraduate Equivalency: RELI 368. Mutually Exclusive: Cannot register for RELI 568 if student has credit for RELI 368. Repeatable for Credit.

RELI 569 - FOUCAULT & THE HERMENEUTICS OF SELF
Short Title: FOUCAULT & THE SELF
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Best known for analyzing domination and power, Michel Foucault shifts his attention to ethics and "technologies of the self" in 1976. In this advanced seminar, we study and critique Foucault's turn to western antiquity through his lectures and volumes of foregrounding resistance to power through religion, politics and ethics. Graduate/Undergraduate Equivalency: RELI 421. Mutually Exclusive: Cannot register for RELI 569 if student has credit for RELI 421.

RELI 570 - BUDDHIST WISDOM TEXTS
Short Title: BUDDHIST WISDOM TEXTS
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Indo-Tibetan analyses of the mind and its functions, especially differing views on the role of reasoning and the nature of the 'ultimate' in major philosophical schools of Tibet and India. RELI 570: More difficult readings and two longer papers required. Graduate/Undergraduate Equivalency: RELI 470. Mutually Exclusive: Cannot register for RELI 570 if student has credit for RELI 470. Repeatable for Credit.

RELI 572 - INTRODUCTION TO BUDDHISM: ARTS FOR LIFE
Short Title: INTRODUCTION TO BUDDHISM
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: What is mind? What is self? What can a human being become? Drawing on a wealth of Buddhist-related art, film, and literature, this course introduces you to Tibetan and other Buddhist approaches to these crucial questions. RELI 572 requires additional readings and research papers. Graduate/Undergraduate Equivalency: RELI 378. Mutually Exclusive: Cannot register for RELI 572 if student has credit for RELI 378.

RELI 573 - KNOWING BODY/GLOWING MIND: BUDDHIST ARTS OF CONTEMPLATION AND ANALYSIS
Short Title: KNOWING BODY/GLOWING MIND
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Buddhism is a performing art engaging both mind and body. Our course investigates Buddhist and other literature, epistemology and rituals with an eye to how they speak to contemplative practice. Contemplative practice itself, in class and out, supplements our exploration of the interplay between traditional Asian and contemporary Western perspectives. Graduate/Undergraduate Equivalency: RELI 333. Recommended prerequisite(s): One course in Buddhism. Mutually Exclusive: Cannot register for RELI 573 if student has credit for RELI 333. Repeatable for Credit.

RELI 578 - MIND AND ART, FILM AND LITERATURE IN BUDDHISM
Short Title: BUDDHIST ART AND LITERATURE
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Explores context and consequences of the concept of religious tolerance in the crucible of globalization politics. Background in settlement of Reformation-era religious wars; American attitudes; impetus for tolerance policies and their implementation, 1945 to present (including governmentality and surveillance); results for historically Christian populations, esp. in US and Europe. Graduate/Undergraduate Equivalency: RELI 359. Mutually Exclusive: Cannot register for RELI 578 if student has credit for RELI 359.
RELI 581 - Gnosticism Seminar
Short Title: Gnosticism Seminar
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In depth examination of one (or more) Gnostic texts within its literary, social, historical, and religious landscapes. RELI 581 requires preparation and delivery of public presentations. Graduate/Undergraduate Equivalency: RELI 481. Mutually Exclusive: Cannot register for RELI 581 if student has credit for RELI 481.

RELI 584 - Religion, Psychology, and Culture
Short Title: Religion, Psychology & Culture
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An historical survey of the History of Religions School that emerged in the 1960s and 1970s at the University of Chicago and came to play such an important role in the comparative study of religion. Graduate Students will have twice the reading and will require a longer paper. Graduate/Undergraduate Equivalency: RELI 384. Mutually Exclusive: Cannot register for RELI 584 if student has credit for RELI 384.

RELI 587 - Western Esotericism: Method and Theory
Short Title: Western Esotericism
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course explores the relation between esoteric texts and the idea of ‘Western Esotericism.’ We will look at primary writings from Agrippa to Madame Blavatsky and consider the historical and methodological approaches emerging as Esotericism is constructed as an academic area. Extra readings and writing a longer essay is required in RELI 587. Graduate/Undergraduate Equivalency: RELI 387. Mutually Exclusive: Cannot register for RELI 587 if student has credit for RELI 387.

RELI 588 - The History of Religions School
Short Title: History of Religions
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An historical survey of the History of Religions School that emerged in the 1960s and 70s at the University of Chicago and came to play such an important role in the comparative study of religion. Graduate Students will have twice the reading and will require a longer paper. Graduate/Undergraduate Equivalency: RELI 488. Mutually Exclusive: Cannot register for RELI 588 if student has credit for RELI 488.

RELI 589 - Mutants and Mystics: Race, Sexuality, and the Future of the Humanities
Short Title: Mutants and Mystics
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is a course about the deep historical and conceptual connections between the histories of science fiction, the paranormal, and social transformation around race, gender, sexuality, and the human. We will see that such events tend to erupt in the “gaps” or “fractures” of society and within both personal and historical traumatic contexts in order to both deconstruct the reigning social formations, epistemologies, and ontologies—usually of an objectivizing, colonizing, and scientistic nature—but also supply the numinous foundations for the imagining of new humanities, or what queer theorist Ramzi Fawaz calls our emerging “mutancy.” Graduate/Undergraduate Equivalency: RELI 393. Mutually Exclusive: Cannot register for RELI 589 if student has credit for RELI 393.

RELI 590 - African American Literature and Religion
Short Title: AF/AM Literature & Religion
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this seminar students will read and analyze African American literature in order to explore the various ways in which African Americans have understood and articulated the nature and meaning of African American religious experience and practice. Graduate/Undergraduate Equivalency: RELI 490. Mutually Exclusive: Cannot register for RELI 590 if student has credit for RELI 490.

RELI 591 - Basic Coptic 1
Short Title: Basic Coptic 1
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A first semester introduction to Coptic grammar and vocabulary. Select a Coptic text, read in its original language, and prepare a commentary or an exegesis on that text (5,000 words). Graduate/Undergraduate Equivalency: RELI 307. Mutually Exclusive: Cannot register for RELI 591 if student has credit for RELI 307.
RELI 592 - BASIC COPTIC 2
Short Title: BASIC COPTIC 2
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): RELI 307
Description: Second semester introduction to Coptic grammar and vocabulary, with selected readings from the Coptic New Testament, nag Hammadi, and monastic literature. Pre-requisite: Introduction to Coptic Language I RELI 592: Select a Coptic text, read in its original language, and prepare a commentary or an exegesis on that text (5,000 words). Graduate/Undergraduate Equivalency: RELI 308. Mutually Exclusive: Cannot register for RELI 592 if student has credit for RELI 308.

RELI 593 - BASIC COPTIC 3
Short Title: BASIC COPTIC 3
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Varied readings in original language to include the New Testament, Nag Hammadi, and monastic literature. Pre-requisite: Coptic 1 and 2. RELI 593: Students will select a Coptic text, and in addition to reading it in its original language, prepare a commentary or an exegesis on that text (5,000 words). Graduate/Undergraduate Equivalency: RELI 309. Mutually Exclusive: Cannot register for RELI 593 if student has credit for RELI 309. Repeatable for Credit.

RELI 595 - PENTECOSTALISM
Short Title: PENTECOSTALISM
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate study and analysis of introduction to Pentecostalism in a global context focusing historical developments, expansion in Europe, North America, Africa, Latin America and Asia. Graduate students will read 4 additional texts one from East, Central, West, and Southern Africa. Graduate students will write weekly reflections on the reading to the braded satisfactory or unsatisfactory. They will do two presentations during the semester. Each student will write a research paper that will be at least 25 double spaced pages. Graduate/Undergraduate Equivalency: RELI 399. Mutually Exclusive: Cannot register for RELI 595 if student has credit for RELI 396.

RELI 596 - THE LEGAL FRAMEWORK OF RELIGIOUS TOLERANCE
Short Title: LEGAL FRMWK RELI TOLERANCE
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The American Constitution embodies a complex experiment in religious tolerance, including the promise of ‘free exercise of religion’ and the prohibition of laws ‘respecting an establishment of religion’. In this class we will primarily seek a critical understanding of our tolerance-rich legal invocations of religious freedom and address fundamental issues such as how can we distinguish ‘religious’ actions and commitments from other morally important beliefs and activities. RELI 596: Write additional paper and more readings. Mutually Exclusive: Cannot register for RELI 596 if student has credit for RELI 320.

RELI 597 - CONTEMPLATIVE PRACTICE
Short Title: CONTEMPLATIVE PRACTICE
Department: Religion
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Literary and artistic creativity, religious experience, and textual interpretation often draw on focused states of consciousness made possible by contemplative practices. The practice will provide historical information about such practices and offer opportunities to participate in techniques ranging from meditation and observing breath to freeform writing and Tai Chi. Graduate students would be expected to write a longer paper and/or to include a segment on contemplative practice in connection with whatever course they are taking. In either case this will involve readings and issues beyond what the undergraduates are responsible for, and which will be developed with each graduate student on an individual basis. Graduate/Undergraduate Equivalency: RELI 399. Mutually Exclusive: Cannot register for RELI 597 if student has credit for RELI 399. Repeatable for Credit.

RELI 600 - GEM RESEARCH FORUM
Short Title: GEM RESEARCH FORUM
Department: Religion
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The GEM Research Forum meets regularly throughout the academic year to share and engage the ongoing research of the GEM faculty and students. The annual capstone experience of the Forum features an invited speaker. Evaluation is based on student participation, research and presentations. Repeatable for Credit.
REL I 604 - FROM DECOLONIZATION TO GLOBALIZATION
Short Title: FROM DECOLONI TO GLOBALIZATION
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Taught in English. Novels, and films, from North and West Africa, and the immigrant population in France, from 1960 to 2010. Emphasis on the tensions between narratives of political emancipation, modernity, secularism, and religious fundamentalism and mysticism. Extra reading for graduate students in theories of colonialism, postcolonialism, globalization. Graduate/Undergraduate Equivalency: RELI 476. Recommended Prerequisite(s): Any 200 level course or above in English or French, or HUMA 101 or HUMA 102, or a FWIS course. Mutually Exclusive: Cannot register for RELI 604 if student has credit for FREN 324/POLI 324/RELI 476.

REL I 606 - READING WRIGHT: THEISM AND ATHEISM IN THE WRITINGS OF RICHARD WRIGHT
Short Title: READING RICHARD WRIGHT
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Richard Wright's fiction and nonfiction are important resources for understanding the nature of radicalized life in the United States. This course explores his writings for what they tell us about the role of religion in the development of identity and life meaning, and we will juxtapose the role of religion with Wright's commentary on the nature and significance of atheism for countering injustice. RELI 606 requires additional reflection papers, longer research paper and class presentations. Graduate/Undergraduate Equivalency: RELI 369. Mutually Exclusive: Cannot register for RELI 606 if student has credit for RELI 369.

REL I 607 - ARCHIVES OF THE IMPOSSIBLE
Short Title: ARCHIVES OF THE IMPOSSIBLE
Department: Religion
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: After reading Prof. Kripal's Authors of the Impossible as a basic theoretical structure for the semester, this advanced archival research seminar will involve students engaging original historical documents contained in Rice University's archive on Paranormal Currents in American Culture toward the writing of a graduate or undergraduate thesis. Graduate students will be responsible for a much more extensive engagement with Whitley Strieber's corpus. They will be required to read examples of Stieber's nonfiction (particularly COMMUNION and THE AFTERLIFE REVOLUTION) and fiction, including WOLFEN, THE GRAYS, and THE HYBRIDS. Each of these books bears directly or indirectly on the content of the Anne and Whitley Strieber Collection. Graduate/Undergraduate Equivalency: RELI 407. Mutually Exclusive: Cannot register for RELI 607 if student has credit for RELI 407.

REL I 611 - READINGS IN MEDIEVAL LATIN
Short Title: READINGS IN MEDIEVAL LATIN
Department: Religion
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Guided readings in Latin from a range of medieval genres, including medicine, theology, visionary literature. Repeatable for Credit.

REL I 612 - THE PSALMS AND THEIR POETIC AFTERLIFE
Short Title: PSALMS AND POETRY
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A seminar on the biblical Psalms. This course will situate the Psalms in their ancient Near Eastern context, explore their original liturgical function in ancient Israel, and trace their afterlife in postbiblical poetry. All texts will be studied in translation. Counts for the Minor in Jewish Studies. RELI 612: Additional readings and longer paper. Graduate/Undergraduate Equivalency: RELI 388. Mutually Exclusive: Cannot register for RELI 612 if student has credit for RELI 388.

REL I 614 - THE RICE/LEIPZIG SEMINAR ON EARLY JUDAISM AND CHRISTIAN ORIGINS
Short Title: THE RICE/LEIPZIG SEMINAR
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate seminar on Early Judaism and Christian Origins taught jointly by Dr. Matthias Henze (Rice) and Dr. Jens Herzer (University of Leipzig, Germany). Participation is by invitation only. Instructor Permission Required.

REL I 615 - SECRET RELIGION
Short Title: SECRET RELIGION
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Examines religious currents that operate in the margins of traditional religion: the gnostic, esoteric and mystical. Covers how these categories were theorized. Explores how they continue to identify contemporary religious currents that are considered transgressive and are rejected by conventional religious authorities. Class is grounded in antiquity and historical method. RELI 615: Write 7,500-10,000 word research paper. Graduate/Undergraduate Equivalency: RELI 415. Mutually Exclusive: Cannot register for RELI 615 if student has credit for RELI 415.
RELI 616 - NEW TESTAMENT / CHRISTIAN ORIGINS  
**Short Title:** NEW TESTAMENT/CHRISTIAN ORIG  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** How did Christianity emerge as a new religious movement in the Roman Empire? Covers the history and literature of the first generations of Christians, focusing on Post-Temple developments, issues of authority and leadership, rise of regional forms of Christianity, and formation of distinct Christian identities. Graduate requirements: additional writings and presentations. Graduate/Undergraduate Equivalency: RELI 416. Mutually Exclusive: Cannot register for RELI 616 if student has credit for RELI 416.  

RELI 619 - MYSTERY RELIGIONS  
**Short Title:** MYSTERY RELIGIONS  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Covers literature, practices, and archaeology of esoteric cults within the context of religion in Roman Empire (Demeter, the Great Gods, Cybele, Persephone, Dionysus, Isis, Mithras, Hermes, Qumran, Christianity, Gnostic groups). Case studies vary depending on students' research goals, including comparison with Renaissance and modern esoteric initiatory groups. 7500-word research paper; UG equivalent 5000-word research paper. Graduate/Undergraduate Equivalency: RELI 419. Mutually Exclusive: Cannot register for RELI 619 if student has credit for RELI 419/RELI 419.  

RELI 644 - VISIONS AND VISIONARY PRACTICES: MEDIEVAL TO MODERN  
**Short Title:** VISIONS & VISIONARY PRACTICES  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This course examines accounts of visions, comparing medieval and modern visionary techniques and processes and relating visionary writings to cultural and personal contexts. Includes some Christian theology along with other theoretical frameworks, but emphasis on praxis. Graduate work includes 10 additional readings (200 pp), double the pages to be written, 30 more minutes presentation time. Graduate/Undergraduate Equivalency: RELI 444. Mutually Exclusive: Cannot register for RELI 644 if student has credit for RELI 444.  

RELI 677 - SPECIAL TOPICS  
**Short Title:** SPECIAL TOPICS  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar, Lecture, Laboratory, Internship/Practicum  
**Credit Hours:** 1-4  
**Restrictions:** Enrollment is limited to Graduate or Visiting Graduate level students.  
**Course Level:** Graduate  
**Description:** Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.  

RELI 700 - RESEARCH FOR COMPREHENSIVE EXAMS  
**Short Title:** RESEARCH FOR COMP EXAMS  
**Department:** Religion  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Research  
**Credit Hours:** 1-12  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Repeatable for Credit.  

RELI 800 - RESEARCH FOR DISSERTATION  
**Short Title:** RESEARCH FOR DISSERTATION  
**Department:** Religion  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Research  
**Credit Hours:** 9  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Repeatable for Credit.  

RELI 801 - RESEARCH FOR M.A. THESIS  
**Short Title:** RESEARCH FOR MA THESIS  
**Department:** Religion  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Research  
**Credit Hours:** 3-9  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Students work independently researching and writing their thesis.  

**Russian (RUSS)**  
RUSS 141 - FIRST YEAR RUSSIAN I  
**Short Title:** FIRST YEAR RUSSIAN I  
**Department:** Cntr Lang & Intercultural Comm  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** Development of interactional competence in Russian (sociolinguistic and sociocultural knowledge) to communicate and interact with speakers of Russian. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. No prior knowledge of this language is necessary. Placement Test is required. Effective May 15, 2019, this course does not carry D1 credit.
RUSS 142 - FIRST YEAR RUSSIAN II
Short Title: FIRST YEAR RUSSIAN II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): RUSS 141
Description: Continuation of RUSS 141. Development of interactional competence in Russian (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Russian. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Effective May 15, 2019, this course does not carry D1 credit. Mutually Exclusive: Cannot register for RUSS 142 if student has credit for RUSS 262.

RUSS 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

RUSS 263 - SECOND YEAR RUSSIAN I
Short Title: SECOND YEAR RUSSIAN I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): RUSS 262
Description: Continuation of RUSS 262. Emphasis on developing reading and writing ability as more authentic materials and socio-cultural topics are introduced.

RUSS 301 - THIRD YEAR RUSSIAN I
Short Title: THIRD YEAR RUSSIAN I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): RUSS 264
Description: Continuation of RUSS 264. Emphasis on developing reading and writing ability as more authentic materials and socio-cultural topics are introduced.

RUSS 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.
Social Sciences (SOSC)

SOSC 221 - PROFESSIONAL EXCELLENCE FOR SOCIAL SCIENCES MAJORS
Short Title: PROF EXCELLENCE FOR SS MAJORS
Department: Social Sciences Division
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Guided professional internship course for social sciences majors. Instructor Permission Required.

SOSC 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Social Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture, Seminar, Lecture/Laboratory, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

SOSC 250 - THINKING DIFFERENTLY: NEW APPROACHES TO IDEAS, PEOPLE, SOLUTIONS AND PROBLEMS
Short Title: THINKING DIFFERENTLY
Department: Social Sciences Division
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This class meets select Wednesdays from 4-5 PM followed by small group discussion. The class explores changes in the economy and information technology that give rise to questions about the future of ideas, work and careers, identity and relationships, and solutions and problems. Repeatable for Credit.

Course URL: freestylerice.org (http://freestylerice.org)

SOSC 300 - BAKER INSTITUTE INTRODUCTION TO PUBLIC POLICY
Short Title: INTRODUCTION TO PUBLIC POLICY
Department: Social Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Taught by Baker Institute Fellow, this course is designed to introduce students to the field of public policy as well as to important policy issues. Topic areas include the Middle East, China, Mexico, energy security, environmental challenges, globalization, health policy, tax policy, and Texas and Houston politics.

SOSC 301 - POLICY ANALYSIS
Short Title: POLICY ANALYSIS
Department: Social Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Familiarizes students with the analytical tools necessary for evaluating and analyzing public policies. Cross-list: POLI 338. Mutually Exclusive: Cannot register for SOSC 301 if student has credit for POST 338.

SOSC 302 - QUANTITATIVE ANALYSIS FOR THE SOCIAL SCIENCES
Short Title: QUANTITATIVE METHODS
Department: Social Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Introduction to quantitative methods and analysis that emphasizes the practical use of statistics to address research questions in the social sciences. Includes univariate, bivariate, and multivariate analysis in correlational and experimental designs. Lab component involves discipline-specific applications and use of statistics software for data analysis.

SOSC 303 - QUALITATIVE METHODS IN THE SOCIAL SCIENCES
Short Title: QUALITATIVE METHODS
Department: Social Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course presents a series of questions surrounding qualitative methods and ethnographic research in the social sciences, centering on three essential research components: design, data collect, and analysis. Students will engage with qualitative methods of inquiry through a hands-on approach to collecting and analyzing data. Repeatable for Credit.
SOSC 322 - GATEWAY STUDY OF LEADERSHIP I
Short Title: GATEWAY STUDY OF LEADERSHIP I
Department: Social Sciences Division
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The Gateway Study of Leadership is a student-led research cohort based in the School of Social Sciences that focuses on leadership and power dynamics within academia as well as common themes in the professional development of faculty members. Students enrolled in the program will perform qualitative research through conducting and transcribing interviews with faculty members. Students will also develop their own leadership skills by attending breakfasts and lunches with prominent leaders in the Rice community and participating in retreats and workshops. Instructor Permission Required. Repeatable for Credit.

SOSC 323 - GATEWAY STUDY OF LEADERSHIP II
Short Title: GATEWAY OF LEADERSHIP II
Department: Social Sciences Division
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Continuation of the Gateway of Leadership from the fall semester. Students will continue to develop their own leadership skills by attending breakfasts and lunches with prominent leaders in the Rice community. After having conducted and transcribed interviews in the fall, students will code these interviews for common themes. Compiled research will be published as the 'Turning Points' booklet series by the School of Social Sciences. Students will further produce a research paper and a poster to be presented the rice Undergraduate Research Symposium. Instructor Permission Required. Repeatable for Credit.

SOSC 330 - HEALTH CARE REFORM IN THE 50 STATES
Short Title: HEALTH CARE REFORM IN U.S.
Department: Social Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Examination of those states that have undertaken comprehensive health system reform, have carried out more limited revisions, or have failed to even begin the process, assessing successes and failures. Includes general theories of state-federal relationships and the role of the federal government in state health reform.

SOSC 405 - LAW PRACTICUM
Short Title: LAW PRACTICUM
Department: Social Sciences Division
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Students will participate in a semester-long 'practicum' with a sitting judge (federal, or Texas appellate) in Houston. This program is designed to give select Rice undergraduates a broad and practical introduction to what lawyers do in court and how judges and the law clerks who work with them think about the questions they are asked to resolve. Instructor Permission Required. Mutually Exclusive: Cannot register for SOSC 405 if student has credit for PLST 401. Repeatable for Credit.

SOSC 406 - JUDICIAL PRACTICUM
Short Title: JUDICIAL PRACTICUM
Department: Social Sciences Division
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Students will participate in a semester-long "practicum" with a sitting judge (federal, or Texas appellate) in Houston. This program is designed to give select Rice undergraduates a broad and practical introduction to what lawyers do in court and how judges and the law clerks who work with them think about the questions they are asked to resolve. Instructor Permission Required. Mutually Exclusive: Cannot register for SOSC 406 if student has credit for PLST 402.

SOSC 423 - FALL MEDICAL RESEARCH INTERNSHIP
Short Title: FALL MEDICAL RESEARCH INTERN
Department: Social Sciences Division
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Internship with a faculty member at Baylor College of Medicine (BCM) centering on a medical research topic involving the Social Sciences. Student-interns will spend up to 10 hours/week at BCM and will be required to submit a written report, evaluations and an example of research products (research posters, abstracts, paper drafts, manuscripts, etc.) both to their supervisor and the Office of the Dean of Social Sciences. Enrollment is limited to Rice undergraduate students who have declared a major within the School of Social Sciences and have been approved for participation in the internship partnership between Rice and BCM. Written approval of the research supervisor and the Dean of Undergraduates must be received by the Office of the Dean of Social Sciences at least 2 weeks prior to the start of classes. Instructor Permission Required.
SOSC 424 - SPRING MEDICAL RESEARCH INTERNSHIP
Short Title: SPRING MEDICAL RESEARCH INTERN
Department: Social Sciences Division
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Internship with a faculty member at Baylor College of Medicine (BCM) centering on a medical research topic involving the Social Sciences. Student-interns will spend up to 10 hours/week at BCM and will be required to submit a written report, evaluations and an example of research products (research posters, abstracts, paper drafts, manuscripts, etc.) both to their supervisor and the Office of the Dean of Social Sciences. Enrollment is limited to Rice undergraduate students who have declared a major within the School of Social Sciences and have been approved for participation in the internship partnership between Rice and BCM. Written approval of the research supervisor and the Dean of Undergraduates must be received by the Office of the Dean of Social Sciences at least 2 weeks prior to the start of classes. Department Permission Required.

SOSC 444 - CONSULTING PRACTICUM
Short Title: CONSULTING PRACTICUM
Department: Social Sciences Division
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Students in the Consulting Practicum learn the elements of problem solving in the business environment. Project teams interact with businesses or non-profit organizations seeking creative solutions to challenges they face. The course offers experiential learning on all project phases from investigation and analysis through presentation of recommendations designed to meet real-world needs. Department Permission Required. Repeatable for Credit.

SOSC 445 - FINANCE AND BANKING PRACTICUM
Short Title: FINANCE PRACTICUM
Department: Social Sciences Division
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course is designed to give interested students first-hand knowledge of the banking and financial services industry and its role in the global economy. Topics include business analysis, credit analysis, risk management, investment banking, commercial real estate and private equity and venture capital. Additionally students will explore the tools and techniques used by the financial industry such as Excel, Bloomberg, MATLAB, and SQL. The course comprises both classroom meetings and a 10-hour per week on-site experience, including opportunities to shadow key stakeholders. Instructor Permission Required. Repeatable for Credit.

SOSC 464 - SOCIAL ENTREPRENEURSHIP
Short Title: SOCIAL ENTREPRENEURSHIP
Department: Social Sciences Division
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course introduces students to contemporary concepts, debates, and contexts necessary for analyzing and engaging in the sphere of social entrepreneurship. The course has four distinct parts: social context; organizational forms and collaborations; private sector roles; and measurement and impacts. Various aspects of social entrepreneurship, such as base of the pyramid/microenterprises, private-public partnerships, private-governmental partnerships, voluntary social codes, corporate social responsibility, and ethical consumerism will be covered. From this foundation, students will undertake a social entrepreneurship project about a contemporary social problem in Houston: food insecurity and food deserts. Cross-list: BUSI 464, GLHT 464.

SOSC 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Social Sciences Division
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Laboratory, Seminar
Credit Hours: 1-4
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

Sociology (SOCI)

SOCI 101 - INTRODUCTION TO SOCIOLOGY
Short Title: INTRODUCTION TO SOCIOLOGY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction to the principal concepts, theories and methods of sociology. Required (normally) for sociology majors and minors. Enrollment in section 003 of this course is reserved for new matriculants only.
SOCI 231 - SOCIAL PROBLEMS
Short Title: SOCIAL PROBLEMS
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will confront 'social problems' in everyday life by focusing on contemporary issues, situations, behaviors, and ideas in national and international contexts. The course will focus primarily on case studies in contemporary issues including racism, religion, politics, classism, sexism, and heterosexism. Mutually Exclusive: Cannot register for SOCI 231 if student has credit for SOCI 338.

SOCI 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Sociology
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Laboratory, Lecture, Seminar, Lecture/Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact Department for current semester's topic(s). Repeatable for Credit.

SOCI 299 - EXPERIENTIAL EDUCATION IN SOCIOLOGY
Short Title: EXPERIENTIAL EDUCATION IN SOCI
Department: Sociology
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Enrollment is limited to students with a major in Sociology. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course provides one hour of university credit for faculty-directed and approved internship. Students must obtain approval from a member of the department's undergraduate committee and must submit a letter from the internship provider indicating completion and satisfactory performance. Department Permission Required. Repeatable for Credit.

SOCI 301 - SOCIAL INEQUALITY
Short Title: SOCIAL INEQUALITY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course investigates the causes and consequences of social inequality in the U.S., focusing on inequality by class, race, and gender. We will discuss different measures of inequality, the extent of inequality, as well as classical and modern theories for why it has been increasing since the 1970s. In addition, we will discuss how much inequality is justifiable and which redistributive programs work.

SOCI 302 - THE SOCIOLOGICAL IMAGINATION
Short Title: THE SOCIOLOGICAL IMAGINATION
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Students in this course will examine the research questions sociologist ask, the methods they use, and how they draw evidence-based conclusions by reading and critically evaluating some of the most critically acclaimed books in the field. Mutually Exclusive: Cannot register for SOCI 302 if student has credit for SOCI 201.

SOCI 304 - ENVIRONMENTAL ISSUES: RICE INTO THE FUTURE
Short Title: ENVIRON ISSUES: RICE IN FUTURE
Department: Sociology
Grade Mode: Standard Letter
Course Type: Laboratory
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Students use the campus as a laboratory for learning about sustainability through group projects to reduce Rice's environmental impact or resolve environmental issues. Cross-list: ENST 302.

SOCI 306 - SOCIOLOGY OF GENDER
Short Title: SOCIOLOGY OF GENDER
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Relationship between gender and social role. Development of the contemporary sexual division of labor and process of socialization with reference to family, education, media, and occupations. Cross-list: SWGS 324.

SOCI 308 - HOUSTON: THE SOCIOLOGY OF A CITY
Short Title: HOUSTON: SOCIOLOGY OF A CITY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Houston as an exemplar of contemporary urban change. The golden buckle of the sunbelt; recovery from the oil boom collapse of the 1980s into a restructuring economy and a demographic revolution; the changing politics of education, quality-of-life issues, and interethnic relations, as they interact to shape the urban future. Guest lectures, field trips.
SOCI 309 - RACE AND ETHNIC RELATIONS
Short Title: RACE & ETHNIC RELATIONS
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Description: Historical and contemporary issues and theories of race and ethnic relations in the United States. The key groups covered will be European Americans, African Americans, Native Americans, Asian Americans, and Mexican Americans. Group patterns of assimilation and conflict inform a basic tenet that race and ethnicity are organizing features of society.

SOCI 310 - URBAN SOCIOLOGY
Short Title: URBAN SOCIOLOGY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of urban development, form, and heterogeneity; and the conditions of life associated with living in cities. Examines the rise of cities, their growth and purposes in the U.S. and internationally. Examines behavioral adaptations required by city life, and considers urban subcultures.

SOCI 313 - DEMOGRAPHY
Short Title: DEMOGRAPHY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Introduction to the study of the dynamics of population change. Includes demographic data sources, components of population change, mortality patterns, family planning, the measurement of migration flows, and population-economic models. Graduate/Undergraduate Equivalency: SOCI 513. Mutually Exclusive: Cannot register for SOCI 313 if student has credit for SOCI 513.

SOCI 314 - SCIENCE AT RISK? OUT OF THE LAB AND INTO PUBLIC SPHERE
Short Title: SCIENCE AT RISK
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: What happens when science enters the public sphere and the public sphere enters science? Through the lens of sociology we will examine some of the most controversial issues facing science, including biotechnology, science and religion, US knowledge of science, increasing diversity of the science workforce and corporate funding.

SOCI 316 - ENVIRONMENTAL FILM
Short Title: ENVIRONMENTAL FILM
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Explores the ways film represents the environment and environmental issues (food, water, energy, waste, environmental justice, sustainability), and both expresses and shapes environmental values. We will view and analyze a variety of genres, as well as reading supplementary material. Cross-list: ENST 316.

SOCI 319 - SOCIOLOGY OF WORK AND OCCUPATIONS
Short Title: WORK AND OCCUPATIONS
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Work is a central part of our lives. We will examine how work is structured in occupations and industries and how it changes over time. We will focus on understanding the lives of workers: work and inequalities between men and women, racial/ethnic inequalities, and relations between work and family.

SOCI 321 - CRIMINOLOGY
Short Title: CRIMINOLOGY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of criminal behavior. Includes social construction of crime, elementary forms of crime, empirical patterns of crime, and theories of crime. Field work required.
SOCI 325 - SOCIOLOGY OF LAW
Short Title: SOCIOLOGY OF LAW
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will explore law and legality utilizing a sociological perspective. We place law within its social and political context, and examine how law influences everyday life. We explore sociological theories of law, empirical studies of law, legal institutions, and how social characteristics influence legal outcomes. Fieldwork required.

SOCI 327 - SUPERVISED RESEARCH I
Short Title: SUPERVISED RESEARCH I
Department: Sociology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course offers the opportunity to work with a faculty member on that faculty member's existing research project. The course involves intensive pedagogy and mentoring including a pedagogical plan developed in conjunction with the sponsoring faculty member. Instructor Permission Required.

SOCI 328 - SUPERVISED RESEARCH II
Short Title: SUPERVISED RESEARCH II
Department: Sociology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course offers the opportunity to work with a faculty member on that faculty member's existing research project. The course involves intensive pedagogy and mentoring including a pedagogical plan developed in conjunction with the sponsoring faculty member. Please contact the Department for a description of the section you are registering for. Instructor Permission Required.

SOCI 329 - MULTIRACIAL AMERICA
Short Title: MULTIRACIAL AMERICA
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Multiracial America examines the phenomenon of race mixing (e.g. interracial interaction, multiracial identity) from a sociological perspective. The course covers the legal, political, and cultural contexts of interracial interaction and how these impact current understanding of what it means to be 'mixed race.' Recommended Prerequisite(s): SOCI 101

SOCI 333 - SOCIOLOGY OF RELIGION
Short Title: SOCIOLOGY OF RELIGION
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of religious beliefs, symbols, actions, organizations, roles, and various interrelationships between religion and society. Includes new religious movements, secularization, and fundamentalism. Field work required.

SOCI 334 - SOCIOLOGY OF THE FAMILY
Short Title: SOCIOLOGY OF THE FAMILY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will teach students the important influences and consequences of American family life. We will consider issues such as sex and sexualities, marriage and cohabitation, divorce, family structure, same-sex marriage, domestic violence, and household labor. We will also examine the role of social institutions and social inequality in shaping family norms and constraints on family behaviors. Cross-list: SWGS 325.

SOCI 340 - SOCIOLOGY OF IMMIGRATION
Short Title: SOCIOLOGY OF IMMIGRATION
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Sociology of Immigration traces the migration process from initiation through its long-term consequences using theories of initiation (e.g. economic and sociological models) and adaptation (e.g. segmented assimilation, new assimilation theory). It also explores the effects of immigration policies.
SOCI 341 - QUALITATIVE RESEARCH METHODS  
Short Title: QUALITATIVE RESEARCH METHODS  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This course examines qualitative methodological approaches for conducting social science research. Particularly, students will examine how qualitative methods allow social scientists to analyze the symbolic, religious, gendered, socio-economic, policies and historical forces and contexts that underlie and motivate beliefs, ideologies, practices and social change. Graduate/Undergraduate Equivalency: SOCI 541. Mutually Exclusive: Cannot register for SOCI 341 if student has credit for SOCI 541.

SOCI 342 - SOCIOLOGY OF GLOBALIZATION  
Short Title: SOCIOLOGY OF GLOBALIZATION  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This course explores how the process of global integration transforms human life with specific emphasis on: the global economy and economic development; transnational political organizations; culture an identity; the effect of globalization on social stratification, including gender/race/ethnic inequalities; transnational migration; environmental change; and transnational social movements.

SOCI 343 - RACE, SOCIETY AND POPULATION CHANGE  
Short Title: RACE, SOCIETY & POPULATION CHG  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: The U.S. population is more diverse than ever before - how did that happen? This course looks at how race and ethnicity patterns demographic processes. This course explores demographic techniques and collection of racial data. Topics include: Roots of racial diversity, collecting racial data, immigration and population growth, and population policies. Graduate/Undergraduate Equivalency: SOCI 543. Mutually Exclusive: Cannot register for SOCI 343 if student has credit for SOCI 543.

SOCI 344 - SOCIOLOGY OF MENTAL HEALTH  
Short Title: SOCIOLOGY OF MENTAL HEALTH  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group II  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This course investigates the meaning and significance of mental health, with heavy emphasis on the social construction of mental illness; positive psychology and psychological well-being; psychiatric epidemiology; stigma and labeling; and culture and social control. Social determinants of mental health are also discussed.

SOCI 345 - MEDICAL SOCIOLOGY  
Short Title: MEDICAL SOCIOLOGY  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group II  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This course will explore the relationship between social factors and health, illness, and mortality, with a heavy emphasis on experiences of illness, the doctor-patient relationship, and the socialization of medical students and new doctors. Social determinants of health, cultural determinants of health, and the ethics surrounding conception, birth, and death will also be discussed.

SOCI 348 - ORGANIZATIONAL SOCIOLOGY  
Short Title: ORGANIZATIONAL SOCIOLOGY  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: From congregations to corporations to colleges, organizations surround us. While the prominence of organizations in our daily lives is an indicator of their success, we know that organizations can be impersonal, unresponsive and even corrupt. This course will visit social scientists’ best attempts to figure out what makes organizations tick.
SOCI 349 - CRIME, LAW & JUSTICE IN POPULAR CULTURE
Short Title: CRIME LAW JUSTICE IN POP CULT
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This class will critically explore cultural imaginaries of deviance, crime, law and justice. How are these portrayed (historically and contemporarily) in popular culture, including television, film, social media outlets, newspapers and magazines, novels, and ’art.’ Well also interrogate has these images and portrayals interact with perceptions, personhood (identity), and policy.

SOCI 350 - URBAN TRANSPORTATION
Short Title: URBAN TRANSPORTATION
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Moving people and goods within cities is the stuff of legendary challenge and the life blood of urban areas. In this course we study the transportation systems used in European and US cities, examine advantages and disadvantages of different systems, and consider whether major transformations in urban transportation are on the horizon.

SOCI 358 - CRIME, PUNISHMENT AND SOCIETY
Short Title: CRIME, PUNISHMENT AND SOCIETY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A multi-faceted exploration of crime. We explore how crime is socially defined, perceived and portrayed. Next we analyze empirical patterns and theories of crime. Lastly, we examine societal responses, focusing on policing and punishment. Material will encompass both classical/foundational and contemporary scholarship, and a mix of empirical and theoretical work.

SOCI 363 - AFRICAN AMERICAN-JEWISH RELATIONS: RACE, RELIGION, POLITICS, AND POPULAR CULTURE
Short Title: AFRICAN AMER-JEWISH RELATIONS
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines African American-Jewish relations in the United States from colonial times to the present day. Through readings, music, images, and films, we will explore constructions of racial identity, arenas of religious and cultural interaction, and the politics and policies that have shaped African American-Jewish relations in urban neighborhoods.

SOCI 364 - MUSLIMS IN AMERICAN SOCIETY
Short Title: MUSLIMS IN AMERICAN SOCIETY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course unearths the history of Muslims in America from the 15th century to present-day. Students will have the opportunity to explore the experiences of African, Middle Eastern, European, South Asian, Hispanic, and black/white Muslims. In studying these communities, students will question what it means to be Muslim in America.

SOCI 365 - POLITICS OF REPRESENTATION: HOW WE UNDERSTAND 'WAR' AND 'THE RACIAL OTHER'
Short Title: POLITICS OF REPRESENTATION
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Does media show how things really are? This class explores the politics of representation, particularly in times of social mayhem, revolution, and war. Although we will focus primarily on cultural and political representations of the Israeli-Palestinian conflict, this class will also put this dispute in comparison with other global events. Cross-list: ANTH 365.
SOCI 366 - HOUSING AND SCHOOLS: THE SOCIAL LOCATIONS OF INEQUALITY
Short Title: HOUSING AND SCHOOLS
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A persistent link between families' residential location and children's school enrollment in the U.S. plays a significant role in the perpetuation of social inequality. This course examines the factors that shape housing and school opportunities for families, and the policies and interventions attempting to change these opportunities.

SOCI 367 - ENVIRONMENTAL SOCIOLOGY
Short Title: ENVIRONMENTAL SOCIOLOGY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course focuses on the foundations of environmental sociology and takes a social and historical approach to examine how humans affect the environment and the environment affects humans. Topics include: agricultural sustainability, resource extraction and climate changes; environmental racism/sexisim; globalization and development; population, and consumption, and environmental movements. Cross-list: ENST 367.

SOCI 368 - SOCIOLOGY OF DISASTER
Short Title: SOCIOLOGY OF DISASTER
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will cover social dimensions of disasters stemming from natural and human hazards. Emphasis will focus on social, economic and political forces that put people unevenly at risk as well as how vulnerable social groups experience and adjust to these risks and associated hazards.

SOCI 374 - SOCIAL PSYCHOLOGY OF PREJUDICE
Short Title: SOCIAL PSYCHOLOGY OF PREJUDICE
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course investigates the meaning, durability and significance of prejudice based upon social psychological literature addressing intergroup and interpersonal conflict and its resolution. Problems of relations between racial groups in contemporary society are also discussed.

SOCI 376 - ART AND ACTIVISM: CRITICAL STUDY OF HOPE IN TIMES OF CRISIS
Short Title: ART AND ACTIVISM
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores art and social change in times of mass displacement, racial oppression, and war. It surveys the efforts involved in achieving justice and the possible implications of remaining historically mute and hopeless. The class will host contemporary activists and artists concerned with radical visions of hope in Houston. Cross-list: ANTH 376.

SOCI 377 - HEALTH DISPARITIES IN THE UNITED STATES
Short Title: HEALTH DISPARITIES
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This class will explore patterns and explanations surrounding health disparities in the United States based on key status characteristics (socioeconomic status, race/ethnic identity, nativity, gender, and sexual orientation). We will draw on interdisciplinary scholarship covering diverse fields (e.g., medical sociology, social demography, public health, public policy) and methodologies.

SOCI 380 - SOCIAL THEORY
Short Title: SOCIAL THEORY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course engages and analyzes the foundational texts of social theory from its classical roots to its contemporary branches. Students will explore theoretical approaches that inform current sociological research and during the course will examine social phenomena of particular interest to them from the perspective of two major theorists.
SOCI 381 - RESEARCH METHODS
Short Title: RESEARCH METHODS
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An introduction to the methods sociologists use to study human societies and their members. Hypothesis formulation and research design; qualitative studies through observation and interviews; historical and comparative approaches; sample surveys and the statistical analysis of quantitative data, political and ethical issues in social research.

SOCI 382 - SOCIAL STATISTICS
Short Title: SOCIAL STATISTICS
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Emphasizes the practical uses of statistics to answer the types of questions sociologists ask. We learn sample description, sampling and probability, sampling theory, and how to make inferences from samples to populations. We study and apply common univariate, bivariate, and multivariate statistics. Because most statistical analysis is done with the aid of computers, we also learn how to use a common statistical package.

SOCI 389 - RACE, GENDER, CLASS ON FILM
Short Title: RACE, GENDER, CLASS ON FILM
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores how race, gender, and class-based differences are presented in the body of American film. We will explore these images as raw materials to understand sociological concepts of identity, bias, and stratification as well as the cultural narratives, or frames, that guide how the public defines these concepts.

SOCI 396 - LAW AND RESISTANCE IN THE EVERYDAY
Short Title: LAW AND RESISTANCE
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will explore how people interact with the law in their everyday lives – in the U.S. and elsewhere. Examples will include how individuals experience and respond to policing, examining the effects of immigration and border security policies, and tracing how people and groups mobilize to challenges laws perceived as unjust.
Cross-list: ANTH 396.

SOCI 401 - RELIGION SEMINAR
Short Title: RELIGION SEMINAR
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course that explores the theories, tools, concepts, and major debates that are central to the sociology of religion. Specific attention is devoted to religious practices, communities, and identities as well as how the sociology of religion relates to other sub-fields within the broader discipline. Instructor Permission Required. Graduate/Undergraduate Equivalency: SOCI 501. Mutually Exclusive: Cannot register for SOCI 401 if student has credit for SOCI 501.

SOCI 402 - RACE AND FAMILY SEMINAR
Short Title: RACE AND FAMILY SEMINAR
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: What features of family life are marked by race? This course examines the question and gauges whether differences are a matter of culture or do they reflect issues of structure (or access to opportunities) and what are the implications for race/ethnic inequality? Topics include racial socialization and ethnic identity. Instructor Permission Required. Graduate/Undergraduate Equivalency: SOCI 502. Mutually Exclusive: Cannot register for SOCI 402 if student has credit for SOCI 502.

SOCI 403 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Directed reading and written papers on subjects not regularly offered; advanced study of subjects on which courses are offered. Instructor Permission Required. Repeatable for Credit.

SOCI 404 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Directed readings and essay writing on special subjects. Includes advanced study in subjects from other courses, if desired. Instructor Permission Required. Repeatable for Credit.
SOCI 405 - ETHNOGRAPHIC RESEARCH

Short Title: ETHNOGRAPHIC RESEARCH

Department: Sociology

Grade Mode: Standard Letter

Course Type: Research

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: Beginning with the theoretical frameworks for ethnographic and other qualitative research methods, the course will cover ethics, entry, observation, field notes, interviewing, data analysis, and writing reports. It will offer a hands-on approach combining lectures, research through lectures, readings, and fieldwork. Field projects can be conducted in group, classroom, campus, or community settings. Graduate/Undergraduate Equivalency: SOCI 505. Mutually Exclusive: Cannot register for SOCI 405 if student has credit for SOCI 505.

SOCI 406 - BASIC DEMOGRAPHIC TECHNIQUES

Short Title: BASIC DEMOGRAPHIC TECHNIQUES

Department: Sociology

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: The course provides a survey of basic demographic methods for assessing population change, fertility, mortality, and (im)migration and characteristics such as age, gender, race/ethnicity, household/family composition, marital status, economic, employment, and educational. Emphasis placed on the use of the methods in a variety of demographic and other settings. Graduate/Undergraduate Equivalency: SOCI 506. Mutually Exclusive: Cannot register for SOCI 406 if student has credit for SOCI 506.

SOCI 407 - GENDER SEMINAR

Short Title: GENDER SEMINAR

Department: Sociology

Grade Mode: Standard Letter

Course Type: Seminar

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: An overview of the construction and reproduction of gender as a social category. Course will compare various conceptualizations of gender and discuss structural-, interactional-, and individual-level processes that reproduce gender inequality. Will also explore interactions of gender with other axes of social difference, such as sexuality, race/ethnicity and social class. Instructor Permission Required. Graduate/Undergraduate Equivalency: SOCI 607. Mutually Exclusive: Cannot register for SOCI 407 if student has credit for SOCI 607.

SOCI 408 - ETHNOGRAPHIC RESEARCH II

Short Title: ETHNOGRAPHIC RESEARCH II

Department: Sociology

Grade Mode: Standard Letter

Course Type: Research

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Prerequisite(s): SOCI 405

Description: Continuation of theoretical frameworks for ethnographic and other qualitative research methods including ethics, entry, observation, field notes, interviewing, data analysis and writing reports. Field projects can be conducted in group, classroom, campus or community settings. Instructor Permission Required.

SOCI 409 - SOCIAL STRATIFICATION

Short Title: SOCIAL STRATIFICATION

Department: Sociology

Grade Mode: Standard Letter

Course Type: Seminar

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: This course examines how scarce resources unequally distributed among individuals, groups, and societies. Social stratification is a key concept in sociology that examines income and wealth inequality, occupational and class hierarchies, inequality of educational opportunity, poverty, and the consequences of inequality. Examples will drawn from US and international cases. Graduate/Undergraduate Equivalency: SOCI 509. Mutually Exclusive: Cannot register for SOCI 409 if student has credit for SOCI 509.

SOCI 412 - PERSPECTIVES ON RELIGIOUS TOLERANCE IN AN INTOLERANT AGE

Short Title: UG SEMINAR RELIGIOUS TOLERANCE

Department: Sociology

Grade Mode: Standard Letter

Course Type: Seminar

Credit Hour: 1

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: How do we understand religious pluralism in the midst of religious traditions that seem inherently at odds? Is religion more likely to bring peace or conflict? Through readings form the humanities and the social sciences and short lectures, this weekly undergraduate seminar will address these issues and more. Graduate/Undergraduate Equivalency: SOCI 512. Mutually Exclusive: Cannot register for SOCI 412 if student has credit for SOCI 512.
SOCI 415 - THE ENVIRONMENTAL MOVEMENT
Short Title: THE ENVIRONMENTAL MOVEMENT
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Examines the environmental movement in the U.S. and globally. After a historical overview, we will use a social movement perspective to examine mobilization, organizations and tactics, ideologies and identities, as well as exploring aspects of contemporary environmentalism (e.g. green building and slow food, wildlife management/biodiversity, sustainable development, environmental justice). Cross-list: ENST 415.

SOCI 422 - SOCIAL AUTOPSIES: HOW SOCIETY KILLS US
Short Title: SOCIAL AUTOPSIES
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores mortality, and how long we live, as a social process. Though we often reflect on the biological, physiological, and genetic conditions that play parts in the length of our lives, we will explore evidence suggesting that social conditions shape mortality prospects for all of us. Graduate/Undergraduate Equivalency: SOCI 522. Mutually Exclusive: Cannot register for SOCI 422 if student has credit for SOCI 522.

SOCI 423 - SOCIOLOGY OF FOOD
Short Title: SOCIOLOGY OF FOOD
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines the production, distribution, and consumption of food as a medium to understand the relations between large social processes and the practices of everyday life. Topics include: food policy, commodification of food, food security and hunger, food, health and the body; cultural food practices; and alternative food systems. Graduate/Undergraduate Equivalency: SOCI 523. Mutually Exclusive: Cannot register for SOCI 423 if student has credit for SOCI 523.

SOCI 424 - RACE AND ETHNICITY SEMINAR
Short Title: RACE AND ETHNICITY SEMINAR
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course builds foundational understanding of the diverse theoretical traditions of the last half-century that underlie much of the work currently being undertaken in sociology. Theories include: symbolic interactionism, critical theory, structuralism, power and social control, neo-institutionalism, feminist theory, and cultural theory. Evaluation based on papers, memos and seminar participation. Graduate/Undergraduate Equivalency: SOCI 524. Mutually Exclusive: Cannot register for SOCI 424 if student has credit for SOCI 524.

SOCI 425 - POPULATION HEALTH SEMINAR
Short Title: POPULATION HEALTH SEMINAR
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Course is a graduate level overview of population health, including the social determinates of morbidity and mortality, fertility and birth outcomes, health disparities, and contextual determinants of health. Course will cover major theoretical perspectives in the field, including fundamental cause theory, life course theory, and theories of stress and resilience. Graduate/Undergraduate Equivalency: SOCI 525. Mutually Exclusive: Cannot register for SOCI 425 if student has credit for SOCI 525.

SOCI 426 - CONTEMPORARY THEORY
Short Title: CONTEMPORARY THEORY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course builds foundational understanding of the diverse theoretical traditions of the last half-century that underlie much of the work currently being undertaken in sociology. Theories include: symbolic interactionism, critical theory, structuralism, power and social control, neo-institutionalism, feminist theory, and cultural theory. Evaluation based on papers, memos and seminar participation. Graduate/Undergraduate Equivalency: SOCI 526. Mutually Exclusive: Cannot register for SOCI 426 if student has credit for SOCI 526.
### SOCI 436 - RESEARCH SEMINAR: THE HOUSTON AREA SURVEY
**Short Title:** HOUSTON AREA SURVEY  
**Department:** Sociology  
**Grade Mode:** Standard Letter  
**Course Type:** Research  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Continuation of the annual surveys on how Houston residents are reacting to the ongoing economic and demographic changes. Includes sampling procedures, questionnaire construction, interviewing, data analysis, and the logic and skills of survey research. Culminates in a research report that develops empirical hypotheses and tests their validity with the survey findings. Graduate/Undergraduate Equivalency: SOCI 536. Recommended Prerequisite(s): SOCI 381 & SOCI 382. Mutually Exclusive: Cannot register for SOCI 436 if student has credit for SOCI 536.  

### SOCI 437 - SOCIOLOGY OF EDUCATION  
**Short Title:** SOCIOLOGY OF EDUCATION  
**Department:** Sociology  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Analyzing educational inequality in the U.S. using concepts of educational equality and inequality and analysis of the factors that shape schooling outcomes. Addressing the role of students, families, neighborhoods, schools, school organizations and teachers. Special topics: education of immigrants, school segregation, accountability, higher education and the future of educational inequality. Graduate/Undergraduate Equivalency: SOCI 537. Mutually Exclusive: Cannot register for SOCI 437 if student has credit for SOCI 337/SOCI 537.  

### SOCI 438 - FAMILY SEMINAR  
**Short Title:** FAMILY SEMINAR  
**Department:** Sociology  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course will cover the history of the family and key theoretical and empirical debates about family formation, stability, and dissolution. Ultimately, we will seek to answer the question: is the American family in decline? Instructor Permission Required. Graduate/Undergraduate Equivalency: SOCI 538. Mutually Exclusive: Cannot register for SOCI 438 if student has credit for SOCI 538.  

### SOCI 451 - IMMIGRATION IN A GLOBAL WORLD  
**Short Title:** IMMIGRATION  
**Department:** Sociology  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course compare 20th century immigration to the US (and other countries) with more recent migratory flows. Topics will be related to the transnational identities of immigrants, ethnic discrimination, and the impact of immigrants on civic and religious institutions. A central part of the course is a semester-long research project. Graduate/Undergraduate Equivalency: SOCI 551. Mutually Exclusive: Cannot register for SOCI 451 if student has credit for SOCI 551.  

### SOCI 453 - RACE, MIGRATION, AND HEALTH SEMINAR  
**Short Title:** RACE, MIGRATION, AND HEALTH  
**Department:** Sociology  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** In this class we will examine the relationship between racial identity, nativity, and health status. Through readings and class discussion we will examine how racial identity and generational status shape health-related resources, stressors, behaviors, and supports. We will also consider how these factors relate to health care access and use. Graduate/Undergraduate Equivalency: SOCI 553. Mutually Exclusive: Cannot register for SOCI 453 if student has credit for SOCI 553.  

### SOCI 459 - RELIGION AND PUBLIC LIFE  
**Short Title:** RELIGION AND PUBLIC LIFE  
**Department:** Sociology  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course will use the tools of social science to understand how religion shows up in public life, both in the US and around the globe. Topics include: epistemology and methodology of public religion; how religion shapes views on politics, gender, families, science, race, immigration, education, the workplace; the challenges of religious diversity and crossing sociopolitical divides. Graduate/Undergraduate Equivalency: SOCI 559. Mutually Exclusive: Cannot register for SOCI 459 if student has credit for SOCI 559.
SOCI 460 - SPATIAL ANALYSIS IN THE SOCIAL SCIENCES
Short Title: SPATIAL ANALYSIS
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Introduction to the core concepts and tools for analyzing spatial data. Students will gain hands-on experience creating spatial data (including georeferencing, geocoding, and merging data sources), producing and interpreting maps, and describing and analyzing spatial patterns and relationships. Drawing on examples in housing, health, education, public policy, and urban studies, students will learn how to apply spatial concepts and methods to study the geographic distribution of social phenomena, the spatial organization of communities, and the relationship between society and the environment. Graduate/Undergraduate Equivalency: SOCI 560. Recommended Prerequisite(s): The course uses R software for spatial data management and analysis. Students should have introductory-level knowledge of R and basic statistics prior to taking the course. Students can make use of online resources (e.g., https://www.datacamp.com/) to gain experience prior to the start of the course. Mutually Exclusive: Cannot register for SOCI 460 if student has credit for SOCI 560.

SOCI 465 - GENDER AND HEALTH
Short Title: GENDER AND HEALTH
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar explores the relationship between gender and health (longevity, physical illness and functioning, mental health, and health behavior). Specific topics include masculinity, disease expression, medical research, health care use, stress and social relationships, and intersectionality (race/ethnicity and sexuality) as they relate shaping health outcomes among men and women. Cross-list: SWGS 465. Graduate/Undergraduate Equivalency: SOCI 665. Mutually Exclusive: Cannot register for SOCI 465 if student has credit for SOCI 665.

SOCI 469 - COMMUNITY BRIDGES TRAINING
Short Title: COMMUNITY BRIDGES TRAINING
Department: Sociology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course is the precursor for the spring course, SOCI 470, Inequality and Urban Life. Only students accepted into the Community Bridges Program may enroll in this course, where we do preparatory readings, trainings and workshops for the spring community internships. Instructor Permission Required.

SOCI 470 - INEQUALITY AND URBAN LIFE
Short Title: INEQUALITY AND URBAN LIFE
Department: Sociology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course combines classroom study with seven hours of fieldwork per week, working on projects with a local organization. We study how urban areas generate wealth and poverty, the experience of inequality, and issues of community development. Enrollment is by permission only. Instructor Permission Required.

SOCI 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Sociology
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

SOCI 483 - DATA ANALYSIS
Short Title: DATA ANALYSIS
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This graduate course introduces students to multivariate regression methods. It assumes previous coursework in elementary statistics and the use of STATA. We will cover regression analysis for continuous dependent variables and move in to intermediate and some advance analysis for categorical dependent variables, commonly referred to as generalized linear models.

SOCI 485 - IDENTITIES IN A DIVERSE WORLD
Short Title: RACIAL IDENTITIES
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: How have shifts in ethnic and race diversity affected the way we answer the question, 'who am I?' 'Identities in a Diverse World' is a seminar dedicated to answering this core question by exploring the new frontiers of understanding race and ethnicity. Topics include: Racial Passing, Transracial adoption, Whiteness, and Immigration. Graduate/Undergraduate Equivalency: SOCI 585. Mutually Exclusive: Cannot register for SOCI 485 if student has credit for SOCI 585.
SOCI 492 - DIRECTED HONORS RESEARCH
Short Title: DIRECTED HONORS RESEARCH
Department: Sociology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Sociological research under faculty supervision. Includes first-semester review of relevant literature and the preparation of an outline for planned research, followed by second-semester research and the writing of an honors thesis. Open only to students in sociology honors program. Instructor Permission Required.

SOCI 493 - DIRECTED HONORS RESEARCH
Short Title: DIRECTED HONORS RESEARCH
Department: Sociology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Sociological research under faculty supervision. Includes first-semester review of relevant literature and preparation of outline for planned research, followed by second-semester research and the writing of an honors thesis. Open only to students in sociology honors program. Instructor Permission Required.

SOCI 500 - SUMMER RESEARCH
Short Title: SUMMER RESEARCH
Department: Sociology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment limited to students with a class of Graduate.
Course Level: Graduate
Description: Sociological research for graduate students in sociology. Repeatable for Credit.

SOCI 501 - GRADUATE RELIGION SEMINAR
Short Title: GRADUATE RELIGION SEMINAR
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Sociology.
Course Level: Graduate
Description: A graduate level course that explores the theories, tools, concepts, and major debates that are central to the sociology of religion. Specific attention is devoted to religions practices, communities, and identities as well as how the sociology of religion relates to other subfields with the broader discipline. Graduate/Undergraduate Equivalency: SOCI 401. Mutually Exclusive: Cannot register for SOCI 501 if student has credit for SOCI 401.

SOCI 502 - RACE AND FAMILY SEMINAR
Short Title: RACE AND FAMILY SEMINAR
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Sociology.
Course Level: Graduate
Description: What features of family life are marked by race? This course examines the question and gauges whether differences are a matter of culture or do they reflect issues of structure (or access to opportunities) and what are the implications for race/ethnic inequality? Topics include racial socialization and ethnic identity. Graduate/Undergraduate Equivalency: SOCI 402. Mutually Exclusive: Cannot register for SOCI 502 if student has credit for SOCI 402.

SOCI 503 - TEACHING SOCIOLOGY
Short Title: TEACHING SOCIOLOGY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to students with a major in Sociology.
Course Level: Graduate
Description: This course will examine different approaches to teaching sociology at the university level, including core curriculum, a syllabus, and different forms of presenting material and evaluating students at the undergraduate and graduate levels. Sociology department faculty will discuss their particular approaches to teaching sociology.

SOCI 505 - ETHNOGRAPHIC RESEARCH
Short Title: ETHNOGRAPHIC RESEARCH
Department: Sociology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Beginning with the theoretical frameworks for ethnographic and other qualitative research methods, the course will cover ethics, entry, observation, field notes, interviewing, data analysis, and writing reports. It will offer a hands-on approach combining lectures, research through lectures, readings, and fieldwork. Field projects can be conducted in group, classroom, campus, or community settings. Graduate/Undergraduate Equivalency: SOCI 405. Mutually Exclusive: Cannot register for SOCI 505 if student has credit for SOCI 405.
SOCI 506 - BASIC DEMOGRAPHIC TECHNIQUES
Short Title: BASIC DEMOGRAPHIC TECHNIQUES
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course provides a survey of basic demographic methods for assessing population change, fertility, mortality, and (im)migration and characteristics such as age, gender, race/ethnicity, household/family composition, marital status, economic, employment, and educational. Emphasis placed on the use of the methods in a variety of demographic and other settings. Graduate/Undergraduate Equivalency: SOCI 406. Mutually Exclusive: Cannot register for SOCI 506 if student has credit for SOCI 406.

SOCI 509 - SOCIAL STRATIFICATION
Short Title: SOCIAL STRATIFICATION
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines how scarce resources unequally distributed among individuals, groups, and societies. Social stratification is a key concept in sociology that examines income and wealth inequality, occupational and class hierarchies, inequality of educational opportunity, poverty, and the consequences of inequality. Examples will drawn from US and international cases. Graduate/Undergraduate Equivalency: SOCI 409. Mutually Exclusive: Cannot register for SOCI 509 if student has credit for SOCI 409.

SOCI 510 - RELIGION AND SOCIETY
Short Title: RELIGION AND SOCIETY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar focuses on the ways in which religion is impacted by society, how society is shaped by religion, and the functions, uses, and meanings of religion in the modern world. We rely on the sociological perspective for understanding religion. Field work required.

SOCI 511 - COMMUNITY AND URBAN SOCIOLOGY
Short Title: COMMUNITY & URBAN SOCIOLOGY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of urban development, form, and heterogeneity; and the conditions of life associated with living in cities, their growth and purposes globally and locally.

SOCI 512 - PERSPECTIVES ON RELIGIOUS TOLERANCE IN AN INTOLERANT AGE
Short Title: GR SEMINAR RELIGIOUS TOLERANCE
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: How do we understand religious pluralism in the midst of religious traditions that seem inherently at odds? Is religion more likely to bring peace or conflict? Through readings form the humanities and the social sciences and short lectures, this weekly undergraduate seminar will address these issues and more. Graduate/Undergraduate Equivalency: SOCI 412. Mutually Exclusive: Cannot register for SOCI 512 if student has credit for SOCI 412.

SOCI 513 - DEMOGRAPHY
Short Title: DEMOGRAPHY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of the dynamics of population change. Includes demographic data sources, components of population change, mortality patterns, family planning, the measurement of migration flows, and population-economic models. Graduate/Undergraduate Equivalency: SOCI 313. Mutually Exclusive: Cannot register for SOCI 513 if student has credit for SOCI 313.

SOCI 521 - RESEARCH-PRACTICE PARTNERSHIPS
Short Title: RESEARCH-PRACTICE PARTNERSHIPS
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course provides a foundational understanding of research-practice partnerships (RPPs) in education, an emerging way for education researchers and practitioners to work together on pressing problems of practice. Topics include launching an RPP; theories of action, supporting research use, communications, sustainability, and measuring RPP effectiveness.

SOCI 522 - SOCIAL AUTOPSIES
Short Title: SOCIAL AUTOPSIES
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course explores mortality, and how long we live, as a social process. Though we often reflect on the biological, physiological, and genetic conditions that play parts in the length of our lives, we will explore evidence suggesting that social conditions shape mortality prospects for all of us. Graduate/Undergraduate Equivalency: SOCI 422. Mutually Exclusive: Cannot register for SOCI 522 if student has credit for SOCI 422.
SOCI 523 - SOCIOLOGY OF FOOD
Short Title: SOCIOLOGY OF FOOD
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines the production, distribution, and consumption of food as a medium to understand the relations between large social processes and the practices of everyday life. Topics include: food policy; commodification of food; food security and hunger; food, health and the body; cultural food practices; and alternative food systems. Graduate/Undergraduate Equivalency: SOCI 423. Mutually Exclusive: Cannot register for SOCI 523 if student has credit for SOCI 423.

SOCI 524 - RACE AND ETHNICITY SEMINAR
Short Title: RACE AND ETHNICITY SEMINAR
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Overview of the sociological study of race and ethnic relations; identifying the major contributions made to the sociological study of race and the ethnicity; and the major areas in need of new thinking and research. Focus on theoretical formulations, historical understandings, and causes and consequences of race and technical relations globally. Graduate/Undergraduate Equivalency: SOCI 424. Mutually Exclusive: Cannot register for SOCI 524 if student has credit for SOCI 424.

SOCI 525 - POPULATION HEALTH SEMINAR
Short Title: POPULATION HEALTH SEMINAR
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Course is a graduate level overview of population health, including the social determinates of morbidity and mortality, fertility and birth outcomes, health disparities, and contextual determinants of health. Course will cover major theoretical perspectives in the field, including fundamental causation theory, life course theory, and theories of stress and resilience. Graduate/Undergraduate Equivalency: SOCI 425. Mutually Exclusive: Cannot register for SOCI 525 if student has credit for SOCI 425.

SOCI 526 - CONTEMPORARY THEORY
Short Title: CONTEMPORARY THEORY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course builds foundational understanding of the course builds foundational understanding of the diverse theoretical traditions of the last half-century that underlie much of the work currently being undertaken in sociology. Theories include: symbolic interactionism, critical theory, structuralism, power and social control, neo-institutionalism, feminist theory, and cultural theory. Evaluation based on papers, memos and seminar participation. Graduate/Undergraduate Equivalency: SOCI 426. Mutually Exclusive: Cannot register for SOCI 526 if student has credit for SOCI 426.

SOCI 528 - GIS FOR SOCIAL SCIENCE RESEARCH
Short Title: GIS FOR SOCIAL SCIENCE RESEARCH
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will focus on integrating spatial concepts into social science research using GIS software. Topics include: data acquisition, structure and management; principles of exploratory data analysis and cartographic visualization; and exploratory spatial data analysis (spatial auto correlation).

SOCI 534 - BLACK SOCIOLOGICAL THOUGHT
Short Title: BLACK SOCIOLOGICAL THOUGHT
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is a graduate level survey seminar on black sociological thought. It will familiarize enrolled students with classic and contemporary work addressing the meaning and consequence of racism with particular emphasis on the black experience in the United States.

SOCI 536 - RESEARCH SEMINAR: THE HOUSTON AREA SURVEY
Short Title: HOUSTON AREA SURVEY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Continuation of the series of annual surveys on how Houston residents are reacting to the ongoing economic and demographic changes. Includes sampling procedures, questionnaire construction, interviewing, data analysis, and the logic and skills of survey research. Culminates in a research report that develops empirical hypotheses and tests their validity with the survey findings. Graduate/Undergraduate Equivalency: SOCI 436. Mutually Exclusive: Cannot register for SOCI 536 if student has credit for SOCI 436.
SOCI 537 - SOCIOLOGY OF EDUCATION
Short Title: SOCIOLOGY OF EDUCATION
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Sociology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Analyzing educational inequality in the U.S. using concepts of educational equality and inequality and analysis of the factors that shape schooling outcomes. Addressing the role of students, families, neighborhoods, schools, school organizations and teachers. Special topics: education of immigrants, school segregation, accountability, higher education and the future of educational inequality. Graduate/Undergraduate Equivalency: SOCI 437. Mutually Exclusive: Cannot register for SOCI 537 if student has credit for SOCI 337/SOCI 437.

SOCI 538 - FAMILY SEMINAR
Short Title: FAMILY SEMINAR
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Sociology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will cover the history of the family and key theoretical and empirical debates about family formation, stability, and dissolution. Ultimately, we will seek to answer the question: is the American family in decline? Graduate/Undergraduate Equivalency: SOCI 438. Mutually Exclusive: Cannot register for SOCI 538 if student has credit for SOCI 438.

SOCI 541 - QUALITATIVE RESEARCH METHODS
Short Title: QUALITATIVE RESEARCH METHODS
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines qualitative methodological approaches for conducting social science research. Particularly, students will examine how qualitative methods allow social scientists to analyze the symbolic, religious, gendered, socio-economic, policies and historical forces and contexts that underlie and motivate beliefs, ideologies, practices and social change. Graduate/Undergraduate Equivalency: SOCI 341. Mutually Exclusive: Cannot register for SOCI 541 if student has credit for SOCI 341.

SOCI 543 - RACE, SOCIETY AND POPULATION CHANGE
Short Title: RACE, SOCIETY & POPULATION CHG
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course compare 20th century immigration to the US (and other countries) with more recent migratory flows. Topics will be related to the transnational identities of immigrants, ethnic discrimination, and the impact of immigrants on civic and religious institutions. A central part of the course is a semester-long research project. Graduate/Undergraduate Equivalency: SOCI 451. Mutually Exclusive: Cannot register for SOCI 551 if student has credit for SOCI 451.

SOCI 551 - IMMIGRATION IN A GLOBAL AGE
Short Title: IMMIGRATION
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course compare 20th century immigration to the US and other countries) with more recent migratory flows. Topics will be related to the transnational identities of immigrants, ethnic discrimination, and the impact of immigrants on civic and religious institutions. A central part of the course is a semester-long research project. Graduate/Undergraduate Equivalency: SOCI 451. Mutually Exclusive: Cannot register for SOCI 551 if student has credit for SOCI 451.

SOCI 553 - RACE, MIGRATION, AND HEALTH SEMINAR
Short Title: RACE, MIGRATION, AND HEALTH
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this class we will examine the relationship between racial identity, nativity, and health status. Through readings and class discussion we will examine how racial identity and generational status shape health-related resources, stressors, behaviors, and supports. We will also consider how these factors relate to health care access and use. Graduate/Undergraduate Equivalency: SOCI 453. Mutually Exclusive: Cannot register for SOCI 553 if student has credit for SOCI 453.
SOCI 559 - RELIGION AND PUBLIC LIFE  
Short Title: RELIGION AND PUBLIC LIFE  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course will use the tools of social science to understand how religion shows up on in public life, both in the US and around the globe. Topics include: epistemology and methodology of public religion; how religion shapes views on politics, gender, families, science, race, immigration, education, the workplace; the challenges of religious diversity and crossing sociopolitical divides. Graduate/Undergraduate Equivalency: SOCI 459. Mutually Exclusive: Cannot register for SOCI 559 if student has credit for SOCI 459.

SOCI 560 - SPATIAL ANALYSIS IN THE SOCIAL SCIENCES  
Short Title: SPATIAL ANALYSIS  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Introduction to the core concepts and tools for analyzing spatial data. Students will gain hands-on experience creating spatial data (including georeferencing, geocoding, and merging data sources), producing and interpreting maps, and describing and analyzing spatial patterns and relationships. Drawing on examples in housing, health, education, public policy, and urban studies, students will learn how to apply spatial concepts and methods to study the geographic distribution of social phenomena, the spatial organization of communities, and the relationship between society and the environment. Graduate/Undergraduate Equivalency: SOCI 460. Recommended Prerequisite(s): The course uses R software for spatial data management and analysis. Students should have introductory-level knowledge of R and basic statistics prior to taking the course. Students can make use of online resources (e.g., https://www.datacamp.com/) to gain experience prior to the start of the course. Mutually Exclusive: Cannot register for SOCI 560 if student has credit for SOCI 460.

SOCI 580 - CLASSICAL THEORY  
Short Title: CLASSICAL THEORY  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to students with a major in Sociology. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course engages and analyzes the foundational texts of social theory from its classical roots to its contemporary branches. Students will explore theoretical approaches that inform current sociological research and during the course will examine social phenomena of particular interest to them from the perspective of two major theorists.

SOCI 581 - QUANTITATIVE RESEARCH METHODS  
Short Title: QUANTITATIVE RESEARCH METHODS  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to students with a major in Sociology. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Designed as a graduate level overview of quantitative research methods, with a focus on survey construction and design. The class moves through the stops of the research design process, and discusses mixed-methods and meta-analysis research. Class also includes a strong focus on writing, critique, peer review, and the publishing process.

SOCI 582 - QUANTITATIVE DATA ANALYSIS I  
Short Title: QUANTITATIVE DATA ANALYSIS I  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to students with a major in Sociology. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: An introduction to statistics and data analysis for graduate students in sociology. Topics include descriptive statistics, visual representation of data, univariate and bivariate tests, as well as an introduction to multiple regression. Techniques for visualizing data will be discussed throughout. Familiarity with the statistical package Stata is assumed. Instructor Permission Required.

SOCI 583 - QUANTITATIVE DATA ANALYSIS II  
Short Title: QUANTITATIVE DATA ANALYSIS II  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to students with a major in Sociology. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course introduces students to multiple regression methods - a set of models that relate an outcome (also referred to as response or dependent) variable to a set of explanatory or independent variables. Students should have a previous coursework on descriptive statistics, bivariate regression, as well as familiarity with Stata.

SOCI 584 - QUANTITATIVE ANALYSIS III  
Short Title: QUANTITATIVE ANALYSIS III  
Department: Sociology  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Lecture/Laboratory  
Credit Hours: 1-3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): SOCI 582 and SOCI 583  
Description: The course will give an overview of several advanced statistical techniques commonly used in Sociology.
SOCI 585 - IDENTITIES IN A DIVERSE WORLD
Short Title: RACIAL IDENTITIES
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: How have shifts in ethnic and race diversity affected the way we answer the question, 'who am I?' 'Identities in a Diverse World' is a seminar dedicated to answering this core question by exploring the new frontiers of understanding race and ethnicity. Topics include: Racial Passing, Transracial adoption, Whiteness, and Immigration. Graduate/Undergraduate Equivalency: SOCI 485. Mutually Exclusive: Cannot register for SOCI 585 if student has credit for SOCI 485.

SOCI 586 - MULTILEVEL MODELING
Short Title: MULTILEVEL MODELING
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): SOCI 582 and SOCI 583
Description: This course is an introduction to multilevel modeling methods for data with complex clustering. The major topics include two-level models for continuous, categorical, and count outcomes, three-level models, multilevel models of change and models for imperfectly nested data. Instructor Permission Required.

SOCI 587 - LONGITUDINAL DATA ANALYSIS
Short Title: LONGITUDINAL DATA ANALYSIS
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): SOCI 582 and SOCI 583
Description: This course introduces students to the nature of longitudinal data and illustrate the applicability of techniques for the analysis using such data. The subject matter consists of regression models for data collected on the same subjects over time, as well as methods of analyzing event histories.

SOCI 596 - STATISTICAL PROGRAMMING
Short Title: STATISTICAL PROGRAMMING
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to students with a major in Sociology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will provide a thorough introduction to the statistical software package Stata. The emphasis will be on important skills for quantitative research that are not typically covered in statistics classes. Topics will include: data management, creating graphs, presentation of results, workflow, and documenting one's work.

SOCI 600 - GRADUATE INDEPENDENT STUDY
Short Title: GRADUATE INDEPENDENT STUDY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is an introduction to multilevel modeling methods for data with complex clustering. The major topics include two-level models for continuous, categorical, and count outcomes, three-level models, multilevel models of change and models for imperfectly nested data. Instructor Permission Required. Repeatable for Credit.

SOCI 601 - CLASSICAL THEORY II
Short Title: CLASSICAL THEORY II
Department: Sociology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate.
Course Level: Graduate
Description: This course focuses on the sociology of global cities, especially on their comparative study. It examines their rise and development as central nodes in the world system, the means to their centrality and the threats to maintaining their status. A required end product of the course will be a publishable research paper using a comparative analysis of global cities. SECTION TWO: This course explores the relationship between social factors and health, illness, and mortality, with a heavy emphasis on equalitative experiences of illness, the doctor-patient relationship, and the socialization of medical students and new doctors. SECTION THREE: This course examines the causes and consequences of societal stratification in different institutional spheres. Students will be expected to examine key theoretical perspectives as well as understand and critique different methodological approaches to the study of social stratification. SECTION FOUR: Designed to familiarize students with the historical and contemporary theoretical explanations of the formation of, identification with, and implications of racial and ethnic categories in the United States and globally. Additionally, this course will cover empirical studies that investigate the perpetuation of racial and ethnic inequality in comparative, international perspective. SECTION FIVE: This course focuses on the mechanisms that lead to and/or perpetuate marginalization of social groups (e.g. racial, socioeconomic, religious, etc...) in urban areas. In particular, this course examines policies (i.e. public housing, cash welfare, corporation tax breaks, zoning laws) that increase or decrease the generational marginalization of groups. SECTION SIX: This course will delve extensively into criminology. The course will cover four broad areas: 1) how crime is imagined and portrayed, 2) empirical patterns of crime, 3) theories of crime causation and victimization, and 4) societal responses to crime, encompassing studies of social control, policing, the legal system, and punishment. Instructor Permission Required. Repeatable for Credit.
SOCI 602 - QUANTITATIVE METHODS  
Short Title: QUANTITATIVE METHODS  
Department: Sociology  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: The student will do advanced work in an area of statistical interest with a faculty member who specializes in the techniques.

SOCI 603 - DIRECTED READING IN URBAN SOCIOLOGY  
Short Title: URBAN SOCIOLOGY  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Independent Study  
Credit Hours: 3  
Restrictions: Enrollment is limited to students with a major in Sociology. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This reading course covers foundational readings in the area of urban sociology.

SOCI 604 - MAXIMUM LIKELIHOOD ESTIMATION FOR GENERALIZED LINEAR MODELS  
Short Title: GENERALIZED LINEAR MODELS  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to students with a major in Sociology. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Explores useful statistical models beyond standard linear regression. Topics covered are logit and probit models for both binary and ordinal dependent variables, even count models, models for heteroskedastic regressions, and more. Maximum likelihood unifies these models by providing a single, coherent approach to estimation and about how data are generated.

SOCI 605 - NON-THESIS GRADUATE RESEARCH  
Short Title: NON-THESIS GRADUATE RESEARCH  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Research  
Credit Hours: 1-9  
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Individual research not for thesis credit. Repeatable for Credit.

SOCI 606 - THESIS RESEARCH  
Short Title: THESIS RESEARCH  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Research  
Credit Hours: 3  
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Sociology. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Repeatable for Credit.

SOCI 607 - GENDER SEMINAR  
Short Title: GENDER SEMINAR  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to students with a major in Sociology. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: An overview of the construction and reproduction of gender as a social category. Course will compare various conceptualizations of gender and discuss structural-, interactional-, and individual-level processes that reproduce gender inequality. Will also explore interactions of gender with other axes of social difference, such as sexuality, race/ethnicity and social class. Graduate/Undergraduate Equivalency: SOCI 407. Mutually Exclusive: Cannot register for SOCI 607 if student has credit for SOCI 407/SOCI 504.

SOCI 608 - GRADUATE RESEARCH DESIGN  
Short Title: GRADUATE RESEARCH DESIGN  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This required graduate seminar in sociological research design focuses on the logic of inquiry within the discipline, including practices of advanced empirical and theoretical contribution. Topics will span state-of-the-art analyses and their exemplars. Department Permission Required.

SOCI 609 - GRADUATE INDEPENDENT STUDY  
Short Title: GRADUATE INDEPENDENT STUDY  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Independent Study  
Credit Hours: 1-9  
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Sociological independent study under faculty supervision. Only open to graduate students. Repeatable for Credit.

SOCI 610 - PROFESSIONALIZATION WORKSHOP  
Short Title: PROFESSIONALIZATION WORKSHOP  
Department: Sociology  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Seminar  
Credit Hours: 1  
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This professionalization workshop is designed to introduce graduate students to professionalization topics such as: giving a conference presentation, writing a fellowship or grant proposal, and the reviewing process of journals. Repeatable for Credit.
SOCI 611 - CRAFTING A DISSERTATION
Short Title: CRAFTING A DISSERTATION
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Sociology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will enable students to receive instructor and peer feedback on dissertation proposals and dissertation chapters. Topics covered will include how to write a dissertation, start to finish. Students must have successfully completed at least one comp exam by August 31st to be eligible.

SOCI 620 - QUANTITATIVE METHODS FOR CAUSAL INFERENCE
Short Title: CAUSAL INFERENCE
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): SOCI 582 and SOCI 583
Description: This course will introduce sociology graduate students to causal inference and common threats to causal identification. We will cover a variety of quantitative methods intended to strengthen causal identification, including fixed effects, propensity score matching, and instrumental variables, among others. Department Permission Required.

SOCI 665 - GENDER AND HEALTH
Short Title: GENDER AND HEALTH
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Sociology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar explores the relationship between gender and health (longevity, physical illness and functioning, mental health, and health behavior). Specific topics include masculinity, disease expression, medical research, health care use, stress and social relationships, and intersectionality (race/ethnicity and sexuality) as they relate shaping health outcomes among men and women. There are additional requirements for Graduate students. Graduate/Undergraduate Equivalency: SOCI 465. Mutually Exclusive: Cannot register for SOCI 665 if student has credit for SOCI 465.

SOCI 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Sociology
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

SOCI 700 - DISSERTATION RESEARCH
Short Title: DISSERTATION RESEARCH
Department: Sociology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Sociology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Dissertation research credit. Repeatable for Credit.

Spanish & Portuguese (SPPO)

SPPO 158 - INTRODUCTION TO LATIN AMERICAN STUDIES
Short Title: INTRO LATIN AMERICAN STUDIES
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Formerly SPAN 158. This course immerses students into Caribbean and Latin American studies by introducing them to the history, society, politics, and culture of the region, through a cross-disciplinary and a multi-national approach. Taught in English. Open to all students. Cross-list: LASR 158.

SPPO 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

SPPO 330 - HISPANIC WRITING SEMINAR
Short Title: HISPANIC WRITING SEMINAR
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: In this writing intensive seminar, students will learn the skills to think and write critically in Spanish about literary and cultural production from the global Hispanic world. Recommended Prerequisite(s): SPAN 303 or SPAN 321 or SPAN 322.
**Short Title:** SPPO 331 - BRASIL ATUAL  
**Department:** Span Port & Latin Amer Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Course examines topics in contemporary Brazil as presented in media, literature, film, and music. Works address persistent race, class, and gender inequalities, national identity, urban life, and environmental issues, among other topics. Further development of speaking, writing and vocabulary enrichment emphasized through discussions and interactive activities. Taught in Portuguese. Recommended Prerequisite(s): PORT 301 or placement test. Mutually Exclusive: Cannot register for SPPO 331 if student has credit for PORT 331.

**SPPO 332 - APPROACHES TO HISPANIC LITERATURES**  
**Short Title:** APPROACHES HISPANIC LITERATURE  
**Department:** Span Port & Latin Amer Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Introduction to Hispanic Literature where students will become familiar with the methodology of literary analysis to approach different genres and develop original and critical interpretation of texts. Course will give a wide and solid literary and analytical context for more advance courses in Spanish and Latin American literature. Recommended Prerequisite(s): SPAN 303 or SPAN 321 or SPAN 322 or Placement Test.

**SPPO 340 - INTRODUCTION TO SPANISH LINGUISTICS**  
**Short Title:** INTRO TO SPANISH LINGUISTICS  
**Department:** Span Port & Latin Amer Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Introduction to the study of the Spanish language covering the following areas of research: history, phonetics/phonology, morphosyntactic system, lexicon, semantics, pragmatics, sociolinguistics, and language acquisition. Recommended Prerequisite(s): SPAN 303 or SPAN 321 or SPAN 322. Mutually Exclusive: Cannot register for SPPO 340 if student has credit for SPAN 352.

**SPPO 341 - DIALECTS IN CONTACT: SEARCHING FOR THE 'INTERNATIONAL' FORM OF SPANISH**  
**Short Title:** DIALECTS IN CONTACT  
**Department:** Span Port & Latin Amer Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Formerly SPAN 350. Course will analyze the essence of language against the essence of dialects to determine (i) the logical and linguistic rationale behind judgments about language, (ii) social and political factors that lead to various decisions, and (iii) the role of popular beliefs on traditional views of proper language use. Recommended Prerequisite(s): SPAN 301 or SPAN 302 or SPAN 303 or SPAN 312 or permission of instructor.

**SPPO 344 - MAPPING LATIN AMERICAN CULTURE**  
**Short Title:** MAPPING LATIN AMER CULTURE  
**Department:** Span Port & Latin Amer Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Explores key issues in Latin American culture. Important aspects of the contemporary situation in Latin America are also studied, including phenomena such as globalization, the rise of mega-cites, migration, authoritarianism, the impact of colonization and the rise of national states. Recommended Prerequisite(s): SPAN 303 or SPAN 321 or SPAN 322. Mutually Exclusive: Cannot register for SPPO 344 if student has credit for SPAN 345.

**SPPO 345 - ART IN LATIN AMERICAN LITERATURE**  
**Short Title:** LATIN AMERICAN LITERATURE ART  
**Department:** Span Port & Latin Amer Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course explores important moments in the history of Latin American European and North American Art by reading literary works that dramatize the transformations of several key artistic movements. 19th century landscape painting, Post-impressionism, Surrealism, Muralism, and 1960s experimental art will be studied through the novels and poems of important Latin American authors. Recommended Prerequisite(s): SPAN 303 or SPAN 321 or SPAN 322. Mutually Exclusive: Cannot register for SPPO 345 if student has credit for SPAN 343.
SPPO 347 - INTRODUCTION TO MEDIEVAL AND EARLY MODERN SPANISH LITERATURE AND CULTURE  
**Short Title:** MEDIEVAL&EARLY SPAN LIT&CULTUR  
**Department:** Span Port & Latin Amer Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Course traces the literary history of Spain from the Medieval period to the 1700's. Students will analyze a wide range of masterpieces in poetry, prose, and drama that have marked the ideological and cultural development of the Iberian Peninsula. Recommended Prerequisite(s): SPAN 303 or SPAN 321 or SPAN 322.  

SPPO 348 - INTRODUCTION TO MODERN SPANISH LITERATURE AND CULTURE, 18TH-21ST CENTURY  
**Short Title:** INTRO MODERN SPAN LIT&CULTURE  
**Department:** Span Port & Latin Amer Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Course is a panoramic introduction to literary, ideological, cultural, and artistic trends from the Enlightenment to the present. Study will include a wide array of exceptional works, (novels, plays, essays, short stories and poems) from authors who have left milestones in modern Spanish literature. Taught in Spanish. Recommended Prerequisite(s): SPAN 303 or SPAN 321 or SPAN 322. Mutually Exclusive: Cannot register for SPPO 348 if student has credit for SPAN 324.  

SPPO 350 - BRAZILIAN LITERATURE AND CULTURE  
**Short Title:** BRAZILIAN LITERATURE & CULTURE  
**Department:** Span Port & Latin Amer Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Course focuses on critical readings of key texts of the 20th century. Materials drawn from Brazilian literature in translation as well as other cultural productions such as film and art. Some of the topics will include questions of national identity, social-racial relations, gender representations, and urban life. Taught in English. Mutually Exclusive: Cannot register for SPPO 350 if student has credit for SPAN 346.  

SPPO 351 - LITERATURES FROM THE SOUTHERN CONE  
**Short Title:** LIT FROM THE SOUTHERN CONE  
**Department:** Span Port & Latin Amer Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course will introduce you to major writers and theories of Caribbean literature, by focusing on the representation of places, peoples, and practices. Close attention will be paid to historical and cultural contexts, while conducting an in-depth analysis of literary texts from different genres. Taught in Spanish. Topics vary. Recommended Prerequisite(s): SPAN 303 or SPAN 321 or SPAN 322. Mutually Exclusive: Cannot register for SPPO 351 if student has credit for SPAN 384.  

SPPO 353 - CARIBBEAN LITERATURE  
**Short Title:** CARIBBEAN LITERATURE  
**Department:** Span Port & Latin Amer Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Formerly SPAN 396. A mixed-genre course focusing on the Chicano movement, the Chicano renaissance, and alternative literary and mythic traditions associated with them. Cross-list: ENGL 371, SWGS 354.  
**Course URL:** [www.english.rice.edu](http://www.english.rice.edu)
SPPO 356 - RACE, GENDER, CLASS, & ENVIRONMENT IN CENTRAL AMERICAN CULTURES
Short Title: UNDERSTANDING CENTRAL AMERICA
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This class explores the diverse cultures and complex histories of the seven Central American countries: Panama, Costa Rica, Nicaragua, Honduras, El Salvador, Guatemala, and Belize. This panoramic course discusses Central American literature, visual culture, and music with a special emphasis on topics such as race, gender, class, environment, geopolitics, revolution, trauma, and migration. Taught in Spanish. Recommended Prerequisite(s): SPAN 303 and SPAN 321 and SPAN 322.

SPPO 360 - SECOND LANGUAGE ACQUISITION: LINGUISTIC, COGNITIVE AND SOCIAL DIMENSIONS
Short Title: SECOND LANGUAGE ACQUISITION
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Second language acquisition seeks to describe the development of a second language. It also attempts to provide an explanatory account of the internal and external factors that guide this process. This course surveys various theoretical approaches to the analysis of second language (L2) acquisition. Recommended Prerequisite(s): SPAN 303 or SPAN 321 or SPAN 322. Mutually Exclusive: Cannot register for SPPO 364 if student has credit for SPAN 380.

SPPO 363 - CONSTRUCTS AND CONTEXTS IN L2 LEARNING: RESEARCH ON STUDY ABROAD
Short Title: RESEARCH ON STUDY ABROAD
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The object of this course is to analyze the effect of context of learning on both the definition of second language competence and the process by which that competence is acquired. Both theoretical constructs (i.e., definition and process) may be categorically different depending on the context in which acquisition occurs. Recommended Prerequisite(s): SPAN 264.

SPPO 364 - SPANISH CREATIVE WRITING
Short Title: SPANISH CREATIVE WRITING
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will explore Spanish creative writings through an aesthetic experience. Recommended Prerequisite(s): SPAN 303 or SPAN 321 or SPAN 322. Mutually Exclusive: Cannot register for SPPO 364 if student has credit for SPAN 383. Repeatable for Credit.

SPPO 368 - LATIN AMERICAN SHORT FICTION
Short Title: LATIN AMERICAN SHORT FICTION
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Latin American writers have achieved great distinction in the genre of the short story. This course studies texts by some of the continent’s best-known short-story writers, such as Cortazar, Borges, Monterroso, Rufio, Fuentes, Garcia Marquez, Elena Garro, Ana Lydia Vega, Clarice Lispector, Benedetti, Usilare Pietri, Massian, Lemebel, Asis, and Carpentier. Recommended Prerequisite(s): SPAN 303 or SPAN 321 or SPAN 322. Mutually Exclusive: Cannot register for SPPO 368 if student has credit for SPAN 388.

SPPO 370 - DISABLED BODIES: ILLNESS AND LITERATURE IN LATIN AMERICA
Short Title: LATIN AMERICAN ILLNESS & LIT
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: What is an illness? How do we define a sick body? How can literature, films and art convey suffering and healing? How do traditional histories of medicine structure sickness? Is there a perception—and representation—of illness that can be specific to Latin American culture? How does the Spanish language address issues of sickness, disability, and pain? This course will explore experiences of illness, suffering and pain through the readings of narratives, works of theory and criticism, and the writings of artists themselves. Discussions will place the narratives of illness in the intersections with the history of public health, biomedical history, and the sociocultural history of disease in Latin America. Within the framework of the Medical Humanities minor, students will learn to recognize the value and relevance of literature and writing to their personal, educational and professional growth. There is an experiential learning component, at Aishel House Houston, associated with the course. Recommended Prerequisite(s): SPPO 330 and SPPO 332.
SPPO 373 - THE MEXICAN REVOLUTION IN LITERATURE, MUSIC AND VISUAL ARTS  
**Short Title:** THE MEXICAN REVOLUTION  
**Department:** Span Port & Latin Amer Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course examines the defining moment of modern Mexico: the revolution of 1910-1920/40. Through a study of major literary works, songs, films, photographs, and paintings, the class explores the complex political and cultural legacy of the Mexican Revolution to this date. Recommended Prerequisite(s): SPAN 204, 263, 264 or permission of instructor. Mutually Exclusive: Cannot register for SPPO 373 if student has credit for SPAN 348.

SPPO 375 - A REVOLUTION FROM WITHIN: TRENDS IN CONTEMPORARY CUBAN CULTURE  
**Short Title:** TRENDS IN CUBAN CULTURE  
**Department:** Span Port & Latin Amer Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This research seminar will explore contemporary trends in Cuban culture through literary texts, films, music and works of art. We will examine the ways in which politics and the practices of artistic representation intersect in post-revolutionary Cuba. A research trip to Cuba has been organized as part of this seminar. (The trip is optional. There is a course fee.) Course taught in Spanish. Instructor Permission Required. Cross-list: FILM 339, HART 304. Recommended Prerequisite(s): Third year Spanish Mutually Exclusive: Cannot register for SPPO 375 if student has credit for SPAN 392.

SPPO 377 - BRAZILIAN MUSIC AND SOCIAL MOVEMENTS  
**Short Title:** BRAZIL: MUSIC & SOCIAL MOVEMENTS  
**Department:** Span Port & Latin Amer Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Course will consider the social dimensions of various musical genres such as Bossa Nova, Tropicallia, and Hip-Hop. Through an interdisciplinary approach, will discuss music as a contextualized social activity and examine Brazilian social movements through the lens of music. Taught in English. Mutually Exclusive: Cannot register for SPPO 377 if student has credit for SPAN 374.

SPPO 380 - CURRENT ISSUES IN SPAIN  
**Short Title:** CURRENT ISSUES IN SPAIN  
**Department:** Span Port & Latin Amer Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Exploration of diverse cultural aspects of today’s Spain through films and newspaper articles. The topics discussed will serve as a springboard for further development of writing skills. Recommended Prerequisite(s): SPAN 303 or SPAN 321 or SPAN 322. Mutually Exclusive: Cannot register for SPPO 380 if student has credit for SPAN 378.

SPPO 381 - SPANISH CINEMA  
**Short Title:** SPANISH CINEMA  
**Department:** Span Port & Latin Amer Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Course will examine how Spanish film has represented the sociocultural and political life of the country – from the Francoist years, exposing the image of a Catholic and homogenous Spain, to a post-Francoist era open to reveal social problems from a more secular and global perspective. Recommended Prerequisite(s): SPAN 303 or SPAN 321 or SPAN 322.

SPPO 382 - THEATER AND PERFORMANCE WORKSHOP  
**Short Title:** THEATER & PERFORMANCE WORKSHOP  
**Department:** Span Port & Latin Amer Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Introduction to a wide array of Spanish plays from the Early Modern period to the present. Participants will also have the opportunity to create a series of original scenes, that they will adapt, direct and perform as the final outcome of the seminar. Recommended Prerequisite(s): SPAN 303 or SPAN 321 or SPAN 322.
SPPO 384 - THE SPANISH AVANT-GARDE
Short Title: THE SPANISH AVANT-GARDE
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This cross-genre, multimedia course examines the contributions of major figures (Picasso, Gris, Dalí, Diego, Alberti, Lorca, Bunuel, Gomez de la Serna) to the Spanish avant-garde in the 20th century. Recommended Prerequisite(s): SPAN 303 or SPAN 321 or SPAN 322. Mutually Exclusive: Cannot register for SPPO 384 if student has credit for SPAN 377.

SPPO 385 - TRENDS IN HISPANIC CINEMA
Short Title: TRENDS IN HISPANIC CINEMA
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Formerly SPAN 390. This course examines the ways in which films in both Spain and Latin America have represented the cultural contexts of their countries. Focus is on the theme of power, and the consequences on social and individual lives. Cross-list: SWGS 390. Recommended Prerequisite(s): SPAN 301, 302, 303, 312, or Permission of the Instructor.

SPPO 387 - POETRY AND CULTURE
Short Title: POETRY AND CULTURE
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of contemporary poetry and its cultural functions. Students engage with poetry through analysis and interpretation of selected Spanish poets. Students also practice writing and translating poems. Recommended Prerequisite(s): SPAN 303 or SPAN 321 or SPAN 322. Mutually Exclusive: Cannot register for SPPO 387 if student has credit for SPAN 376.

SPPO 392 - CONTEMPORARY SPANISH CULTURE AND SOCIETY
Short Title: COMTEMP SPAN CULTURE & SOCIETY
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): SPAN 263 and SPAN 264
Description: Introduction to the history of Spanish culture and civilization, establishing a foundation of the study of contemporary social, economic, and political realities of the country. Course will examine economic development and Spain’s place in the European Union; the recent economic crisis; labor reform and its impact; and the phenomenon of immigration. Instructor Permission Required.

SPPO 403 - READINGS IN LATIN AMERICAN LIT
Short Title: READINGS IN LATIN AMERICAN LIT
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Course offers methodologies for the analysis of Latin-American cultural practices, including letters (fiction), diverse modalities of visual culture (film, plastic art, photography, spectacles). Combines theoretical reading sand corresponding analytical practices. Useful for students of literature, psychology, history, political science, sociology and history of art. Recommended Prerequisite(s): SPAN 303 or SPAN 321 or SPAN 322. Mutually Exclusive: Cannot register for SPPO 403 if student has credit for SPAN 401.

SPPO 410 - THE CITY IN LATIN AMERICA
Short Title: THE CITY IN LATIN AMERICA
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will explore representations of the city in both new Latin American writings and films, with a special focus on the changing urban landscape, the representation of poverty and the excluded from the new global economy, environmental issues and biopolitics, as well as hybrid cultures and multicultural identities. Recommended Prerequisite(s): SPAN 303 or SPAN 321 or SPAN 322. Mutually Exclusive: Cannot register for SPPO 410 if student has credit for SPAN 402.
SPPO 411 - LITERATURE AND THE ENVIRONMENT IN LATIN AMERICA
Short Title: LATIN AMER LIT & ENVIRONMENT
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course aims to offer students a systematic contact with a representative sample of the literature and scholarship about the mutual relationships between human societies and their natural environments, particularly but not exclusively in Latin America. Taught in Spanish. Recommended Prerequisite(s): SPAN 303 or SPAN 321 or SPAN 322. Mutually Exclusive: Cannot register for SPPO 411 if student has credit for SPAN 403.

SPPO 412 - BOOM-BOOM-CRACK: LATIN AMERICAN NOVEL
Short Title: BOOM-BOOM-CRACK: LATIN AM NOVEL
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Works by Asturias, Carpentier, Rulfo, Onetti, Vargas Llosa, Cortazar, Fuentes, and others. Examines how Spanish American novelists from the 1940s onward appropriated the techniques of European modernist literature and infused them with new cultural content. Recommended Prerequisite(s): SPAN 303 or SPAN 321 or SPAN 322. Mutually Exclusive: Cannot register for SPPO 412 if student has credit for SPAN 462.

SPPO 415 - BORDER NARRATIVES
Short Title: BORDER NARRATIVES
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will analyze certain types of cultural productions (fiction, movies, etc.) produced in geographical contact zones, that generate hybrid languages and genres. These are products of migrations and nomadic people. Recommended Prerequisite(s): SPAN 303 or SPAN 321 or SPAN 322. Mutually Exclusive: Cannot register for SPPO 415 if student has credit for SPAN 453.

SPPO 420 - LATIN AMERICAN LITERATURE IN THE MOVIES
Short Title: LATIN AMER LIT IN THE MOVIES
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores the national cinemas of various regions of Latin America. Special attention is given to the different periods of its development, to the close relationship between political contexts and filmmaking, to the understanding of Latin American cinema from cultural studies views, and to the current shaping of Latin America in light of globalization. Recommended Prerequisite(s): SPAN 303 or SPAN 321 or SPAN 322. Mutually Exclusive: Cannot register for SPPO 420 if student has credit for SPAN 405/SPAN 505.

SPPO 422 - LATIN AMERICAN CINEMA
Short Title: LATIN AMERICAN CINEMA
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Formerly SPAN 456. Studies the cultural production (literary, artistic, cinematic) of intellectual women in Latin America. Examines the struggles for interpretive power in works by women from the colonial period to the present. Cross-list: SWGS 466. Recommended Prerequisite(s): SPAN 301, 302, 303, 312, or Permission of the Instructor.
**SPPO 435 - LANGUAGE IDEOLOGIES AND LANGUAGE IDENTITIES**  
**Short Title:** LANGUAGE IDEOLOGIES/IDENTITIES  
**Department:** Span Port & Latin Amer Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This seminar focuses on the analysis of the interaction of the concepts of language identity (primarily identified at an individual level) and language ideology (described as an institutional/political perspective about the nature of language and its role in society). Some of the topics include: construction and negotiation of social identity through language use, language and nationhood, language policies/planning, beliefs about proper language use, gender-biased language, language contact and multilingualism, bilingual education, etc. Recommended Prerequisite(s): Third year Spanish.  

**SPPO 450 - TWENTIETH CENTURY MEXICAN NOVEL**  
**Short Title:** TWENTIETH CENTURY MEXICAN NOVL  
**Department:** Span Port & Latin Amer Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** An introduction to major Mexican novels of the Twentieth Century, including works by Juan Rulfo, Carlos Fuentes, Elena Garro, Jose Emilio Pacheco, Elena Poniatowska, Jorge Volpi and Cristina Rivera Garza. We will examine these works through a variety of methods including historical biographical analysis as well as through formalist approaches. Recommended Prerequisite(s): SPAN 303 or SPAN 321 or SPAN 322. Mutually Exclusive: Cannot register for SPPO 450 if student has credit for SPAN 373.  

**SPPO 451 - OCTAVIO PAZ**  
**Short Title:** OCTAVIO PAZ  
**Department:** Span Port & Latin Amer Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Studies the literary and intellectual career of Nobel prize-winning Mexican poet and essayist Octavio Paz. Topics to be covered include: poetry and modernity; literature and national identity; art and the avant-garde; Paz’s role in political debates in Mexico; the reception of his work at home and abroad. Recommended Prerequisite(s): SPAN 303 or SPAN 321 or SPAN 322. Mutually Exclusive: Cannot register for SPPO 451 if student has credit for SPAN 468.  

**SPPO 452 - WITNESSING, TRUTH & TRAUMA: TESTIMONIAL WRITING IN MEXICO & CENTRAL AMERICA**  
**Short Title:** WITNESSING, TRUTH & TRAUMA  
**Department:** Span Port & Latin Amer Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This seminar provides an exploration of testimonial writing, a crucial and controversial Latin American genre that aims at giving voice to those marginalized within society. Looking at testimonials by indigenous militants, poor women, war crime survivors, and insurgents the course explores the meaning of truth and fiction, historical reckoning, and trauma. Recommended Prerequisite(s): SPAN 303 or SPAN 321 or SPAN 322.  

**SPPO 462 - DON QUIJOTE**  
**Short Title:** DON QUIJOTE  
**Department:** Span Port & Latin Amer Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Cervantes’s masterpiece is studied in its relationship to the books of knight errantry, and to the picaresque and pastoral novels, with emphasis on the innovative techniques of Cervantes which contribute to the birth of the modern novel. Recommended Prerequisite(s): SPAN 303 or SPAN 321 or SPAN 322. Mutually Exclusive: Cannot register for SPPO 462 if student has credit for SPAN 412.  

**SPPO 466 - THE SPANISH CIVIL WAR**  
**Short Title:** THE SPANISH CIVIL WAR  
**Department:** Span Port & Latin Amer Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Prelude to World War II and culmination of perennial struggles between the so-called ‘two Spains,’ the Spanish Civil War (1936-39) is a watershed moment in modern Spanish and European history. Interdisciplinary, multi-media approach: the war seen through Spanish and foreign novels, poetry, film, painting, journalism, songs, and posters. Recommended Prerequisite(s): SPAN 303 or SPAN 321 or SPAN 322. Mutually Exclusive: Cannot register for SPPO 466 if student has credit for SPAN 375.
SPPO 467 - 20TH-CENTURY SPANISH NOVEL
Short Title: 20TH-CENTURY SPANISH NOVEL
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines the evolution of the Spanish novel as a work of art while exploring how cultural issues are incorporated into fictional worlds. Recommended Prerequisite(s): SPAN 303 or SPAN 321 or SPAN 322. Mutually Exclusive: Cannot register for SPPO 467 if student has credit for SPAN 430.

SPPO 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture, Seminar, Internship/Practicum, Laboratory, Lecture/Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

SPPO 490 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Research in Hispanic literature, Hispanic linguistics, Hispanic culture and civilization. Open to qualified juniors and seniors interested in a topic not covered in other courses. Instructor Permission Required. Mutually Exclusive: Cannot register for SPPO 490 if student has credit for SPAN 490.

SPPO 492 - SUMMER INTERNSHIP IN MADRID
Short Title: SUMMER INTERNSHIP IN MADRID
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Course will offer the opportunity of an internship with Spanish companies or non-governmental organizations (NGO). In this professional practice, participants will be immersed in daily business activities and special projects associated with their particular area of interest. Nearly all interactions with supervisors and colleagues will be in Spanish. 5-Week Summer Session Course. Instructor Permission Required.

SPPO 495 - HONORS THESIS
Short Title: HONORS THESIS
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Independent research projects by outstanding Hispanic Studies majors leading to a substantial honors essay, undertaken in close cooperation with a departmental faculty member, who must first approve the thesis proposal. Department Permission Required. Mutually Exclusive: Cannot register for SPPO 495 if student has credit for SPAN 495.

Spanish (SPAN)

SPAN 141 - FIRST YEAR SPANISH I
Short Title: FIRST YEAR SPANISH I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Development of interactional competence in Spanish (sociolinguistic and sociocultural knowledge) to communicate and interact with speakers of Spanish. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. No prior knowledge of this language is necessary. Placement Test is required. Effective May 15, 2019, this course does not carry D1 credit. Mutually Exclusive: Cannot register for SPAN 141 if student has credit for SPAN 161/SPAN 222.
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<td>Lecture</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
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<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
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<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
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<td>SHORT TITLE: SECOND YEAR SPANISH II</td>
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<td>SPAN 265</td>
<td>AP/OTH CREDIT IN ADVANCED SPANISH</td>
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**Description:**
- Continuation of SPAN 141. Development of interactional competence in Spanish (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Spanish. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Effective May 15, 2019, this course does not carry D1 credit. Mutually Exclusive: Cannot register for SPAN 262.
- This course is for students who have been exposed to Spanish at home, through relatives and/or in the community and who wish to improve their confidence and intermediate fluency by expanding their formal knowledge of the language and of Hispanic cultures. Authentic materials such as short stories, poetry, films and articles will be used to develop reading, writing, speaking and listening skills. Placement Test is required.
- Continuation of SPAN 263. Development of interactional competence in Spanish (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Spanish. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Cannot register for SPAN 263 if student has credit for SPAN 201/SPAN 225.
- Continuation of SPAN 142. Development of interactional competence in Spanish (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Spanish. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Cannot register for SPAN 263 if student has credit for SPAN 201/SPAN 225.
- This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation. Mutually Exclusive: Cannot register for SPAN 222 if student has credit for SPAN 101/SPAN 141/SPAN 161.
- This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation. Mutually Exclusive: Cannot register for SPAN 225 if student has credit for SPAN 201/SPAN 263.
SPAN 303 - ADVANCED SPANISH FOR HERITAGE STUDENTS
Short Title: ADV SPAN HERITAGE STUDENTS
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): SPAN 204
Description: SPAN 303 aims to bring students to advanced proficiency in Spanish, enabling them to interact confidently in a wide variety of contexts, while providing them with cultural insights about the Hispanic world. It is designed for students who come with heritage exposure and at least intermediate proficiency in Spanish.

SPAN 321 - SPECIAL TOPICS: ADVANCED SPANISH I
Short Title: SPECIAL TOPICS: ADV SPANISH I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): SPAN 264
Description: This course helps students develop an advanced level of proficiency in Spanish through the analysis and use of the target language in the context of specific topics of interest that will vary.

SPAN 322 - SPECIAL TOPICS: ADVANCED SPANISH II
Short Title: SPECIAL TOPICS: ADV SPANISH II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): SPAN 262
Description: This course helps students develop an advanced level of proficiency in Spanish through the study and use of the target language in various settings, and analyze and classify collected data. Department Permission Required.

SPAN 323 - SPANISH PROFESSIONAL PRACTICUM I
Short Title: SPANISH PROFESSIONAL PRACTICUM I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): SPAN 322
Description: This hybrid course combines practicum hours and course hours for students who are interested in using their Spanish-language skills in professional settings. Course meets on campus once a week; and on location during practicum working hours, to be determined between student and instructor. Effective May 15, 2019, this course does not carry D1 credit.

SPAN 324 - SPANISH PROFESSIONAL PRACTICUM II
Short Title: SPANISH PROFESSIONAL PRACTICUM II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course provides experiential learning for students show are interested in expanding their interactional and intercultural competence in Spanish in professional settings. Students participate as apprentices which includes working in contextualized strategic scenarios (simulated and/or real) such as simulations, shadowing professionals, work-related tasks, and case studies. Department Permission Required.

SPAN 325 - SPECIAL TOPICS: ADVANCED SPANISH III
Short Title: SPECIAL TOPICS:ADV SPANISH III
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): SPAN 324
Description: This is a continuation of SPAN 323 or SPAN 324. Students develop an advanced level of proficiency and interactional competence in Spanish through analysis and use of the target language in the study abroad context. Students will facilitate class discussions with students in SPAN 322; collect samples of interactional and sociolinguistic data in various settings, and analyze and classify collected data. Department Permission Required.

SPAN 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Laboratory, Lecture, Seminar, Lecture/Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.
Sport Management (SMGT)

SMGT 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory, Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

SMGT 260 - INTRODUCTION TO SPORT MANAGEMENT
Short Title: INTRO TO SPORT MANAGEMENT
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Freshman or Sophomore. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is designed to: first, provide the student with an overview of the structure of the sport industry as well as issues facing sport organizations and how management techniques can be applied to solve business problems. Second, students will be introduced to the various sub-disciplines within sport management (marketing, law, sales, event management, etc). Third, students will become familiar with career opportunities in sport management. Special Registration is required for Juniors and Seniors.

SMGT 266 - LEADING WITH SERVICE
Short Title: LEADING WITH SERVICE
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Freshman or Sophomore. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): SMGT 260
Description: This course will examine industry leaders in customer service, identifying the unique qualities that their employees exhibit. Students will learn the fundamentals of service delivery and various research and various research and analysis methods, then apply those in practical applications with local sports franchises. By the conclusion of this course, students will have created a customer service vision for a fictitious organization, developed training programs for employees and created measurable objectives for success. This course is for Freshmen and Sophomores only. Special Registration is required for Juniors and Seniors.

SMGT 276 - SPORT MANAGEMENT PRACTICUM
Short Title: SPORT MANAGEMENT PRACTICUM
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): SMGT 260 or KINE 260
Description: This class is designed to prepare students for working in the sport industry. Students will learn how to construct an effective resume, interview skills, business etiquette, etc. Students will also gain real-life experience by working with one of the numerous sports organizations in Houston for 100 hours during the course of the semester.

SMGT 320 - BUSINESS OF COLLEGE ATHLETICS
Short Title: BUSINESS OF COLLEGE ATHLETICS
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): SMGT 260
Description: This course will focus on developing an understanding of college athletics and its role in higher education. Students will develop a research project and presentation as well as learn from guest speakers and case studies.

SMGT 350 - SPORT ETHICS
Short Title: SPORT ETHICS
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course is designed to assist students in self-evaluating, examining and developing a philosophy, values, and moral reasoning skills. Major moral/ethical issues and theoretical frameworks inside and outside of sport will be researched and discussed. Students will experience the ethical decision-making process through opportunities for critical analysis drawing upon their philosophical bases. All major theories of ethics will be examined with special application made to the sport management environment.
SMGT 360 - SALES & REVENUE GENERATION IN SPORT
Short Title: SALES & REVENUE GENERATION
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): SMGT 260 or KINE 260
Description: In this class, students are introduced to the characteristics that are required for successful selling in the sport industry, such as developing proposals, making persuasive sales presentations, closing deals, maintaining relationships, etc. Students will also explore the various ways that revenue is generated in the sport industry.

SMGT 361 - SPORT FINANCE AND COMMUNITY ENGAGEMENT
Short Title: SPORT FINANCE
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will explore economic and financial principals that are significant in the sport industry. This course also addresses the issues, challenges, and opportunities of civic life and the benefits that diverse populations receive when sports organizations use their unique power to unite members of a community who otherwise might not share in the array of benefits provided.

SMGT 362 - SPORT MARKETING
Short Title: SPORT MARKETING
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course covers the essentials of sport marketing which includes planning, promotions, operations, and market analysis. Students will examine the fundamental principles used in the marketing of sport, products, events, and the importance of service quality. Recommended Prerequisite(s): SMGT 260 and (HUMA 201 or LEAD 321 or BUSI 296)

SMGT 364 - SPORT LAW
Short Title: SPORT LAW
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): SMGT 260 or KINE 260
Description: This course is designed to introduce students to the American legal system and to the types of legal reasoning used by lawyers and judges. This course will also provide an overview of how various areas of sports are integrated with the American legal system.

SMGT 365 - SPORT MEDIATION
Short Title: SPORT MEDIATION
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): SMGT 260 and SMGT 364
Description: This course introduces the core principles of mediation. Within the class each student will become familiar with the nature of conflict, have a better understanding of culture awareness, as well as the ethics within the field of mediation. Students will conduct a full mediation while maintaining neutrality, exhibiting negotiation skills, and drafting agreements.

SMGT 366 - EVENT MANAGEMENT
Short Title: EVENT MANAGEMENT
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (SMGT 260 or KINE 260) and SMGT 266
Description: Practical application of the principles and theory related to planning, organization, and execution of sport and entertainment events. Students will case study examples of crisis management and even day coordination. During the semester, students will attend large scale events and evaluate key performance indicators. By the conclusion of this course, students will be prepared to design, run, and measure the success of events and event management teams.

SMGT 368 - ISSUES IN CONTEMPORARY SPORT
Short Title: ISSUES IN CONTEMPORARY SPORT
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): SMGT 260 or KINE 260
Description: This class examines the social institution of sport and its consequences for American society and various social organizations ranging from leisure to professional sport. Topics such as deviance in sport, discrimination, women in sport, and ethics will be covered. This class will also review the socialization implications from participation in sport.
SMGT 376 - SPORT MANAGEMENT INTERNSHIP 1
Short Title: SPORT MANAGEMENT INTERNSHIP 1
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (SMGT 260 or KINE 260) and (SMGT 276 or KINE 276)
Description: Internship experience for upper-level students in sport management.

SMGT 377 - SPORT MANAGEMENT INTERNSHIP 2
Short Title: SPORT MANAGEMENT INTERNSHIP 2
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (SMGT 260 or KINE 260) and (SMGT 276 or KINE 276)
Description: Internship experience for upper-level students in sport management. Repeatable for Credit.

SMGT 378 - SPORT MANAGEMENT INTERNSHIP 3
Short Title: SPORT MANAGEMENT INTERNSHIP 3
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (SMGT 260 or KINE 260) and (SMGT 276 or KINE 276)
Description: Internship course in sport management offered specifically during the summer session. Repeatable for Credit.

SMGT 379 - SPORT MANAGEMENT INTERNSHIP 4
Short Title: SPORT MANAGEMENT INTERNSHIP 4
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (SMGT 260 or KINE 260) and (SMGT 276 or KINE 276)
Description: Internship experience for upper-level students in sport management. Repeatable for Credit.

SMGT 405 - RESEARCH IN SPORT MANAGEMENT
Short Title: RESEARCH IN SPORT MANAGEMENT
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (KINE 319 or STAT 280) and (SMGT 260 or KINE 260)
Description: This class is designed to provide students with experience working on actual research projects, likely with one of the professional sport franchises in Houston. At the end of the semester, the class will present its findings to the organization's upper management.

SMGT 415 - THEORIES OF HIGH LEVEL PERFORMANCE
Short Title: THEORIES-HIGH LVL PERFORMANCE
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (SMGT 260 or KINE 260) and (SMGT 276 or KINE 276)
Description: This is a class designed for students who plan to go into coaching or training. It will provide the most current information available for training elite athletes in the area of strength, power, speed, and flexibility. Experts in the field of strength training, plyometrics, speed training, and flexibility will speak. The nature and basis of elite athlete training related to exercise physiology, biomechanics, motor learning, sport psychology, and nutrition will be explored.

SMGT 430 - INTRODUCTION TO SPORT ANALYTICS
Short Title: INTRO TO SPORT ANALYTICS
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): SMGT 260 and (STAT 280 or SOSC 302)
Description: The focus of this course will be to provide the basics for understanding and applying analytical techniques to professional teams both on the sports side (predicting player performance and outcomes) and the business side (establishing business models). A survey into basic statistical techniques (multiple regression, discriminant analysis, etc.) will be the foundation of the class.
SMGT 440 - SPORT BUSINESS ANALYTICS
Short Title: SPORT BUSINESS ANALYTICS
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): SMGT 260 and (STAT 280 or SOSC 302)
Description: In this age of Big Data, employees must be tech savvy with a strong background in computer and statistical analysis. Sport Business Analytics calls for special approaches to marketing and pricing. This course is designed to introduce the students to techniques that will allow for productive sport business analytics.

SMGT 450 - LEADERSHIP IN SPORT MANAGEMENT
Short Title: LEADERSHIP IN SPORT MANAGEMENT
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): SMGT 260
Description: This course will provide an overview of several major leadership theories as well as stimulate discussion on different styles of leadership and how they apply to the sport industry. Students will perform a leadership self-evaluation as well as develop a plan for its real-world application.

SMGT 460 - BUSINESS ANALYSIS IN SPORT
Short Title: BUSINESS ANALYSIS IN SPORT
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): SMGT 260 or KINE 260
Description: Students will be exposed to the aspects of effectively planning for and introducing change in sport organizations. This will include an examination of the successful management of organizational and behavioral changes, focusing on planned and unplanned changes and emphasizing development of change strategies and the measurement of change effectiveness.

SMGT 464 - ADVANCED SPORT LAW
Short Title: ADVANCED SPORT LAW
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): SMGT 364
Description: This course examines legal issues impacting amateur and professional sports. Students will analyze sport cases and materials that cover multiple disciplines, including contracts, torts, constitutional law, labor and employment, and criminal law. Students will augment their learning through analysis and discussion of up-to-the-minute professional and collegiate sports law developments.

SMGT 465 - SPORT CONTRACTS AND NEGOTIATION
Short Title: SPORT CONTRACTS & NEGOTIATION
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): SMGT 260 and SMGT 364
Description: This course introduces students to contracts and negotiations and how they are used in sport management. Students develop an understanding of contract language, drafting and negotiation, as well as practical experience applying those techniques through exercises and role-play designed to increase understanding and enhance learning.

SMGT 466 - SPORT PUBLIC RELATIONS
Short Title: SPORT PUBLIC RELATIONS
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (SMGT 260 or KINE 260) and (SMGT 362 or KINE 362)
Description: An applied study of media in business and sport with an emphasis on press conferences, news releases, media-athlete relations, communications, print journalism, and community relations. Recommended Prerequisite(s): HUMA 201 or LEAD 321.
SMGT 467 - SPORTS JOURNALISM
Short Title: SPORTS JOURNALISM
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Successful journalists must be able to communicate through their writing, their spoken word, and also through video. Students in this class will learn all of the different journalism formats and techniques including writing short and long articles, blogging, videos, podcasts, interviews, PR writing, social media, etc. Students will complete assignments in each of these areas. When students finish the course, they will have an updated portfolio filled with examples of their work. Recommended Prerequisite(s): SMGT 466

SMGT 470 - SPORT MANAGEMENT SEMINAR
Short Title: SPORT MANAGEMENT SEMINAR
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (SMGT 260 or KINE 260) and (SMGT 276 or KINE 276)
Description: The object of this course is to expose students to upper-level problem-solving methods in the sport management industry. Students will learn by writing and solving case studies as well as discussing current issues. This class is designed for students who are pursuing a career in the sport management industry. Students will also interact with a series of speakers from the industry. Students should have completed the majority of SMGT classes before considering taking this course. Instructor Permission Required. Repeatable for Credit.

SMGT 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Laboratory, Lecture, Seminar, Independent Study, Lecture/Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

SMGT 490 - SEMINAR IN SPORTS ANALYTICS
Short Title: SEMINAR IN SPORTS ANALYTICS
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 140 and SMGT 430 and (STAT 315 or DSCI 301) and STAT 405 and (SOSC 302 or STAT 280)
Description: This course is designed to be the culminating experience in the Sport Analytics Minor. It will involve working with a professional or college sports team researching a real problem. Also, selected speakers will discuss cutting edge research in the field of Sports Analytics.

SMGT 495 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Enrollment limited to students with a class of Junior or Senior. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Reading or research project to be determined by discussions between student(s) and faculty member(s). Must have the approval of the Chair of the Department of Sport Management and the participating faculty member. Instructor Permission Required.

SMGT 498 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics may vary. Please consult with the Sport Management Program for additional information. Repeatable for Credit.

SMGT 499 - TEACHING PRACTICUM
Short Title: TEACHING PRACTICUM
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Advanced teaching experience for upper level students who have demonstrated a particular aptitude and interest in an area of sport management. Students assist in conducting a course in which they have previously excelled. The student will learn techniques in course management, instruction, and evaluation. The Chair of the Department of Sport Management must approve all teaching assistants. Pre-requisites: declared Sport Management major. Student must have received at least an 'A-' in the course serving as the practicum. Instructor Permission Required. Repeatable for Credit.
### STAT 310 - PROBABILITY AND STATISTICS

**Short Title:** PROBABILITY & STATISTICS  
**Department:** Statistics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** MATH 102 or MATH 106  
**Description:** Probability and the central concepts and methods of statistics including probability, distributions of random variables, expectation, sampling distributions, estimation, confidence intervals, and hypothesis testing. Cross-list: ECON 307. Recommended prerequisite(s): MATH 212. Mutually Exclusive: Cannot register for STAT 310 if student has credit for DSCI 301/STAT 315.

### STAT 312 - PROBABILITY & STATISTICS FOR ENGINEERS

**Short Title:** PROB & STAT FOR ENGINEERS  
**Department:** Statistics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** MATH 102  
**Description:** Probability and the central concepts and methods of statistics including probability, distributions of random variables, expectation, sampling distributions, estimation, confidence intervals, and hypothesis testing. Examples are predominantly from civil and environmental engineering. Recommended Prerequisite(s): MATH 212.

### STAT 313 - UNCERTAINTY AND RISK IN URBAN INFRASTRUCTURES

**Short Title:** RISK-BASED DEC UNDER UNCERT  
**Department:** Statistics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** STAT 312 or STAT 310 or STAT 315 or DSCI 301 or ECON 307 or ECON 382 or STAT 331 or ELEC 331  
**Description:** This course explores methods for practical risk-based decision support, particularly for infrastructure systems. Uncertainty quantification (UQ) to external events including natural hazards is at the core of risk-informed design, operation, and mitigation actions. UQ also guides engineering practice and enables code developments. The course emphasizes decision theory, Bayesian approaches, risk analysis tools, and infrastructure safety. Cross-list: CEVE 313. Repeatable for Credit.
**STAT 315 - PROBABILITY AND STATISTICS FOR DATA SCIENCE**

**Short Title:** STATISTICS FOR DATA SCIENCE  
**Department:** Statistics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Distribution Group:** Distribution Group III  
**Credit Hours:** 4  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Prerequisite(s):** MATH 102 or MATH 106 or MATH 112  
**Description:** An introduction to mathematical statistics and computation for applications to data science. Topics include probability, random variables expectation, sampling distributions, estimation, confidence intervals, hypothesis testing and regression. A weekly lab will cover the statistical package, R, and data projects. Cross-list: DSCI 301. Recommended Prerequisite(s): MATH 212. Mutually Exclusive: Cannot register for STAT 315 if student has credit for ECON 307/STAT 310.

**STAT 376 - ECONOMETRICS**

**Short Title:** ECONOMETRICS  
**Department:** Statistics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Credit Hours:** 4  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** (ECON 209 or ECON 309 or ECON 446) and (ECON 308 or ECON 401 or ECON 477)  
**Description:** Survey of estimation and forecasting models. Includes multiple regression time series analysis. A good understanding of linear algebra is highly desirable. Cross-list: ECON 310. Mutually Exclusive: Cannot register for STAT 376 if student has credit for ECON 409/STAT 400.

**STAT 385 - METHODS OF DATA ANALYSIS AND SYSTEM OPTIMIZATION**

**Short Title:** METHODS FOR DATA ANALYSIS  
**Department:** Statistics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Distribution Group:** Distribution Group III  
**Credit Hours:** 4  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** STAT 280 or STAT 305 or STAT 310 or ECON 307 or STAT 312 or STAT 315 or DSCI 301  
**Description:** The three general topic areas covered in this methodology oriented course are statistical methods including regression, sampling, and experimental design; simulation based methods in statistics, queuing and inventory problems; and an introduction to optimization methods. Excel will serve as the basic computing software.

**STAT 405 - R FOR DATA SCIENCE**

**Short Title:** R FOR DATA SCIENCE  
**Department:** Statistics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Distribution Group:** Distribution Group III  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** STAT 305 or STAT 312 or (STAT 310 or ECON 307 or ECON 382) or STAT 385 or STAT 315 or DSCI 301  
**Description:** Students will learn how to work through data science problems within the statistical programming language R. The course covers the complete analytical process, from getting your data into R, to applying appropriate exploratory and statistical analysis, and communicating the results. Important topics in data science (e.g. databases, web scraping, and big data) and efficient programming are integrated throughout the course. Graduate/Undergraduate Equivalency: STAT 605. Mutually Exclusive: Cannot register for STAT 405 if student has credit for STAT 605.

**STAT 406 - SAS STATISTICAL PROGRAMMING**

**Short Title:** SAS STATISTICAL PROGRAMMING  
**Department:** Statistics  
**Grade Mode:** Standard Letter  
**Course Type:** Laboratory  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** STAT 305 or STAT 312 or ECON 307 or ECON 382 or STAT 385 or STAT 310 or STAT 315 or DSCI 301  
**Description:** Students will learn how to work within the statistical programming language SAS. The course covers from getting data into SAS, transforming and plotting it, to applying appropriate statistical analysis, and communicating the results. Important topics such as database managing with SQL, macro programming, interactive Matrix Language, and efficient programming in general are integrated throughout the course. Graduate/Undergraduate Equivalency: STAT 606. Mutually Exclusive: Cannot register for STAT 406 if student has credit for STAT 606. Repeatable for Credit.

**STAT 410 - LINEAR REGRESSION**

**Short Title:** LINEAR REGRESSION  
**Department:** Statistics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Credit Hours:** 4  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** STAT 310 or STAT 312 or ECON 307 or ECON 382 or STAT 385 or STAT 310 or DSCI 301  
**Description:** An introduction to linear regression and its applications. Topics include simple and multiple linear regression, least squares, analysis of variance, model selection, diagnostics, remedial measures. Applications to real data using statistical software are emphasized. Recommended Prerequisite(s): CAAM 335 or MATH 355.
STAT 411 - ADVANCED STATISTICAL METHODS
Short Title: ADVANCED STATISTICAL METHODS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (STAT 310 or STAT 312 or STAT 315 or DSCI 301 or ECON 307 or ECON 382) and (STAT 410 or STAT 615)
Description: Advanced topics in statistical applications such as sampling, experimental design and statistical process control. STAT 411 will have assignments and examinations focusing more on basic concepts than on theoretical methods. Graduate/Undergraduate Equivalency: STAT 616. Mutually Exclusive: Cannot register for STAT 411 if student has credit for STAT 616.

STAT 413 - INTRODUCTION TO STATISTICAL MACHINE LEARNING
Short Title: INTRO TO STAT MACHINE LEARNING
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): STAT 410 and (STAT 405 or CAAM 210 or COMP 140 or COMP 130)
Description: This course is an introduction to concepts, methods, and best practices in statistical machine learning. Topics covered include regularized regression, classification, kernels, dimension reduction, clustering, trees, and ensemble learning. Emphasis will be placed on applied data analysis and computation. Recommended Prerequisite(s): STAT 411 and CAAM 335 or MATH 354 or MATH 355.

STAT 415 - DATA SCIENCE CONSULTING
Short Title: DATA SCIENCE CONSULTING
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): STAT 405 or COMP 140 or CAAM 210
Description: Students in this course will advise clients at Rice and beyond in a data science consulting clinic, learn best practices in consulting, and gain exposure to a variety of real data science problems. Instructor Permission Required. Graduate/Undergraduate Equivalency: STAT 515. Recommended Prerequisite(s): STAT 413 or COMP 440 or COMP 540 or COMP 330 or STAT 411. Mutually Exclusive: Cannot register for STAT 415 if student has credit for STAT 515. Repeatable for Credit.

STAT 418 - PROBABILITY
Short Title: PROBABILITY
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics include random variables, distributions, transformations, moment generating functions, common families of distributions, independence, sampling distributions, and basic stochastic processes. STAT 418 will have assignments and examinations focusing more on basic concepts than on theoretical methods. Graduate/Undergraduate Equivalency: STAT 518. Mutually Exclusive: Cannot register for STAT 418 if student has credit for STAT 518.

STAT 419 - STATISTICAL INFERENCE
Short Title: STATISTICAL INFERENCE
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (MATH 354 or MATH 355 or CAAM 334 or CAAM 335) and STAT 418
Description: Topics include principles of data reduction, point estimation, hypothesis testing, interval estimation, Bayesian inference, Decision Theory, inference foundations of analysis of variance and regression. STAT 419 will have assignments and examinations focusing more on basic concepts than on theoretical methods. Graduate/Undergraduate Equivalency: STAT 519. Mutually Exclusive: Cannot register for STAT 419 if student has credit for STAT 519.

STAT 421 - APPLIED TIME SERIES AND FORECASTING
Short Title: APPLIED TIME SERIES/FORECASTING
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): STAT 410 or ECON 310
Description: Applied time series modeling and forecasting, with applications to financial markets. STAT 621 is a graduate version of STAT 421 with advanced assignments. Graduate/Undergraduate Equivalency: STAT 621. Mutually Exclusive: Cannot register for STAT 421 if student has credit for STAT 621.
STAT 423 - PROBABILITY IN BIOINFORMATICS AND GENETICS

Short Title: PROB BIOINFORMATICS & GENETICS

Department: Statistics

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Prerequisite(s): STAT 310 or ECON 307 or STAT 315 or DSCI 301 or STAT 312 or STAT 418

Description: Course introduces the student to modern biotechnology and genomic data. Statistical methods to analyze genomic data are covered, including probability models, basic stochastic processes, and statistical modeling. Biological topics include DNA sequence analysis, phylogenetic inference, gene finding, and molecular evolution. Graduate/Undergraduate Equivalency: STAT 623. Mutually Exclusive: Cannot register for STAT 423 if student has credit for STAT 623.

STAT 425 - INTRODUCTION TO BAYESIAN INFERENCE

Short Title: INTRO TO BAYESIAN INFERENCE

Department: Statistics

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Prerequisite(s): STAT 410 and STAT 405 or COMP 210 or COMP 140 or COMP 130

Description: This course is an introduction to Bayesian inference, with emphasis on concepts and methods for analyzing data. We will consider a variety of models, including MCMC algorithms and methods for linear regression and hierarchical models. Computational methods will be emphasized. Recommended Prerequisite(s): STAT 411 or CAAM 335 or MATH 355.

STAT 435 - DATA SCIENCE PROJECTS

Short Title: DATA SCIENCE PROJECTS

Department: Statistics

Grade Mode: Standard Letter

Course Type: Lecture/Laboratory

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: In this project-based course, student teams will complete semester-long data science research or analysis projects selected from a variety of disciplines and industries. Students will also learn best practices in data science. Instructor Permission Required. Graduate/Undergraduate Equivalency: STAT 535. Mutually Exclusive: Cannot register for STAT 435 if student has credit for STAT 535. Repeatable for Credit.

STAT 440 - STATISTICS FOR BIOENGINEERING

Short Title: STATISTICS FOR BIOENGINEERING

Department: Statistics

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hour: 1

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Prerequisite(s): BIOE 252 (may be taken concurrently)

Description: Course covers application of statistics to bioengineering. Topics include descriptive statistics, estimation, hypothesis testing, ANOVA, and regression. Offered first five weeks of the semester. BIOE 252 may be taken concurrently with STAT 440. BIOE 440/STAT 440 and BIOE 439 cannot both be taken for credit. Cross-list: BIOE 440. Mutually Exclusive: Cannot register for STAT 440 if student has credit for BIOE 439.

STAT 449 - QUANTITATIVE FINANCIAL RISK MANAGEMENT

Short Title: QUAN FINANCIAL RISK MANAGEMENT

Department: Statistics

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Prerequisite(s): MATH 211 and MATH 212 and (ECON 400 or STAT 400 or ECON 409 or STAT 410) or STAT 310 or ECON 307 or STAT 315 or DSCI 301 or STAT 312 or STAT 331 or ELEC 331

Description: This course covers the use of financial securities and derivatives to take or hedge financial risk positions. Most commonly used instruments, from simple forwards and futures to exotic options and swaptions are covered. The pricing of derivatives securities will also be studied, but the emphasis will be on the mechanics and uses of financial engineering methods. STAT 449 is mutually exclusive to ECON 449. Credit cannot be given for both. Graduate/Undergraduate Equivalency: STAT 649. Mutually Exclusive: Cannot register for STAT 449 if student has credit for ECON 449.

STAT 450 - SENIOR CAPSTONE PROJECT

Short Title: SENIOR CAPSTONE PROJECT

Department: Statistics

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hours: 3

Restrictions: Enrollment limited to students with a class of Senior. Enrollment is limited to students with a major in Statistics. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: Students engage in individual or team-oriented statistical projects to solve problems motivated by theory, computation, or application to real problems and data. Typical projects involve statistical modeling, data analysis, and computing to answer substantive questions in engineering or the physical, biological, or social sciences. Participants attend regular seminars addressing project development, research techniques and effective written and verbal communication skills in presenting statistical results. Repeatable for Credit.
STAT 453 - BIOSTATISTICS
Short Title: BIOSTATISTICS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): STAT 410
Description: An overview of statistical methodologies useful in the practice of Biostatistics. Topics include epidemiology, rates, and proportions, categorical data analysis, regression, and logistic regression, retrospective studies, case-control studies, survival analysis. Real biomedical applications serve as context for evaluating assumptions of statistical methods and models. R serves as the computing software. Graduate/Undergraduate Equivalency: STAT 553. Mutually Exclusive: Cannot register for STAT 453 if student has credit for STAT 553.

STAT 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

STAT 482 - QUANTITATIVE FINANCIAL ANALYTICS
Short Title: QUANT FINANCIAL ANALYTICS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A modern approach to fundamental analytics of securities, the classic works of Graham and Dodd. Deconstructing the Efficient Market Hypothesis Financial Statement Analysis, Capital Market Theory, CAPM, APT, Fama-French Empirical Financial Forecasting. Graduate/Undergraduate Equivalency: STAT 682. Mutually Exclusive: Cannot register for STAT 482 if student has credit for STAT 682.

STAT 484 - ENVIRONMENTAL RISK ASSESSMENT & HUMAN HEALTH
Short Title: ENVIR RISK ASSESS&HUMAN HLTH
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): STAT 280 or STAT 305
Description: Learn and apply quantitative risk assessment methodology to estimate human health risk from environmental exposure to contamination in air, soil and water. Students will conduct a series of team projects focused on toxicology, risk based screening levels, exposure concentration estimation and risk characterization. Cross-list: CEVE 484. Graduate/Undergraduate Equivalency: STAT 684. Mutually Exclusive: Cannot register for STAT 484 if student has credit for STAT 684.

STAT 485 - ENVIRONMENTAL STATISTICS AND DECISION MAKING
Short Title: ENVIR STAT & DECISION MAKING
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): STAT 305 or STAT 385
Description: A project oriented computer intensive course focusing on statistical and mathematical solutions and investigations for the purpose of environmental decisions. This course is the undergraduate version of STAT 685 with reduced requirements. Graduate/Undergraduate Equivalency: STAT 685. Recommended Prerequisite(s): STAT 305 and STAT 385. Mutually Exclusive: Cannot register for STAT 485 if student has credit for STAT 685.

STAT 486 - MARKET MODELS
Short Title: MARKET MODELS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): STAT 310 or ECON 307 or STAT 315 or DSCI 301 or ECON 382 or STAT 312
Description: This course takes the classical efficient market models and superimposes upon it models for other stochastic phenomena not generally accounted for in efficient market theory, showing how risk is lessened by portfolios and other mechanisms. This undergraduate course uses computer simulations as an alternative to closed form solutions. Graduate/Undergraduate Equivalency: STAT 686. Mutually Exclusive: Cannot register for STAT 486 if student has credit for STAT 686.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Short Title</th>
<th>Department</th>
<th>Grade Mode</th>
<th>Course Type</th>
<th>Credit Hours</th>
<th>Restrictions</th>
<th>Course Level</th>
<th>Description</th>
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<tbody>
<tr>
<td>STAT 490</td>
<td>INDEPENDENT STUDY</td>
<td>INDEPENDENT STUDY</td>
<td>Statistics</td>
<td>Standard Letter</td>
<td>Independent Study</td>
<td>1-6</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Upper-Level</td>
<td>A seminar course to introduce students to topics in Data Science at the interface between Statistics and Computer Science. Students participate in the process of preparing, delivering and critiquing talks. Topics change each semester. Instructor Permission Required. Cross-list: COMP 496. Graduate/Undergraduate Equivalency: STAT 696. Mutually Exclusive: Cannot register for STAT 496 if student has credit for STAT 696. Repeatable for Credit.</td>
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<tr>
<td>STAT 491</td>
<td>INDEPENDENT STUDY</td>
<td>INDEPENDENT STUDY</td>
<td>Statistics</td>
<td>Standard Letter</td>
<td>Independent Study</td>
<td>1-6</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Upper-Level</td>
<td>A seminar course that will cover selected theme of general research in the mathematical sciences from the perspectives of mathematics, computational and applied mathematics and statistics. The course may be repeated multiple times for credit. Cross-list: CAAM 498, MATH 498. Graduate/Undergraduate Equivalency: STAT 698. Mutually Exclusive: Cannot register for STAT 498 if student has credit for STAT 698. Repeatable for Credit.</td>
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<tr>
<td>STAT 492</td>
<td>STATISTICS PRACTICUM</td>
<td>STATISTICS PRACTICUM</td>
<td>Statistics</td>
<td>Satisfactory/Unsatisfactory</td>
<td>Internship/Practicum</td>
<td>1</td>
<td>Enrollment is limited to students with a major in Statistics. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Upper-Level</td>
<td>Designed for undergraduate statistics majors. The course is to provide experience in real world applications and practice in statistics. An off-campus internship is required. Instructor Permission Required. Repeatable for Credit.</td>
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<tr>
<td>STAT 496</td>
<td>RTG CROSS-TRAINING IN DATA SCIENCE</td>
<td>RTG CROSS-TRAINING IN DATA SCI</td>
<td>Statistics</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>1</td>
<td>Enrollment is limited to students with a major in Computer Science or Statistics. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Upper-Level</td>
<td>A seminar course to introduce students to topics in Data Science at the interface between Statistics and Computer Science. Students participate in the process of preparing, delivering and critiquing talks. Topics change each semester. Instructor Permission Required. Cross-list: COMP 496. Graduate/Undergraduate Equivalency: STAT 696. Mutually Exclusive: Cannot register for STAT 496 if student has credit for STAT 696. Repeatable for Credit.</td>
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<tr>
<td>STAT 498</td>
<td>RESEARCH THEMES IN THE MATHEMATICAL SCIENCES</td>
<td>RESEARCH THEMES IN MATH. SCI.</td>
<td>Statistics</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>1-3</td>
<td>Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.</td>
<td>Undergraduate Upper-Level</td>
<td>A seminar course to introduce new topics. Graduate/Undergraduate Equivalency: STAT 699. Repeatable for Credit.</td>
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<tr>
<td>STAT 502</td>
<td>NEURAL MACHINE LEARNING I</td>
<td>NEURAL MACHINE LEARNING I</td>
<td>Statistics</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>Review of major neural machine learning (Artificial Neural Network) paradigms. Analytical discussion of supervised and unsupervised neural learning algorithms and their relation to information theoretical methods. Practical applications to data analysis such as pattern recognition, clustering, classification, function approximation/ regression, non-linear PCA, projection pursuit, independent component analysis, with lots of examples from image and digital processings. Details are posted at <a href="http://www.ece.rice.edu/~erzsebet/ANNcourse.html">www.ece.rice.edu/~erzsebet/ANNcourse.html</a>. Cross-list: COMP 502, ELEC 502.</td>
</tr>
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</table>
STAT 503 - TOPICS IN METHODS AND DATA ANALYSIS
Short Title: TOPICS METHODS&DATA ANALYSIS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Applications of least squares and general linear model.

STAT 509 - ADVANCED PSYCHOLOGICAL STATISTICS I
Short Title: ADVANCED PSYC STATISTICS I
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to inferential statistics, with emphasis on analysis of variance. Students who do not meet registration requirements as Graduate and Psychology Majors must receive instructor permission to register. Cross-list: PSYC 502.

STAT 510 - ADVANCED PSYCHOLOGICAL STATISTICS II
Short Title: ADVANCED PSYC STATISTICS II
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): PSYC 502 or STAT 509
Description: A continuation of PSYC 502, focusing on multiple regression. Other multivariate techniques and distribution-free statistics are also covered. Cross-list: PSYC 503.

STAT 514 - INTRODUCTION TO BIOSTATISTICS
Short Title: INTRODUCTION TO BIOSTATISTICS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Bioengineering. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Presents basic and advanced methods of statistics as applied to problems in bioengineering. Demonstrates techniques for data organization, exploration, and presentation. Foundations of statistical estimation, inference, and testing are reviewed. Optimal planning of experiments is explored. Advanced techniques include multiple regression, variable selection, logistic regression, analysis of variance, survival analysis, multiple measurements and measurements over time. Additional topics, such as Bayesian methods, will be discussed as time allows. Labs will use the statistical software JMP and/or R. Cross-list: BIOE 514.

STAT 515 - DATA SCIENCE CONSULTING
Short Title: DATA SCIENCE CONSULTING
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students in this course will advise clients from across this Rice community in a data science consulting clinic, learn best practices in consulting, and gain exposure to a variety of real data science problems. Instructor Permission Required. Graduate/Undergraduate Equivalency: STAT 415. Recommended Prerequisite(s): STAT 413 or COMP 440 or COMP 540 or COMP 330 or STAT 411. Mutually Exclusive: Cannot register for STAT 515 if student has credit for STAT 415. Repeatable for Credit.

STAT 518 - PROBABILITY
Short Title: PROBABILITY
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics include random variables, distributions, transformations, moment generating functions, common families of distributions, independence, sampling distributions, and basic stochastic processes. STAT 518 will have more advanced assignments and examinations focusing on theoretical methods. Graduate/Undergraduate Equivalency: STAT 418. Mutually Exclusive: Cannot register for STAT 518 if student has credit for STAT 418.

STAT 519 - STATISTICAL INFERENCE
Short Title: STATISTICAL INFERENCE
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers Bayesian Inference and methods for analyzing data. The emphasis will be on applied data analysis rather than theoretical development. We will consider a variety of models, including linear regression, hierarchical models, and models for categorical data. Recommended Prerequisite(s): STAT 519 and STAT 615 and STAT 605.
STAT 532 - FOUNDATIONS OF STATISTICAL INFERENCE I  
Short Title: FOUNDATIONS OF STAT INF I  
Department: Statistics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): STAT 519  
Description: The first semester in a two-semester sequence in mathematical statistics: random variables, distributions, small and large sample theorems of decision theory and Bayesian methods, hypothesis testing, point estimation, and confidence intervals; topics such as exponential families, univariate and multivariate linear models, and nonparametric inference will also be discussed. Required for graduate students in statistics.

STAT 533 - FOUNDATIONS OF STATISTICAL INFERENCE II  
Short Title: FOUNDATIONS OF STAT INF II  
Department: Statistics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): STAT 532  
Description: A continuation of STAT 532. Required for Ph.D. students in statistics.

STAT 535 - DATA SCIENCE PROJECTS  
Short Title: DATA SCIENCE PROJECTS  
Department: Statistics  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: In this project-based course, student teams will complete semester-long data science research or analysis projects selected from a variety of disciplines and industries. Students will also learn best practices in data science. Instructor Permission Required. Graduate/Undergraduate Equivalency: STAT 435. Mutually Exclusive: Cannot register for STAT 535 if student has credit for STAT 435. Repeatable for Credit.

STAT 540 - INTERNSHIP IN STATISTICAL MODELING  
Short Title: PRACTICUM IN STAT & DATA SCI  
Department: Statistics  
Grade Mode: Standard Letter  
Course Type: Internship/Practicum  
Credit Hours: 1-2  
Restrictions: Enrollment is limited to students with a major in Statistics.  
Course Level: Graduate  
Description: Designed for graduate students in statistics. This course introduces current theoretical and applied problems encountered in statistical practice through practical internships. Students will be required to complete a paid or unpaid off-campus internship. MSTAT students will be required to submit a written, 10-15 page report/document summarizing the statistical experience developed during the internship, as well documenting how the internship was instrumental to the Master's in Statistical course of study. Repeatable for Credit.

STAT 541 - MULTIVARIATE ANALYSIS  
Short Title: MULTIVARIATE ANALYSIS  
Department: Statistics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): STAT 410 or STAT 615  
Description: Study of multivariate data analysis and theory. Topics include normal theory, principal components, factor analysis, discrimination, estimation and hypothesis testing, multivariate analysis of variance and regression clustering.

STAT 542 - SIMULATION  
Short Title: SIMULATION  
Department: Statistics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): STAT 519 and (STAT 615 or STAT 410)  
Description: Topics in stochastic simulation including; random number generators; Monte Carlo methods, resampling methods, Markov Chain Monte Carlo, importance sampling and simulation based estimation for stochastic processes.

STAT 545 - GLM & CATEG'L DATA ANALYSIS  
Short Title: GLM & CATEG'L DATA ANALYSIS  
Department: Statistics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): STAT 519 or STAT 615 or STAT 410  
Description: Contingency tables, association parameters, chi-squared tests, general theory of generalized linear models, logistics regression, loglinear models, poisson regression.

STAT 547 - SURVIVAL ANALYSIS  
Short Title: SURVIVAL ANALYSIS  
Department: Statistics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): STAT 519 and STAT 615  
Description: Lifetime tables, cumulative distribution theory, censored data, Kaplan-Meier survival curves, log-rank tests, Cox proportional hazards models, parametric and non parametric estimation, hypothesis testing.
STAT 549 - FUNCTIONAL DATA ANALYSIS
Short Title: FUNCTIONAL DATA ANALYSIS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 533 and STAT 581
Description: Statistical methods for functional data; spaces of functions; pre-processing of functional data; probability models for functional data; basis representations including spline functions, orthogonal bases such as wavelets, and functional principal components; methods of inference for functional data including both frequentist and Bayesian methods.

STAT 550 - NONPARAMETRIC FUNCTION ESTIMATION
Short Title: NONPARAMETRIC FUNCTION EST
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Survey of topics in data analysis including data visualization, multivariate density estimation, and nonparametric regression. Advanced applications will include clustering, discrimination, dimension reduction, and bump-hunting using nonparametric density procedures.

STAT 551 - ADVANCED TOPICS IN TIME SERIES
Short Title: ADVANCED TOPICS IN TIME SERIES
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 552 or STAT 621 or STAT 622
Description: The course will cover current topics in both modeling and forecasting discrete and continuous time series. A brief coverage will also be given to spatial and spatial-temporal processes.

STAT 552 - APPLIED STOCHASTIC PROCESSES
Short Title: APPLIED STOCHASTIC PROCESSES
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 518
Description: This course covers the theory of some of the most frequently used stochastic processes in application; discrete and continuous time, Markov chains, Poisson and renewal processes, and Brownian motion.

STAT 553 - BIOSTATISTICS
Short Title: BIOSTATISTICS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 615
Description: Same as STAT 453 with advanced problem sets. Graduate/Undergraduate Equivalency: STAT 453. Mutually Exclusive: Cannot register for STAT 553 if student has credit for STAT 453.

STAT 555 - BIOSTATISTICS CONSULTING AND COLLABORATION
Short Title: BIOSTAT CONSULTG & COLLAB
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 545 and STAT 553 and STAT 615
Description: Students will gain experience by working on real collaborative projects that biostatisticians encounter every day. The goal of the course is to introduce students to projects where statistics and science meet and interact to produce knowledge. The students will learn to work with clinical/basic science collaborators to elicit the scientific question of interest, design studies, identify the correct statistical analyses tools, and communicate the results in both oral and written form. We will also address important topics related to developing productive collaborations, such as building trust and mutual respect, effective communication, participating in multidisciplinary teams and reproducible research. This course is also offered at GSBS/MD Anderson Cancer Center as GS01 1723. Instructor Permission Required. Repeatable for Credit.
Course URL: statistics.rice.edu (http://statistics.rice.edu)

STAT 581 - MATHEMATICAL PROBABILITY I
Short Title: MATHEMATICAL PROBABILITY I
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

STAT 582 - MATHEMATICAL PROBABILITY II
Short Title: MATHEMATICAL PROBABILITY II
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 581
Description: Continuation of STAT 581.
STAT 583 - INTRODUCTION TO RANDOM PROCESSES AND APPLICATIONS
Short Title: INTRO RANDOM PROCESSES & APPL
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Review of basic probability; Sequences of random variables; Random vectors and estimation; Basic concepts of random processes; Random processes in linear systems, expansions of random processes; Wiener filtering; Spectral representation of random processes, and white-noise integrals. Cross-list: CAAM 583, ELEC 533.

STAT 590 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Statistics
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Independent study for graduate level research topics in statistics. It provides credit for independent study in a selected area of statistical specialization. It is intended for directed reading, for conducting independent research, and documentation of conclusions and application of practical internships. Repeatable for Credit.

STAT 600 - GRADUATE SEMINAR IN STATISTICS
Short Title: GRADUATE SEMINAR IN STATISTICS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to students with a major in Statistics. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students participate in the process of researching professional literature (journal articles, book chapters, dissertations), preparing, delivering and critiquing talks. Literature topics change each semester. Repeatable for Credit.

STAT 601 - STATISTICS COLLOQUIUM
Short Title: STATISTICS COLLOQUIUM
Department: Statistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

STAT 602 - NEURAL MACHINE LEARNING AND DATA MINING II
Short Title: NEURAL MACHINE LEARNING II
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ELEC 502 or COMP 502 or STAT 502
Description: Advanced topics in ANN theories, with a focus on learning high-dimensional complex manifolds with neural maps (Self-Organizing Maps, Learning Vector Quantizers and variants). Application to data mining, clustering, classification, dimension reduction, sparse representation. The course will be a mix of lectures and seminar discussions with active student participation, based on most recent research publications. Students will have access to professional software environment to implement theories. Cross-list: COMP 602, ELEC 602. Repeatable for Credit.
Course URL: www.ece.rice.edu/~erzsebet/NMLcourseII.html

STAT 604 - COMPUTATIONAL ECONOMICS
Short Title: COMPUTATIONAL ECONOMICS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers numerical methods most commonly used in Economics, including solving systems of equations, numerical optimization, stochastic dynamic programming, numerical differentiation and integration, Monte Carlo methods, and solving ordinary and partial differential equations. Cross-list: ECON 504.

STAT 605 - R FOR DATA SCIENCE
Short Title: R FOR DATA SCIENCE
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students will learn how to work through data science problems within the statistical programming language R. The course covers the complete analytical process, from getting your data into R, to applying appropriate exploratory and statistical analysis, and communicating the results. Important topics in data science (e.g. databases, web scraping, and big data) and efficient programming are integrated throughout the course. STAT 605 includes more advanced assignments and/or examinations than STAT 405. Graduate/Undergraduate Equivalency: STAT 405. Mutually Exclusive: Cannot register for STAT 605 if student has credit for STAT 405.
STAT 606 - SAS STATISTICAL PROGRAMMING
Short Title: SAS STATISTICAL PROGRAMMING
Department: Statistics
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students will learn how to work within the statistical programming language SAS. The course covers from getting data into SAS, transforming and plotting it, to applying appropriate statistical analysis, and communicating the results. Important topics such as database managing with SQL, macro programming, interactive Matrix Language, and efficient programming in general are integrated throughout the course. Graduate/Undergraduate Equivalency: STAT 406. Mutually Exclusive: Cannot register for STAT 606 if student has credit for STAT 406. Repeatable for Credit.

STAT 610 - ECONOMETRICS I
Short Title: ECONOMETRICS I
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Estimation and inference in single equation regression models, multicollinearity, autocorrelated and heteroskedastic disturbances, distributed lags, asymptotic theory, and maximum likelihood techniques. Emphasis is placed on critical analysis of the literature. Cross-list: ECON 510.

STAT 611 - ECONOMETRICS II
Short Title: ECONOMETRICS II
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics in linear and nonlinear simultaneous equations estimation, including panel data, qualitative and categorical dependent variable models, duration analysis, simulation-based estimation, treatment effects, stochastic production frontier estimation. Cross-list: ECON 511.

STAT 613 - STATISTICAL MACHINE LEARNING
Short Title: STAT MACHINE LEARNING
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is an advanced survey of statistical machine learning theory and methods. Emphasis will be placed methodological, theoretical, and computational aspects of tools such as regularized regression, classification, kernels, dimension reduction, clustering, graphical models, trees, and ensemble learning. Recommended Prerequisite(s): STAT 615 and STAT 605 and STAT 519.

STAT 615 - REGRESSION AND LINEAR MODELS
Short Title: REGRESSION AND LINEAR MODELS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (STAT 310 or STAT 312 or ECON 307 or ECON 382) and (MATH 355 or CAAM 335)
Description: A survey of regression, linear models, and experimental design. Topics include simple and multiple linear regression, single- and multi-factor studies, analysis of variance, analysis of covariance, model selection, diagnostics. Data analysis using statistical software is emphasized.
Course URL: ece.rice.edu/~erzsebet/STAT615.html

STAT 616 - ADVANCED STATISTICAL METHODS
Short Title: ADVANCED STATISTICAL METHODS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 615
Description: Advanced topics in statistical applications such as sampling, experimental design and statistical process control. STAT 616 will have more advanced assignments and examinations focusing on theoretical methods. Graduate/Undergraduate Equivalency: STAT 411. Mutually Exclusive: Cannot register for STAT 616 if student has credit for STAT 411.

STAT 620 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar on advanced topics in Statistics. Repeatable for Credit.

STAT 621 - APPLIED TIME SERIES AND FORECASTING
Short Title: APPLIED TIME SERIES/FORECASTING
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 615 (may be taken concurrently)
Description: Applied time series modeling and forecasting, with applications to financial markets with advanced problem sets. This is a graduate version of STAT 421 with advanced assignments. The courses STAT 615 and STAT 431 may be taken concurrently with STAT 621 if courses are not in history. Graduate/Undergraduate Equivalency: STAT 421. Mutually Exclusive: Cannot register for STAT 621 if student has credit for STAT 421.
STAT 623 - PROBABILITY IN BIOINFORMATICS AND GENETICS
Short Title: PROB BIOINFORMATICS & GENETICS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 305 or STAT 310 or STAT 315 or DSCI 301 or STAT 331 or STAT 418 or STAT 518
Description: Course introduces the student to modern biotechnology and genomic data. Statistical methods to analyze genomic data are covered, including probability models, basic stochastic processes, and statistical modeling. Biological topics include DNA sequence analysis, phylogenetic inference, gene finding, and molecular evolution. Graduate/Undergraduate Equivalency: STAT 423. Mutually Exclusive: Cannot register for STAT 623 if student has credit for STAT 423.

STAT 625 - ADVANCED BAYESIAN INFERENCE
Short Title: ADVANCED BAYESIAN INFERENCE
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 525
Description: This course focuses on the Bayesian inference with emphasis on theory and applications. In this course, we will cover advancements and challenges in modern Bayesian inference, and illustrate a variety of theoretical and computational methods, simulation techniques, and hierarchical models that are suitable to analyze complex data. Repeatable for Credit.

STAT 648 - GRAPHICAL MODELS AND NETWORKS
Short Title: GRAPH MODELS & NETWORKS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 519
Description: This course covers the use of financial securities and derivatives to take or hedge financial risk positions. Most commonly used instruments, from simple forwards and futures to exotic options and swaptions are covered. The pricing of derivatives securities will also be studied, but the emphasis will be on the mechanics and uses of financial engineering methods. Students receiving graduate credit in STAT 649 will be expected to address additional homework and test questions targeting a graduate level understanding of the material. Graduate/Undergraduate Equivalency: STAT 449.

STAT 649 - QUANTITATIVE FINANCIAL RISK MANAGEMENT
Short Title: QUAN FINANCIAL RISK MANAGEMENT
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 519 or STAT 615
Description: This course will cover both theory and applications of stochastic differential equations. Topics include: the Langevin equation from physics, the Wiener process, white noise, the martingale theory, numerical methods and simulation, the Ito and Stratonovitch theories, applications in finance, signal processing, materials science, biology, and other fields.

STAT 650 - STOCHASTIC CONTROL AND STOCHASTIC DIFFERENTIAL EQUATIONS
Short Title: STOCH CONTRL & STOCH DIFF EQU
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 581
Description: This course will cover both theory and applications of stochastic differential equations. Topics include: the Langevin equation from physics, the Wiener process, white noise, the martingale theory, numerical methods and simulation, the Ito and Stratonovitch theories, applications in finance, signal processing, materials science, biology, and other fields.
STAT 682 - QUANTITATIVE FINANCIAL ANALYTICS
Short Title: QUANT FINANCIAL ANALYTICS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A modern approach to fundamental analytics of securities, the classic works of Graham and Dodd. Deconstructing the Efficient Market Hypothesis Financial Statement Analysis, Capital Market Theory, CAPM, APT, Fama-French Empirical Financial Forecasting. Graduate/Undergraduate Equivalency: STAT 482. Mutually Exclusive: Cannot register for STAT 682 if student has credit for STAT 482.

STAT 684 - ENVIRONMENTAL RISK ASSESSMENT & HUMAN HEALTH
Short Title: ENVIRON RISK ASSESS&HUMAN HLTH
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 280 or STAT 305
Description: Learn and apply quantitative risk assessment methodology to estimate human health risk from environmental exposure to contamination in air, soil and water. Students will conduct a series of team projects focused on toxicology, risk based screening levels, exposure concentration estimation and risk characterization. Cross-list: CEVE 684. Graduate/Undergraduate Equivalency: STAT 484. Mutually Exclusive: Cannot register for STAT 684 if student has credit for STAT 484.

STAT 685 - ENVIRONMENTAL STATISTICS AND DECISION MAKING
Short Title: ENVIR STAT & DECISION MAKING
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 305 or STAT 385
Description: A project oriented computer intensive course focusing on statistical and mathematical solutions and investigations for the purpose of environmental decisions. This course is required for EADM students. Graduate/Undergraduate Equivalency: STAT 485. Mutually Exclusive: Cannot register for STAT 685 if student has credit for STAT 485.

STAT 686 - MARKET MODELS
Short Title: MARKET MODELS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 518 and (STAT 615 or STAT 410)
Description: This course takes the classical efficient market models and superimposes upon it models for other stochastic phenomena not generally accounted for in efficient market theory, showing how risk is lessened by portfolios and other mechanisms. This graduate course uses computer simulations as an alternative to closed form solutions with advanced problem sets. Graduate/Undergraduate Equivalency: STAT 486. Mutually Exclusive: Cannot register for STAT 686 if student has credit for STAT 486.

STAT 696 - RTG CROSS-TRAINING IN DATA SCIENCE
Short Title: RTG CROSS-TRAINING IN DATA SCI
Department: Statistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to students with a major in Computer Science or Statistics. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A seminar course to introduce students to topics in Data Science at the interface between Statistics and Computer Science. Students participate in the process of preparing, delivering and critiquing talks. Topics change each semester. Instructor Permission Required. Cross-list: COMP 696. Graduate/Undergraduate Equivalency: STAT 496. Mutually Exclusive: Cannot register for STAT 696 if student has credit for STAT 496. Repeatable for Credit.

STAT 698 - RESEARCH THEMES IN THE MATHEMATICAL SCIENCES
Short Title: RESEARCH THEMES IN MATH. SCI.
Department: Statistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A seminar course that will cover selected theme of general research in the mathematical sciences from the perspectives of mathematics, computational and applied mathematics and statistics. The course may be repeated multiple times for credit. Cross-list: CAAM 698, MATH 698. Graduate/Undergraduate Equivalency: STAT 498. Mutually Exclusive: Cannot register for STAT 698 if student has credit for STAT 498. Repeatable for Credit.
Systems/Synthetic/Phys Biology (SSPB)

SSPB 502 - INTRO COMPUTATIONAL SYSTEMS BIOLOGY: MODELING & DESIGN PRINCIPLES OF BIOCHEM NETWORKS
Short Title: INTRO SYSTEMS BIOLOGY MODELING
Department: Systems/Synthetic/Phys Biology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course summarizes techniques for quantitative analysis and simulations of basic circuits in genetic regulation, signal transduction and metabolism. We discuss engineering approaches adapted to computational systems biology and aim to formulate evolutionary design principles explaining organization of networks in terms of their physiological demands. We discuss biochemical simulation methodology and software as well as recent advances in the field. Topics include end-product inhibition in biosynthesis, optimality and robustness of the signaling networks and kinetic proofreading. More emphasis on recent advances in the field - paper reading and presentations. Cross-list: BIOE 552. Recommended Prerequisite(s): Basic knowledge of biochemistry, cell biology, linear algebra, and ordinary differential equations is expected.

SSPB 503 - SYNTHETIC BIOLOGY
Short Title: SYNTHETIC BIOLOGY
Department: Systems/Synthetic/Phys Biology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Design of biology at scales from molecules to multicellular organisms will be covered by lecture, primary literature, and student presentations. Students will write a research proposal at the end of the course. Cross-list: BIOE 508.

SSPB 550 - GRADUATE SEMINAR
Short Title: GRADUATE SEMINAR
Department: Systems/Synthetic/Phys Biology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1
Restrictions: Enrollment is limited to students with a major in Systems/Synthetic/Phys Biology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar course to introduce SSPB students to current research topics and activities in the systems, synthetic, and physical biology fields. Repeatable for Credit.

SSPB 575 - INTRODUCTION TO RESEARCH
Short Title: INTRODUCTION TO RESEARCH
Department: Systems/Synthetic/Phys Biology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 2
Restrictions: Enrollment is limited to students with a major in Systems/Synthetic/Phys Biology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction of first-year graduate students to the research programs and laboratories of individual faculty members. Repeatable for Credit.
SSPB 599 - GRADUATE TEACHING IN SSPB

Short Title: GRADUATE TEACHING IN SSPB
Department: Systems/Synthetic/Phys Biology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Supervised instruction in teaching systems, synthetic, and physical biology. Repeatable for Credit.

SSPB 601 - NAVIGATING INTERDISCIPLINARY TEAMS IN SCIENCE AND ENGINEERING

Short Title: INTERDISCIPLINARITY I
Department: Systems/Synthetic/Phys Biology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Covers team science literature on the assumptions that guide scientific practice, communication, and group integration. Instructor Permission Required.

SSPB 602 - INNOVATIONS AND CHALLENGES IN BIOELECTRONICS RESEARCH

Short Title: INTERDISCIPLINARITY II
Department: Systems/Synthetic/Phys Biology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): SSPB 601
Description: Covers literature on past biotechnological innovations that required interdisciplinary collaboration for success. Instructor Permission Required.

SSPB 610 - INTERDISCIPLINARY BIOELECTRONICS RESEARCH COLLOQUIUM

Short Title: BIOELECTRONICS COLLOQUIUM
Department: Systems/Synthetic/Phys Biology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Covers effective oral communication in the interdisciplinary field of bioelectronics. Repeatable for Credit.

SSPB 620 - INTERDISCIPLINARY BIOELECTRONICS PEER WRITING GROUPS

Short Title: BIOELECTRONICS WRITING
Department: Systems/Synthetic/Phys Biology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Covers effective written communication in the interdisciplinary field of bioelectronics. Repeatable for Credit.

SSPB 677 - SPECIAL TOPICS

Short Title: SPECIAL TOPICS
Department: Systems/Synthetic/Phys Biology
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

SSPB 700 - INTERDISCIPLINARY BIOELECTRONICS RESEARCH

Short Title: BIOELECTRONICS RESEARCH
Department: Systems/Synthetic/Phys Biology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Covers research in the interdisciplinary field of bioelectronics. Repeatable for Credit.

SSPB 800 - GRADUATE RESEARCH

Short Title: GRADUATE RESEARCH
Department: Systems/Synthetic/Phys Biology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to students with a major in Systems/Synthetic/Phys Biology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate students will conduct independent research/thesis project under the direction of their advisor. Repeatable for Credit.

Theatre (THEA)

THEA 100 - STAGE CRAFT

Short Title: STAGE CRAFT
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction to materials, tools, and standard theatre production techniques. Theory and practice of scenic building and painting techniques, creation of props, sound support requirements, and running crew during performance. No Lab hours required.

THEA 101 - THEATRE TECHNOLOGY: COSTUME CONSTRUCTION

Short Title: THEA TECH: COSTUME CONSTRUCTION
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction to the materials, tools, and standard techniques of costume/clothing construction. Lab hours required.
THEA 102 - INTRODUCTION OF ACTING
Short Title: INTRODUCTION TO ACTING
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This is a class in the basic terminology and craft of acting. It will encompass voice and movement training, as well as basic technical theatre terminology and vocabulary for the actor. The course work will progress from ensemble/group work and individual exercises/monologues to scenes. Space in classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor.

THEA 103 - THEATRE TECHNOLOGY
Short Title: THEATRE TECHNOLOGY
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction to lighting and sound equipment, tools, and board operation. Theory and practice of lighting and sound materials, hang and focus, programming both sound and lights boards as well as introduction to projection elements. No lab required.

THEA 202 - COSTUME AND PATTERN DRAFTING AND DRAPING FOR STAGE
Short Title: PATTERN DRAFTING AND DRAPING
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): THEA 101
Description: This course enables students to explore pattern-making, design, fit and alteration of costumes for the stage. The course will familiarize students with the draping method of pattern development and the flat-pattern method of pattern development in order to create three-dimensional period and contemporary costumes for the theatre based on two-dimensional research and theatrical designer drawings. Instructor Permission Required.

THEA 207 - MAKEUP FOR THE STAGE
Short Title: MAKEUP FOR THE STAGE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This is a hands-on class that explores the principals of stage makeup materials and skills, methods and techniques that are used in an actor’s transformation for the stage. This includes techniques for moderate and extreme aging, injuries and character roles and period styles. Class will use the application of analytical and research skills in the visual development of the character.

THEA 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

THEA 270 - BIG PAINTING: MATERIALS AND TECHNIQUES FOR THEATRICAL PAINTING
Short Title: BIG PAINTING FOR THEATRE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Big Painting: Materials and Techniques for Theatrical Painting will examine the materials and techniques usually associated with scenic and theatrical painting but as applied to the context of 21st century contemporary art practices. Students will learn how to make big paintings. This course has limited enrollment. The roster is formatted on the first day class by the instructor, who may allow additional registration for majors. It is necessary to attend the first class meeting to confirm your place on the class roster. Cross-list: ARTS 270.

THEA 300 - INTRODUCTION TO THEATRE DESIGN
Short Title: INTRODUCTION TO THEATRE DESIGN
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Introduction to the theory and practice of theatre design through exploration of the principles and elements of design as they apply to scenery, lighting, and costumes with an emphasis on text analysis and research. Students will complete and present a variety of projects.
THEA 301 - ACTING I  
Short Title: ACTING I  
Department: Visual and Dramatic Arts  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Introduction to the fundamentals of acting through the exploration of actor training techniques based on the theories of Stanislavsky, Strasburg, Adler, Meisner, and Hagen, emphasizing the actor’s primary tools: voice, body, emotional life, and imagination.

THEA 302 - ACTING II  
Short Title: ACTING II  
Department: Visual and Dramatic Arts  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): THEA 301  
Description: Text analysis for the actor with particular emphasis on a thorough investigation of given circumstances and dramatic action. Students will work on scenes from Ibsen to contemporary playwrights. Space in classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor.

THEA 303 - INTRODUCTION TO THEATRE  
Short Title: INTRODUCTION TO THEATRE  
Department: Visual and Dramatic Arts  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: A survey course of the art and theory of the theatre through an examination of dramatic literature and theatrical venues from the Greeks through the modern era. The course will also explore the craft of the theatre from a practitioner’s point of view as it is realized today. Requires attending several theatre productions in local Houston venues. Cross-list: ENGL 390.  
Course URL: www.english.rice.edu (http://www.english.rice.edu)

THEA 304 - COSTUME DESIGN  
Short Title: COSTUME DESIGN  
Department: Visual and Dramatic Arts  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Exploration of costume design and the designers’ role in the collaborative process. Students will read diverse plays then present design projects that explore character, storytelling, and the relationship between performer and audience. Students will experiment with rendering techniques to explore the visual language of period and contemporary clothing.

THEA 305 - LIGHTING DESIGN  
Short Title: LIGHTING DESIGN  
Department: Visual and Dramatic Arts  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): THEA 300  
Description: Exploration of the role that lighting plays in a production and the lighting designer’s place as an artist in the collaboration process. Emphasis on the practical application of the controllable properties of light as they apply to theatre. Students will be required to complete a variety of projects including light labs responding to music and culminating in a final lighting project.

THEA 306 - SCENIC DESIGN  
Short Title: SCENIC DESIGN  
Department: Visual and Dramatic Arts  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): THEA 300  
Description: Advanced examination of the principles of scenic design including research, rendering, technical drawing, model construction, text analysis and the role of the scenic designer in collaboration with directors, actors, and other designers. Students will read and analyze a variety of plays in different periods and styles, and then, based on text analysis and research, complete and present design projects.
THEA 307 - HISTORY OF ARCHITECTURE, INTERIORS, AND CLOTHING FOR THEATRE DESIGNERS  
Short Title: HIST FOR THEATER DESIGNERS  
Department: Visual and Dramatic Arts  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: HISTORY OF ARCHITECTURE, INTERIORS, AND CLOTHING FOR THEATRE DESIGNERS ***** Survey of the major period styles of buildings, homes, furnishings, and clothing from ancient Egypt through the 20th century including a critical analysis of the interdependent nature of the evolution of design and the relationship to the cultures in which they were created. Repeatable for Credit.

THEA 308 - IMPROVISATION FOR STAGE AND SCREEN  
Short Title: IMPROV FOR STAGE AND SCREEN  
Department: Visual and Dramatic Arts  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This is a course in the practical training of comedic, long-form, improvisation. Students will learn how to craft scenes spontaneously using tools like character dynamic, status, comedic pattern, beat structuring, and agreement. Classic forms of scenic improv will be taught and the course will also examine the role of improvisation in comedy films, video, and the creation of sketch comedy. Students will get to practice their skills by crafting videos in the class’ culmination run of improv shows. Cross-list: FILM 308.

THEA 309 - MUSICAL THEATRE STUDIO  
Short Title: MUSICAL THEATRE STUDIO  
Department: Visual and Dramatic Arts  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Practical training and experience in musical theatre performance. This course will focus on the particular challenges that musical theatre presents as distinct from non-musical theatre. Performance techniques will emphasize the skills necessary for successful presentation of a musical number by an actor, as well as how to prepare an effective audition.

THEA 310 - THE SPOKEN TEXT  
Short Title: THE SPOKEN TEXT  
Department: Visual and Dramatic Arts  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): THEA 301  
Description: An exploration of language through voice, movement and text as one of the actor’s primary means of communication and expression. The student will analyze, rehearse, and perform scenes from the work of William Shakespeare and his contemporaries. Recommended prerequisite(s): ENGL 321.

THEA 311 - HISTORY OF MUSICAL THEATRE  
Short Title: HISTORY OF MUSICAL THEATRE  
Department: Visual and Dramatic Arts  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This course is designed to familiarize students with the repertoire of a uniquely American art form that has had a widespread cultural influence. It will present a historical perspective of the decades of musical theatre from the 1920s to the present, with particular emphasis on representative innovative examples of change and the transition from musical comedy into musical theatre.

THEA 312 - DIRECTING I  
Short Title: DIRECTING I  
Department: Visual and Dramatic Arts  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): THEA 301  
Description: An introductory course exploring the tools and craft of the stage director. Students will learn how to analyze dramatic text and will gain a fundamental knowledge of the director’s basic skills, including composition, picture, movement, rhythm, and pantomimic dramatization. Recommended prerequisite(s): THEA 303 or 300.
THEA 301 - INTRODUCTION TO THEATRE HISTORY
Short Title: INTRO TO THEATRE HISTORY
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Exploration of the development of Western theatre from ancient roots to modern day. Students will explore how the theatrical experience reflects and effects the society in which it exists and will consider how theater holds a mirror up to cultural power, taboos, and changes.

THEA 302 - DIRECTING SHAKESPEARE
Short Title: DIRECTING SHAKESPEARE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): THEA 301
Description: Staging Shakespeare's plays for modern audiences: learning to speak the lines 'trippingly off the tongue', analyzing textual clues, and researching the period to find correlations to contemporary society in the process of active rehearsal. Students will work with THEA 310 to stage a final scene. Recommended prerequisite(s): THEA 310.

THEA 303 - VOICE AND SPEECH FOR THEATRE
Short Title: VOICE AND SPEECH FOR THEATRE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Development of an expressive speaking voice through awareness and overcoming physical and vocal habits and limitations, including alignment, relaxation, breath support, resonance, tone and projection. Recommended prerequisite(s): THEA 301.

THEA 311 - THEATRE IN WESTERN CULTURE: A HISTORICAL INTRODUCTION
Short Title: THEATRE IN WESTERN CULTURE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Through reading and watching a selection of major plays and exploring other primary historical and critical sources, students in this course will study the development of the western dramatic tradition from ancient roots to modern day. Students will explore how the theatrical experience reflects and effects the society in which it exists and will consider how theater holds a mirror up to cultural power, taboos, and changes.

THEA 312 - DIRECTING SHAKESPEARE
Short Title: DIRECTING SHAKESPEARE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines the embodiment of gender and sexuality through the oral interpretation of transnational literature. Students will learn how to analyze and adapt to performance novels and short stories from various global and historical contexts that exemplify the genre of the 'coming of age' narrative. Cross-list: SWGS 320.

THEA 313 - ACTING FOR FILM
Short Title: ACTING FOR FILM
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): THEA 302 or THEA 301
Description: This course provides an introduction to the art of acting on camera. It emphasizes specific techniques of speech, movement, character development, and the creation of relationships as they relate to the recorded medium (film, television, commercials, industrial films). The elements of study include proper voice placement, appropriate acting styles, and subtlety in performance. Student performances will be videotaped for study.

THEA 314 - CONTEMPORARY DRAMATIC LITERATURE
Short Title: CONTEMP DRAMATIC LITERATURE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will examine contemporary American plays that have had a significant impact on theatrical form or that are highly reflective of contemporary society. Playwrights whose work will be studied will include Mamet, Guare, Lucas, Wilson and many others.
THEA 331 - THEATRE PRODUCTION
Short Title: THEATRE PRODUCTION
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Distribution Group: Distribution Group I
Credit Hours: 3-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Practical application of skills acquired in previous THEA courses in a realized Theatre Program production as a company member. Admission to class requires either an audition, interview, or portfolio review with the director and/or production manager. Possible roles include: actor, assistant director, stage manager, assistant stage manager, designer, and technical support in scenery, costumes, lighting, or sound. Prerequisites: permission of instructor. Instructor Permission Required. Repeatable for Credit.

THEA 332 - CRITICAL STUDIES OF MULTIMEDIA ARTS
Short Title: CRITICAL STU OF MULTIMEDIA ART
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Critical Studies for Multimedia Arts is a course designed to familiarize art and non-art majors with key theories and core concepts in modern and contemporary multimedia art. Students will examine a broad spectrum of specific topics in contemporary artwork related conceptually to: space/time; bodies and performance; 'sculptural' studies in an expanded field and video & film space. This is a multi-dimensional class consisting of guest lectures, artist-speakers, and field trips to local museums, galleries and alternative art spaces. This course will include discussions on readings, writings and special projects. This promises to be a fun and thought-provoking class and is designed to enhance studio practice and encourage interest in the visual arts. Cross-list: ARTS 332, FILM 332, FOTO 332.

THEA 333 - SPECIAL PROBLEMS: THEATRE PRODUCTION
Short Title: SPECIAL PROBLEMS: THEATRE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1,2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of problems at the intermediate level in theatre making. Topics may vary. Please consult with your faculty advisor for additional information. This class may be used in awarding transfer credit. Instructor Permission Required. Repeatable for Credit. Instructor Permission Required. Repeatable for Credit.

THEA 396 - THEATRE INTERNSHIP
Short Title: THEATRE INTERNSHIP
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course is a field-based, supervised, professional learning experience designed to enhance classroom learning. Students will be responsible for identifying and securing internship positions and must obtain permission from the department chairman and have a department faculty sponsor. All interns are required to keep an internship journal recording duties and activities; the journal will be used as the basis of a five-page paper summarizing the internship experience. Documentation of the work produced during the internship is required, portfolio, CD, DVD, etc. Instructor Permission Required. Repeatable for Credit.

THEA 432 - SPECIAL PROBLEMS: DIRECTING AND DESIGN
Short Title: SPEC PROB: DIRECT & DESIGN
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Independent study. Instructor Permission Required. Repeatable for Credit.

THEA 435 - SPECIAL PROBLEMS: ADVANCED TOPICS
Short Title: SPEC PROB:ADVANCED TOPICS
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Independent study. Instructor Permission Required. Repeatable for Credit.

THEA 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.
TIBT 233 - INTRODUCTION TO TIBETAN LANGUAGE, LITERATURE AND CULTURE  
**Short Title:** INTRO TO TIBETAN LANG & LIT  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** Introducing the Tibetan alphabet and basics of grammar through reading section of a classic Tibetan text. In addition, readings in English in Indian and Tibetan Buddhist materials, also on the art, history, geography and /or modern era in those areas. Final includes a paper drawn from readings and class discussion. Cross-list: RELI 233.

TIBT 234 - INTERMEDIATE TIBETAN LANGUAGE, LITERATURE AND CULTURE  
**Short Title:** INT TIBETAN LANG LIT & CULTURE  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** Continued training in Tibetan language-extending vocabulary and facility with grammar. Final includes a paper drawn from readings and class discussion. Cross-list: RELI 234. Repeatable for Credit.

TIBT 238 - SPECIAL TOPICS  
**Short Title:** SPECIAL TOPICS  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Internship/Practicum, Seminar, Lecture, Laboratory  
**Credit Hours:** 1-4  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** A six-week, academically intensive, pre-college program for pre-matriculating students who intend to major in science or engineering. The program includes coursework in Calculus, Chemistry, and Physics, with a focus on the most challenging topics from the freshman curricula; daily homework and group-work; and complementary seminars on design, bioscience research, and discrete math. Department Permission Required.

TIBT 477 - SPECIAL TOPICS  
**Short Title:** SPECIAL TOPICS  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Internship/Practicum, Seminar, Lecture, Laboratory  
**Credit Hours:** 1-4  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Topics and credit hours may vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

University Courses (UNIV)  

UNIV 105 - SCHOLARLY APPROACHES TO SCIENCE AND ENGINEERING  
**Short Title:** SCHOLARLY APPROACHES TO S&E  
**Department:** University Courses  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Intensive Learning Experience  
**Credit Hours:** 0  
**Course Level:** Undergraduate Lower-Level  
**Description:** This course is designed to provide new students with the knowledge and tools to succeed at Rice. Combining classroom discussion, information from campus departments, self-assessments and reflections, and other interactive activities, this class will focus on key issues new students will encounter when transitioning to college. This course is limited to first-year students only.

UNIV 110 - FOUNDATIONS FOR SELF-DISCOVERY AND LIFELONG LEARNING  
**Short Title:** FIRST YEAR FOUNDATIONS  
**Department:** University Courses  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 2  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** This course is designed to provide new students with the knowledge and tools to succeed at Rice. Combining classroom discussion, information from campus departments, self-assessments and reflections, and other interactive activities, this class will focus on key issues new students will encounter when transitioning to college. This course is limited to first-year students only.

UNIV 180 - INTRODUCTION TO RICE FOR NEW INTERNATIONAL UNDERGRADUATE STUDENTS  
**Short Title:** INTRO TO RICE - INTERNATIONALS  
**Department:** University Courses  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Lecture  
**Credit Hour:** 1  
**Course Level:** Undergraduate Lower-Level  
**Description:** Survey course of themes geared for new undergraduate international students to the USA and Rice. Adjustment and acculturation topics include Rice culture, US culture and academic success.
UNIV 181 - ACADEMIC ENGLISH SKILLS FOR VISITING STUDENTS
Short Title: ENGLISH FOR VISITING STUDENTS
Department: University Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course reviews the written and oral English skills needed by visiting international students to succeed in upper-division courses at Rice. Students will learn to express ideas effectively in individual and group conversations; to give academic presentations; to critique, report, and interpret research findings in writing; and to become better self-editors of their writing. Instructor Permission Required.

UNIV 194 - CTIS WORKSHOP
Short Title: CTIS WORKSHOP
Department: Dean of Undergraduates
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 0
Course Level: Undergraduate Lower-Level
Description: CTIS Workshop will draw from a public health model of violence prevention to teach Freshman and transfer students the dynamics of domestic and sexual violence, consent and bystander intervention. Students will understand the impacts of healthy relationships and consent, as well as successful models shown to increase gender equality, healthy sexual communication and empathy. This course is only available to first time matriculants.

UNIV 201 - CENTURY SCHOLARS PROGRAM
Short Title: CENTURY SCHOLARS PROGRAM
Department: University Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Repeatable for Credit.

UNIV 212 - CAREER AND LIFE OPTIONS
Short Title: CAREER AND LIFE OPTIONS
Department: University Courses
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This class is intended for freshmen and sophomores who are exploring careers and academic majors (juniors and seniors are also welcome to enroll). In the class, students will learn about career options that match their interests, personality, and values; become more familiar with the world of work and various career options; understand the connections between careers and major choice; learn about services that will enhance their marketability and academic experiences (internships, study abroad programs, scholarships/grants); and develop an action plan to reach their goals. This class is ideally suited for students who have no idea what they want to do after graduation. Mutually Exclusive: Cannot register for UNIV 212 if student has credit for HUMA 212.

UNIV 215 - ALTERNATIVE SPRING BREAK LEADERSHIP COURSE
Short Title: ASBC
Department: University Courses
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: UNIV 215 is required of all Alternative Spring Break student site leaders. This course consists of weekly 1.5 hour meetings that will include lectures, discussions, group activities, work sessions, and panel presentations. Instructor Permission Required. Repeatable for Credit.

UNIV 216 - ALTERNATIVE SPRING BREAK LEADERSHIP COURSE
Short Title: ASB LEADERSHIP COURSE
Department: University Courses
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): UNIV 215
Description: The course aims to: 1) analyze service philosophy and mechanisms for implementing a mutually beneficial short-term service program. 2) equip students with the knowledge, skills, and confidence necessary to lead a group of their peers, 3) provide a platform for self-assessment and an opportunity for personal and professional development for student leaders. Instructor Permission Required. Repeatable for Credit.
Course URL: ccl.rice.edu (http://ccl.rice.edu)

UNIV 220 - PEER ACADEMIC ADVISING PROFESSIONAL DEVELOPMENT
Short Title: PAA PROF DEVELOPMENT
Department: University Courses
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Designed for members of the Peer Academic Advising (PAA) program. Students in this course will learn about best practices in advising and see that being a peer advisor is more than just recommending classes to fellow students. The course is meant to help PAs think differently and more critically about their roles as peer advisors, as well as to discuss the power PAs have in helping create positive change on campus and in the experiences of individual students. Instructor Permission Required.
UNIV 235 - APPLIED LEADERSHIP AND ORGANIZATIONAL DEVELOPMENT
Short Title: APPLIED LEADERSHIP
Department: University Courses
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Designed with an emphasis on critical thinking, this class will assist O-Week Coordinators in the critique, design, development and execution of a comprehensive orientation and new student transition program for freshmen and transfer students. Due to Rice’s unique orientation structure, special attention will be placed on the importance of providing leadership to teams, as well as working successfully in a team environment to allow students to best function in their role as O-Week Coordinator this semester. Instructor Permission Required. Mutually Exclusive: Cannot register for UNIV 235 if student has credit for COLL 199.

UNIV 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: University Courses
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Laboratory, Lecture
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

UNIV 250 - RICE HEALTH ADVISORS
Short Title: RICE HEALTH ADVISORS
Department: University Courses
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is designed to introduce students to the principles of peer health education. Students will assess their own personal health status as well as major health risks among their peers. They will learn effective strategies for reducing these risks and promoting healthy lifestyles to college students. Enrollment is restricted, students must be in good academic and judicial standing and complete an application. This course is a pre-requisite to becoming a Rice Health Advisor. Instructor Permission Required.

UNIV 295 - EXPLORING CAREERS THROUGH AN INTERNSHIP
Short Title: CAREERS THRU INTERNSHIP
Department: University Courses
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Designed for currently enrolled undergraduate students from all areas of study to gain experience in a work place setting, earn course credit, and further develop professional skills. Students meet individually with a CCD team member to process their experience and complete an action plan to market their qualifications to potential employers and graduate schools. Students arrange internship and receive approval from the course instructor(s). Instructor Permission Required. Mutually Exclusive: Cannot register for UNIV 295 if student has credit for HUMA 295. Repeatable for Credit.

UNIV 299 - SCIENTIA: LECTURES IN SCIENCE AND CULTURE
Short Title: SCIENTIA SCIENCE & CULTURE
Department: University Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Annual lecture series, panel discussions and discussion talks on topics bridging science, culture and art. 4 lectures plus 2 discussion talks. Lectures are on specified dates, usually Tuesdays. Discussion talks scheduled at semester beginning. Topics vary year to year. Repeatable for Credit.

UNIV 301 - UNDERGRADUATE RESEARCH
Short Title: UNDERGRADUATE RESEARCH
Department: University Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 0
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This zero credit course enables students to have supervised research experience on and off campus recorded on their transcript. Students must register the name and contact of their PI in the UNIV 301 OWL-Space site by the end of the second week of classes or drop the class. Repeatable for Credit.
UNIV 304 - RESEARCH ETHICS IN THE COMMUNITY
Short Title: RESEARCH ETHICS
Department: University Courses
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This class introduces students to a range of ethical issues that arise in community-based participatory research. Drawing on literature review and case studies, the class brings together students who will carry out CBR projects abroad on a Loewenstein Fellowship. We will also focus on cultural communication and how the international landscape influences the role of the researcher.

UNIV 305 - INTERNATIONAL SERVICE
Short Title: INTERNATIONAL SERVICE
Department: University Courses
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Objectives are to (1) examine the history of international service and service ethics, (2) develop broad knowledge of history, culture, and politics related to the country of service, and to (3) engage students in conversations about global society and international service work. Instructor Permission Required. Repeatable for Credit.

UNIV 307 - SYNTHEIZING YOUR SERVICE EXPERIENCE
Short Title: SYNTHEIZING YOUR EXPERIENCE
Department: University Courses
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: UNIV 307 will focus on synthesizing the service experience. Students will reflect on the host country’s culture, the social issues being addressed, and personal learning and growth; articulate the experiences in relation to students’ academic, career, and personal goals; and, create a portfolio to showcase their service achievements. Instructor Permission Required. Recommended Prerequisite(s): UNIV 305 and UNIV 306. Repeatable for Credit.

UNIV 310 - RICE LEGAL LAB
Short Title: RICE LEGAL LAB
Department: University Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course provides hands-on exposure to the practical legal environment, including legal research, legal writing, and Texas court processes, with optional work placing the Texas legal environment into an international comparative context. Instructor Permission Required. Repeatable for Credit.

UNIV 311 - JUDICIAL INTERNSHIP - RICE LEGAL LAB
Short Title: RICE LEGAL LAB
Department: University Courses
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Students will serve judicial internships with Texas state or federal judges; required travel component over spring break, with associated costs and lab fee. Instructor Permission Required. Repeatable for Credit.

UNIV 313 - INTRODUCTION TO RESEARCH ABROAD
Short Title: INTRO TO RESEARCH ABROAD
Department: University Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course is designed to help undergraduate students develop skills to design, refine, and carry out an individual research project in an international context. This is a preparatory course for students who plan to apply for international scholarships such as Fulbright, Thinkswiss, Wagoner, DAAD or for students who will design an international research project as part of their study abroad program or their honors thesis.

UNIV 320 - ADVANCED ACADEMIC ADVISING PRACTICUM
Short Title: ADVANCED ADVISING PRACTICUM
Department: University Courses
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will focus on individually designed and faculty guided action plans. Students will design plans that enhance the role, effectiveness, and/or educational breadth and depth of academic advising at the individual, college, or university level. Instructor Permission Required. Repeatable for Credit.

UNIV 321 - ADVANCED ACADEMIC FELLOWS/MENTORS PRACTICUM
Short Title: ADV FELLOWS/MENTORS PRACTICUM
Department: University Courses
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Designed for current members of the PAA program. This course will focus on individually designed and faculty guided action plans. Students will design plans that enhance the role, effectiveness, and/or educational breadth and depth of academic advising at the individual, college, or university level. Instructor Permission Required. Repeatable for Credit.
UNIV 330 - MEDICAL EXPLORATION AND OBSERVERSHIP
Short Title: MEDICAL EXPLORATION
Department: Dean of Undergraduates
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: UNIV 330 is designed for currently enrolled undergraduate students to gain exposure to the medical setting and develop professional skills, while earning course credit. The purpose is to allow students to explore careers in the health professions through exposure to medical shadowing and the healthcare industry in the operating room, intensive care unit or other clinical unit at Houston Methodist Hospital. Students will be required to reflect upon shadowing experience while understanding how professionals apply their medical knowledge, interpersonal communication skills, and leadership to provide appropriate patient-centered care. Please note, matching with physicians will not occur until students begin matriculating in UNIV 330. The physician selection process will be explained during class. The process and application deadlines can be found using the following link: https://forms.gle/j46gJdMmBTz9CiBVA. NOTE: Space is limited and registration for UNIV 003 does not guarantee a seat in UNIV 330. Instructor Permission Required.

UNIV 395 - RICE SCHLARS ABROAD PREDEPARTURE
Short Title: RICE SCHLARS ABROAD PREDEPART
Department: University Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This class is for students completing a Rice Scholars Abroad research project. It requires acceptance into that program and permission of the instructor. Instructor Permission Required. Repeatable for Credit.

UNIV 399 - RICE SCHLARS ABROAD DIRECTED RESEARCH
Short Title: RICE SCHLARS ABROAD DIR RES
Department: University Courses
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This class is for students participating in the Rice Scholars Abroad program and is to be completed before the student goes abroad. Acceptance into that program and permission of the instructor are required. Instructor Permission Required. Repeatable for Credit.

UNIV 401 - INDEPENDENT STUDY: INTERNATIONAL EDUCATION SURVEY
Short Title: IND STUDY: INTERNATIONAL ED
Department: University Courses
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The independent study is intended for upper classmen who are considering working in the field of international education. Individualized meetings with the instructor and personalized coursework investigate ways to bridge current theoretical research in the field of international education with real-life practicalities in international education offices. Instructor Permission Required. Repeatable for Credit.

UNIV 402 - CIVIC LEADERSHIP CAPSTONE I
Short Title: CIVIC LEADERSHIP CAPSTONE I
Department: University Courses
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: UNIV 402 is a requirement for the Certificate in Civic Leadership. The course prepares students to develop and implement high-level, independent, community-based projects, and enhances students’ capacity to lead in diverse community settings. Students are required to develop a project proposal in collaboration with a community partner and faculty advisor. Instructor Permission Required.

UNIV 403 - CIVIC LEADERSHIP CAPSTONE II
Short Title: CIVIC LEADERSHIP CAPSTONE II
Department: University Courses
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): UNIV 402
Description: UNIV 403 is a requirement for the Certificate in Civic Leadership. This course requires students to implement and complete their capstone project, present their findings at a conference or symposium, and submit a final reflection paper. Students who enroll in 403 and do not graduate may be permitted to implement their project during the summer. Instructor Permission Required.
UNIV 477 - SPECIAL TOPICS  
Short Title: SPECIAL TOPICS  
Department: University Courses  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory, Internship/Practicum, Laboratory, Lecture, Seminar, Independent Study  
Credit Hours: 1-4  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

UNIV 500 - PRINCIPLES OF EFFECTIVE COLLEGE TEACHING  
Short Title: PRINCIPLES EFFECTIVE TEACHING  
Department: University Courses  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course provides an overview of essential, research-based methods used by college instructors to enhance the quality of student learning. Topics will include course and syllabus design, student engagement, classroom management, and more. This course will culminate with the development of a syllabus and a statement of teaching philosophy.

UNIV 501 - RESEARCH ON TEACHING AND LEARNING  
Short Title: RESEARCH TEACHING & LEARNING  
Department: University Courses  
Grade Mode: Standard Letter  
Course Type: Research  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course explores scholarship on teaching and learning in detail with special attention to the breadth of approaches and methodologies. The culminating project will be a literature review in an area of interest.

UNIV 502 - PRACTICUM IN COLLEGE TEACHING  
Short Title: PRACTICUM IN COLLEGE TEACHING  
Department: University Courses  
Grade Mode: Standard Letter  
Course Type: Internship/Practicum  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): UNIV 500 and UNIV 501  
Description: This practicum allows students to design and deliver teaching demonstrations and to receive feedback on their work. The course will also focus on the place of teaching in the broader landscapes of higher education and the academic job market. Because of the highly practical and interactive nature of the course, students will be asked to attend all classes.

UNIV 555 - INTER-INSTITUTIONAL TRANSFER COURSE  
Short Title: INTER-INSTITUTIONAL TRANSFER  
Department: University Courses  
Grade Mode: Transfer Courses  
Course Type: Transfer  
Credit Hours: 1-6  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course is used when a Rice student transfers coursework taken through the inter-institutional program at UH, BCM, UTHSC, TAMHSC, UTMB-Galveston. The transfer course will carry the title of the course at the respective university. Department Permission Required. Repeatable for Credit.

UNIV 594 - RESPONSIBLE CONDUCT OF RESEARCH  
Short Title: RESPONSIBLE CONDUCT - RESEARCH  
Department: University Courses  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Seminar  
Credit Hours: 1  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Responsible conduct of research (RCR) is defined as the practice of scientific investigation with integrity. It involves the awareness and application of established professional norms and ethical principles in the performance of all activities related to scientific research. (Formerly BIOC/BIOE 594)

UNIV 599 - TEACHING PORTFOLIO  
Short Title: TEACHING PORTFOLIO  
Department: University Courses  
Grade Mode: Standard Letter  
Course Type: Independent Study  
Credit Hours: 2  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): UNIV 500 and UNIV 501  
Description: This independent study serves as a capstone to the UNIV sequence on teaching and learning. Students will meet individually with the instructor to plan and complete a teaching portfolio.
UNIV 600 - INTRODUCTION TO ACADEMIC READING AND WRITING FOR INTERNATIONAL GRADUATE STUDENTS
Short Title: ACADEMIC READING AND WRITING
Department: Program Writing Communication
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course teaches fundamental academic reading and writing skills to international graduate students in the first two years of their studies. Students will learn how scholars construct arguments and use evidence to support claims, and they will practice writing texts that are relevant to their own courses and careers.

UNIV 601 - ORAL COMMUNICATION SKILLS FOR INTERNATIONAL GRADUATE STUDENTS
Short Title: ORAL COMMUNICATION SKILLS
Department: Program Writing Communication
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course provides students with strategies to improve oral communication skills necessary for academic and professional success in North American contexts. Students will learn how to overcome common and individual challenges related to pronunciation clarity, small group interactions, and formal presentations. Final projects will be related to students’ studies or research.

UNIV 602 - ADVANCED ACADEMIC WRITING FOR INTERNATIONAL GRADUATE STUDENTS
Short Title: ADVANCED ACADEMIC WRITING
Department: Program Writing Communication
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will address writing at both the macro- and micro-level, engaging students in such academic writing tasks as critiquing, reporting, and interpreting research findings, illustrating and justifying the significance of research, while also attending to mechanical topics. Writing assignments in the course will be linked to students’ studies, courses, or research. One-on-one conferences with instructors and CAPC staff will be required.

UNIV 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: University Courses
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

Visual Arts (ARTS)

ARTS 103 - CREATIVE 2-D DESIGN
Short Title: CREATIVE 2-D DESIGN
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Study of the elements and principles of design and drawing using traditional and digital means. The emphasis in the class is on a foundation to culture practice and the critical approaches to art and technology. Students will be required to participate in class discussions and critiques. This course has limited enrollment. The roster is formatted on the first day class by the instructor, who may allow additional registration for majors. It is necessary to attend the first class meeting to confirm your place on the class roster.

ARTS 165 - BEGINNING SCULPTURE
Short Title: BEGINNING SCULPTURE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Students with a class of Senior may not enroll. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction to the concepts and forms of contemporary sculpture. Exploration of materials (including plaster, clay, cardboard, fabric, wood, and found objects) and sculpture techniques such as mold making and woodworking. Shop and studios are available days and evening throughout the week. This course has limited enrollment. The roster is formalized on the first day class by the instructor, who may allow additional registration for majors. It is necessary to attend the first class meeting to confirm your place on the class roster. Seniors need a Permission of Instructor override to register.

ARTS 200 - SPECIAL PROBLEMS IN STUDIO ART I
Short Title: SPECIAL PROB IN STUDIO ART I
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Study of problems at the introductory level in creative art. Topics may vary. Please consult with your faculty advisor for additional information. This class may be used in awarding transfer credit. Instructor Permission Required. Repeatable for Credit.
ARTS 225 - BEGINNING DRAWING
Short Title: BEGINNING DRAWING
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course introduces students to the basic techniques, materials and processes of drawing. Students will explore line, tone, space, form, composition, and content through a variety of drawing assignments in dry and wet media. Students learn how to draw from direct observation. No previous drawing experience is required.

ARTS 230 - COMICS AND SEQUENTIAL ART
Short Title: COMICS AND SEQUENTIAL ART
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An introduction to the art of combining words and pictures: diverse applications such as storyboarding for stage and screen, comic books and graphic novels, and serial or multiples in a variety of media all fall under the umbrella of Sequential Art. Through instruction, demos, readings and practice, students will learn the history and implementation of linear visual narratives utilizing the Comics Art Teaching and Study Workshop as a resource. Students in this class will also participate in the construction and establishment of a permanent research center for the study of Comic Book Art within the Department of Visual and Dramatic Arts. This course has limited enrollment. The roster is formatted on the first day class by the instructor, who may allow additional registration for majors. It is necessary to attend the first class meeting to confirm your place on the class roster. Cross-list: FILM 275.

ARTS 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

ARTS 262 - ART OF DIY: PROBLEM SOLVING AND MAKING
Short Title: ART OF DIY: PROBLEM SOLVING
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The utilization of D.I.Y. (Do It Yourself) communities will be a centralized resource used to guide and complete audio work within the class. Keeping in mind the question: within contemporary society, how has the ability to produce and problem solve on an individual basis changed? The focuses of this class are to produce diverse technically proficient works of art that draw from and inform the student's current research. The class will also, during the course of the semester, build and implement a large, open-source DIY laser cutter. This course has limited enrollment. The roster is formatted on the first day class by the instructor, who may allow additional registration for majors. It is necessary to attend the first class meeting to confirm your place on the class roster. Instructor Permission Required.

ARTS 263 - ART OF DIY: PROBLEM SOLVING AND MAKING II
Short Title: ART OF DIY: PROBLEM SOLVING II
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The focus of this class will be to first build a DIY 3-D printer. We will utilize the laser cutter built in the previous DIY course to make the necessary components for the printer. We will then focus our attention on utilizing these tools to construct works of art that draw from and inform the students current research and interests. This course has limited enrollment. The roster is formatted on the first day class by the instructor, who may allow additional registration for majors. It is necessary to attend the first class meeting to confirm your place on the class roster. Instructor Permission Required.

ARTS 270 - BIG PAINTING: MATERIALS AND TECHNIQUES FOR THEATRICAL PAINTING
Short Title: BIG PAINTING FOR THEATRE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Big Painting: Materials and Techniques for Theatrical Painting will examine the materials and techniques usually associated with scenic and theatrical painting but as applied to the context of 21st century contemporary art practices. Students will learn how to make big paintings. This course has limited enrollment. The roster is formatted on the first day class by the instructor, who may allow additional registration for majors. It is necessary to attend the first class meeting to confirm your place on the class roster. Cross-list: THEA 270.
ARTS 280 - HISTORY & AESTHETICS OF FILM
Short Title: HISTORY & AESTHETICS OF FILM
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction to the art and aesthetics of film as an artifact produced within certain social contexts. Includes style, narration, mise-en-scene, editing, sound, and ideology in classical Hollywood cinema, as well as in independent, alternative, notification, and Third World cinemas. Cross-list: FILM 280, HART 280.

ARTS 294 - SPECIAL PROBLEMS IN STUDIO ART: JUNIOR FIELD TRIP
Short Title: JUNIOR FIELD TRIP
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is designed to help visual & dramatic arts majors, in their third year of study, focus on the upcoming senior year of intensive work. The destination city may be national or international and will offer students the opportunity to visit cultural centers, museums, galleries, artist studios, theaters, and participate in meetings with creative professionals in their fields of study. Travel takes place during one of the University's official recess periods. Course may not be used in awarding transfer credit. Instructor Permission Required. Mutually Exclusive: Cannot register for ARTS 294 if student has credit for ARTS 387.

ARTS 300 - SPECIAL PROBLEMS IN STUDIO ART II
Short Title: SPECIAL PROB IN STUDIO ART II
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of problems at the intermediate level in creative art. Topics may vary. Please consult with your faculty advisor for additional information. This class may be used in awarding transfer credit. Instructor Permission Required. Repeatable for Credit.

ARTS 301 - BEGINNING PAINTING
Short Title: BEGINNING PAINTING
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will give an introduction to prints and printmaking through the study of original works on paper and the opportunity to produce printed works of art. Works will include etchings, lithograph, linocut, and monoprints. Enrollment is limited. The instructor will formulate the course roster and may allow additional majors and underclassmen to enroll.

ARTS 311 - BEGINNING PRINTMAKING
Short Title: BEGINNING PRINTMAKING
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course introduces students to the basic language, tools, and materials of painting. Students will learn painting techniques and concepts, starting with painting from observation and ending with more student-directed projects. Lectures and filed trips will explore painting through an art historical context as well as a contemporary one.

ARTS 312 - RELIEF I
Short Title: RELIEF I
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARTS 225
Description: Instruction in black-and-white linoleum prints. Includes advanced color methods. This course has limited enrollment. The roster is formatted on the first day class by the instructor, who may allow additional registration for majors. It is necessary to attend the first class meeting to confirm your place on the class roster.
ARTS 314 - SCREEN PRINTING I
Short Title: SCREEN PRINTING I
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARTS 101 or ARTS 225
Description: Instruction in color screen-printing processes. Emphasis will be on figurative/narrative work with strong print experimentation. This course has limited enrollment. The roster is formatted on the first day class by the instructor, who may allow additional registration for majors. It is necessary to attend the first class meeting to confirm your place on the class roster.

ARTS 315 - LINO + MONOPRINTING
Short Title: LINO + MONOPRINTING
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARTS 101 or ARTS 225
Description: Introduction to Monotype. Includes black-and-white and color Monotype printing. This course has limited enrollment. The roster is formatted on the first day class by the instructor, who may allow additional registration for majors. It is necessary to attend the first class meeting to confirm your place on the class roster.

ARTS 320 - MONOTYPE I
Short Title: MONOTYPE I
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Includes black-and-white, color, chine-colle, and additional monotype printing techniques to produce one of a kind prints. Creative and personal imagery is emphasized.

ARTS 322 - 3-D PRINTMAKING
Short Title: 3-D PRINTMAKING
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARTS 225
Description: This course will produce 3-dimensional works utilizing the traditional and non-traditional print processes of linocut, photocopy, transfer, vinyl cutter, and monoprinting techniques. This course has limited enrollment. The roster is formatted on the first day class by the instructor, who may allow additional registration for majors. It is necessary to attend the first class meeting to confirm your place on the class roster.

ARTS 323 - DRAWING STUDIO
Short Title: DRAWING STUDIO
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARTS 225
Description: A continuation of Beginning Drawing, where students continue to investigate the concepts, materials, and possibilities of drawing. Students will explore further drawing in all its permutations, experimenting with scale, new materials, and new techniques. Assignments will continue focusing on working from life while also offering opportunities to work more subjectively.

ARTS 325 - LIFE DRAWING
Short Title: LIFE DRAWING
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARTS 101 or ARTS 225
Description: This course introduces students to drawing from the model. Students will work from short and long poses on exercises emphasizing gesture, proportion, composition, and character. A variety of media and approaches will be introduced. Homework and required visits to museums and galleries will build on what students practice in class.

ARTS 326 - COLLAGE
Short Title: COLLAGE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course introduces methods and theories of collage. Lectures, museum visits, and projects examine both the historical precedents for collage and its contemporary possibilities. Students explore collage through experimentation with diverse materials, approaches, and critiques. Students will work with frottage, photomontage, and assemblage, both independently and collaboratively.
ARTS 327 - DOCUMENTARY PRODUCTION
Short Title: DOCUMENTARY PRODUCTION
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of the expressive possibilities of documentary production using digital systems. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Cross-list: ANTH 324, FILM 327.

ARTS 328 - FILMMAKING I
Short Title: FILMMAKING I
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Dramatic film production class that requires the making of one digital video and one 16mm film. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Cross-list: FILM 328.

ARTS 329 - FILM FORM
Short Title: FILM FORM
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Viewing, analysis, and discussion of modern and classic films. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Cross-list: FILM 329.

ARTS 332 - CRITICAL STUDIES OF MULTIMEDIA ARTS
Short Title: CRITICAL STU OF MULTIMEDIA ART
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Critical Studies for Multimedia Arts is a course designed to familiarize art and non-art majors with key theories and core concepts in modern and contemporary multimedia art. Students will examine a broad spectrum of specific topics in contemporary artwork related conceptually to: space/time; bodies and performance; 'sculptural' studies in an expanded field and video & film space. This is a multi-dimensional class consisting of guest lectures, artist-speakers, and field trips to local museums, galleries and alternative art spaces. This course will include discussions on readings, writings and special projects. This promises to be a fun and thought-provoking class and is designed to enhance studio practice and encourage interest in the visual arts. Cross-list: FILM 332, FOTO 332, THEA 332.

ARTS 349 - PRINTMAKING STUDIO
Short Title: PRINTMAKING STUDIO
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Exploration of etching, lithography, photo gravure, and monoprinting. Enrollment is limited. The instructor will formulate the course roster and may allow additional majors to enroll.

ARTS 358 - GROTESQUE, IMPURE, AND HYBRID PRACTICES IN ART
Short Title: MONSTER STUDIO
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course should be taken in conjunction with Monster (HUMA 368 or BIOC 368). Topics discussed in that seminar will act as prompts for studio projects. Students will work independently and in groups on assignments addressing the monstrous in art, culminating in a final exhibition. Intended for all skill and experience levels.
ARTS 366 - SCULPTURE STUDIO  
**Short Title:** SCULPTURE STUDIO  
**Department:** Visual and Dramatic Arts  
**Grade Mode:** Standard Letter  
**Course Type:** Studio  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Study of advanced problems in various sculptural media. Limited enrollment. The roster is formulated on the first day of class by the instructor, who may allow additional registration for majors and under-classmen. It is necessary to attend the first class meeting to confirm your place on the class roster. Cross-list: ARCH 367.

ARTS 368 - PHYSICAL COMPUTING FOR ART  
**Short Title:** PHYSICAL COMPUTING FOR ART  
**Department:** Visual and Dramatic Arts  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This class will explore how we relate to other humans and our environment through digital technology. We will begin constructing projects on traditional computers; however, the projects in the class will expand beyond these confines. The class will focus on a hands-on experience of making interactive art projects, performance installations, interactive moving images, and sound within the context of contemporary art. Space in studio class is limited. Registration does not guarantee a place in class. The class roster will be formulated on the first day of class by the individual instructor. Repeatable for Credit.

ARTS 370 - OUTSIDE CONTEXT: ART, ARTISTS AND AUDIENCES BEYOND THE WHITE CUBE  
**Short Title:** OUTSIDE CONTEXT  
**Department:** Visual and Dramatic Arts  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This interdisciplinary course will explore the relationship between language, text, and the visual arts. The class will examine poet/artist collaborations, text-focused artistic movements such as Dada, Surrealism, and the early text-based works of the 1960s, along with contemporary artists and writers who push the boundaries of their fields. Field trips, readings, group discussions, and class critique will all be integral to this course. Students will develop projects, either through individual investigation or group collaboration, examining how words and images might intersect. The semester will culminate in a publication of these projects. This course has limited enrollment. The roster is formatted on the first day class by the instructor, who may allow additional registration for majors. It is necessary to attend the first class meeting to confirm your place on the class roster.

ARTS 378 - EXHIBITION DESIGN  
**Short Title:** EXHIBITION DESIGN  
**Department:** Visual and Dramatic Arts  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course will explore the world of museums and galleries through exhibition design. Students will study the curatorial process and exhibition preparation including concept development, educational goals, budget, installation, and publicity. Discussions, workshops, museum visits, and guest lectures will provide students the opportunity to gain practical experience in museum/gallery work.

ARTS 383 - STUDIO ART INTERNSHIP  
**Short Title:** STUDIO ART INTERNSHIP  
**Department:** Visual and Dramatic Arts  
**Grade Mode:** Standard Letter  
**Course Type:** Internship/PRACTICUM  
**Credit Hours:** 1-6  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course is a field-based, supervised, professional learning experience designed to enhance classroom learning. Students will be responsible for identifying and securing internship positions and must obtain permission from the department chairman and have a department faculty sponsor. All interns are required to keep an internship journal recording duties and activities; the journal will be used as the basis of a five-page paper summarizing the internship experience. Documentation of the work produced during the internship is required, portfolio, CD, DVD, etc. Instructor Permission Required. Repeatable for Credit.

ARTS 384 - TEXT AND IMAGE  
**Short Title:** TEXT AND IMAGE  
**Department:** Visual and Dramatic Arts  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This interdisciplinary course will explore the relationship between language, text, and the visual arts. The class will examine poet/artist collaborations, text-focused artistic movements such as Dada, Surrealism, and the early text-based works of the 1960s, along with contemporary artists and writers who push the boundaries of their fields. Field trips, readings, group discussions, and class critique will all be integral to this course. Students will develop projects, either through individual investigation or group collaboration, examining how words and images might intersect. The semester will culminate in a publication of these projects. This course has limited enrollment. The roster is formatted on the first day class by the instructor, who may allow additional registration for majors. It is necessary to attend the first class meeting to confirm your place on the class roster.
ARTS 387 - JUNIOR PROFESSIONAL PRACTICES SEMINAR AND FIELD TRIP
Short Title: JUNIOR SEMINAR
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Description: This seminar is to help majors in the Department of Visual and Dramatic Arts establish a frame of reference for professional practices in the fields of Studio Art, Film/Photography and Theater. Instructor Permission Required. Mutually Exclusive: Cannot register for ARTS 387 if student has credit for ARTS 294.

ARTS 388 - CRITICAL STUDIES FOR STUDIO PRACTICE
Short Title: CRIT STUDIES STUDIO PRACTICE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Critical Studies for Studio Practice is a course designed to familiarize art and non-art majors with key theories and concepts in modern and contemporary art. This is a multi-dimensional class consisting of guest lectures, artist-speakers, and art field trips to local museums, galleries, and alternative art spaces. The course will include discussions on readings, writing, and special projects. This promises to be a fun and thought-provoking class and is designed to enhance studio practice and encourage interest in the visual arts.

ARTS 396 - SPEC PROBLEMS: MOBILE ARTS PROJECT
Short Title: SPEC PROB: MOBILE ARTS PROJECT
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The focus of this special problems/independent study class will be on the practical conversion of a 30' transit bus into a multi-purpose mobile arts platform. Students will work one-on-one with Professor Sperandio and visiting artists on the development and fabrication of a variety of mechanical systems, including HVAC, electrical and plumbing. Participants will develop a more comprehensive understanding of alternative art practices through targeted readings and discussions, as well as participate in the development of new uses for this mobile arts space once it’s completed. This project is funded in part by the Humanities Research Center, Rice Office of Parking and Transportation, and the Department of Visual and Dramatic Arts. Instructor Permission Required. Repeatable for Credit.

ARTS 400 - SPECIAL PROBLEMS IN STUDIO ART III
Short Title: SPECIAL PROB IN STUDIO ART III
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of problems at the advanced level in creative art. Topics may vary. Please consult with your faculty advisor for additional information. This class may be used in awarding transfer credit. Instructor Permission Required. Repeatable for Credit.

ARTS 401 - PAINTING STUDIO
Short Title: PAINTING STUDIO
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARTS 301
Description: A continuation of practices and concepts introduced in Beginning Painting. Individual expression will be encouraged through a series of assignments that explore scale, subject matter, and process. Experimentation in different, painterly media will be encouraged. Students will continue to learn how to discuss painting through in-class critique. Mutually Exclusive: Cannot register for ARTS 401 if student has credit for ARTS 303.

ARTS 425 - ADVANCED DRAWING
Short Title: ADVANCED DRAWING
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ARTS 225 or ARTS 101) and (ARTS 323 or ARTS 325)
Description: This advanced course uses students to further uncover and articulate the possibilities of drawing. Students will continue to learn drawing techniques while developing their own individual drawing vocabularies. Assignments will be more open in structure, allowing the opportunity for more individually driven projects, specific to each student’s interests.

ARTS 428 - FILMMAKING II
Short Title: FILMMAKING II
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: 16mm film production course utilizing handmade cinema techniques. Space in class is limited. Registration does not guarantee a place in class. The class roster is formulated the first day of class by the individual instructor. Cross-list: FILM 428.
ARTS 430 - ARTS RESEARCH AND PRACTICE  
Short Title: ARTS RESEARCH AND PRACTICE  
Department: Visual and Dramatic Arts  
Grade Mode: Standard Letter  
Course Type: Research  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Independent Study with a faculty member in Visual and Dramatic Arts in a specified art practice and field of research. The student will devise and work upon a chosen artistic practice. Instructor Permission Required.  

ARTS 432 - FILM GENRE: THE WESTERN  
Short Title: FILM GENRE: THE WESTERN  
Department: Visual and Dramatic Arts  
Grade Mode: Standard Letter  
Course Type: Seminar  
Distribution Group: Distribution Group 1  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Survey of the essential American film experience spanning all the years of U.S. cinema, with emphasis on the western and its mythic function in society. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Cross-list: FILM 432.  

ARTS 435 - SEMINAR ON FILM AUTHORSHIP: THE NEW HOLLYWOOD  
Short Title: SEMINAR ON FILM AUTHORSHIP  
Department: Visual and Dramatic Arts  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 4  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: This seminar covers the concept of authorship in Hollywood cinema since 1968. Topics include: the auteur theory, biography, voice, the implied author, intention, and others. Cross-list: FILM 435, HART 480.  

ARTS 444 - HANDMADE FILM  
Short Title: HANDMADE FILM  
Department: Visual and Dramatic Arts  
Grade Mode: Standard Letter  
Course Type: Studio  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: 16mm film production course utilizing handmade cinema techniques, 4 required 16mm films made using surface treatments, shooting with a 16mm film camera, hand developing, classic animation, crating soundtracks and digital editing. Space in class is limited. Registration does not guarantee a place in class. Cross-list: FILM 444.  

ARTS 447 - SPECIAL PROBLEMS IN LIFE DRAWING  
Short Title: SPECIAL PROBLEMS IN LIFE DRAWING  
Department: Visual and Dramatic Arts  
Grade Mode: Standard Letter  
Course Type: Independent Study  
Credit Hours: 3-6  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Study of advanced problems in creative art. Topics may vary. Please consult with the department for additional information. May be used in awarding transfer credit. Prerequisite: permission of instructor. Instructor Permission Required. Repeatable for Credit.  

ARTS 449 - PRINTMAKING STUDIO  
Short Title: ADVANCED PRINTMAKING  
Department: Visual and Dramatic Arts  
Grade Mode: Standard Letter  
Course Type: Studio  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): ARTS 311 and ARTS 349  
Description: Advanced exploration of etching, lithography, photo gravure, and monoprinting. Enrollment is limited. The instructor will formulate the course roster and may allow additional majors to enroll.  

ARTS 450 - SPECIAL PROBLEMS IN PRINTMAKING  
Short Title: SPECIAL PROBLEMS IN PRINTMAKING  
Department: Visual and Dramatic Arts  
Grade Mode: Standard Letter  
Course Type: Independent Study  
Credit Hours: 1-6  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Study of advanced problems in creative art. Topics may vary. Please consult with the department for additional information. May be used in awarding transfer credit. Instructor Permission Required. Repeatable for Credit.  

ARTS 457 - SPECIAL PROBLEMS IN SCULPTURE  
Short Title: SPECIAL PROBLEMS IN SCULPTURE  
Department: Visual and Dramatic Arts  
Grade Mode: Standard Letter  
Course Type: Independent Study  
Credit Hours: 1-6  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Description: Study of advanced problems in creative art. Topics may vary. Please consult with the department for additional information. May be used in awarding transfer credit. Instructor Permission Required. Repeatable for Credit.
ARTS 460 - ADVANCED COMPUTER GRAPHICS
Short Title: ADV COMPUTER GRAPHICS
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This project-based class involves teams of 2-4 CS and Visual Arts students designing and building computer games suitable for Xbox Live Arcade using C# and XNA. For CS students, COMP 160 or COMP 360 is recommended as a prerequisite. For Visual Arts students, previous experience in drawing using Photoshop is suggested. Instructor Permission Required. Cross-list: COMP 460. Course URL: www.owlnet.rice.edu/~comp460 (http://www.owlnet.rice.edu/~comp460/)

ARTS 465 - ADVANCED SCULPTURE
Short Title: ADVANCED SCULPTURE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARTS 165 or ARTS 365
Description: Study of advanced problems in various sculptural media. This course has limited enrollment. The roster is formatted on the first day class by the instructor, who may allow additional registration for majors. It is necessary to attend the first class meeting to confirm your place on the class roster.

ARTS 475 - ADVANCED PAINTING
Short Title: ADVANCED PAINTING
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARTS 301 and (ARTS 303 or ARTS 401)
Description: Students will further advance their painting skills while beginning to develop a personal painting vocabulary. Students will have the opportunity to experiment with new materials, at new scales, and with new subject matter. Assignments will be more open in structure, allowing for more individually driven projects, specific to student interest.

ARTS 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory, Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

ARTS 494 - SPECIAL PROBLEMS IN PRINTMAKING
Short Title: SPECIAL PROBLEMS PRINTMAKING
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Study of advanced problems in creative art. Topics may vary. Please consult with the department for additional information. May be used in awarding transfer credit. Prerequisite: permission of instructor. Instructor Permission Required. Repeatable for Credit.

ARTS 499 - SENIOR STUDIO
Short Title: SENIOR STUDIO
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Senior. Enrollment is limited to students with a major in Visual and Dramatic Arts. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Required seminar for all studio track majors. This course is designed to guide the senior major in focused preparation of their work of the annual senior exhibition. Classes will consist of lectures, visits and critiques by artists and curators, and intensive independent studio work. Prerequisites: Students must receive permission from their faculty advisor or department chair to register for this class; only department majors who have senior academic standing will be allowed to register for this course. Department Permission Required. Repeatable for Credit.

Women, Gender, & Sexuality (SWGS)

SWGS 101 - INTRODUCTION TO WOMEN & GENDER
Short Title: INTRO WOMEN & GENDER
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction to the Study of Women, Gender, and Sexuality- An introductory survey of issues in the study of gender, such as women’s social, political, and legal status in the US and globally; feminist perspectives on sexuality, race, the body, globalization, labor, culture; and the implications of these perspectives for social and critical theory. The course also introduces the concept of engaged research and the public service components of feminist activity.
SWGS 111 - INTRODUCTION TO FEMINIST PHILOSOPHY  
Short Title: INTRO TO FEMINIST PHILOSOPHY  
Department: Stdy of Women, Gender, & Sxltiy  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: Feminist philosophy both uses philosophical methods to investigate feminism, and critiques philosophy from a feminist perspective. This course introduces the student to feminist philosophy from historical and contemporary perspectives, investigating topics of both feminist and philosophical interest such as gender, sexuality, family, class, race, equality, justice, politics, science, and knowledge. Cross-list: PHIL 111.

SWGS 201 - INTRODUCTION TO LESBIAN, GAY, BISEXUAL, AND TRANSGENDER STUDIES  
Short Title: INTR LESBIAN, GAY, BISEX&TRAN  
Department: Stdy of Women, Gender, & Sxltiy  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: An introduction to Lesbian, Gay, Bisexual, & Transgender Studies - An introduction to the interdisciplinary examination of sexual desires, sexual orientations, and the concept of sexuality, with a focus on the construction of lesbian, gay, bisexual, and transgender identities. The course looks at how identities interact with other social phenomena such as government, family, popular culture, scientific inquiry, and especially gender, and highlights the complexity and variability of sexualities of both across historical periods and in relation to race, class, ethnicity and nation. The course also introduces the concept of engaged research and the public service component of LGBT activity.

SWGS 205 - LANGUAGE AND SOCIETY  
Short Title: LANGUAGE AND SOCIETY  
Department: Stdy of Women, Gender, & Sxltiy  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group II  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: This course treats language as a social phenomenon to show how language, personal identity and institutions of social control inter-relate. The course focuses on linguistic interaction in daily life and how gender, ethnic, class, activity, and geographic variation affect language use. Cross-list: LING 205.

SWGS 234 - U.S. WOMEN'S HISTORY I: COLONIAL BEGINNINGS TO THE CIVIL WAR  
Short Title: U.S. WOMEN'S HISTORY, I  
Department: Stdy of Women, Gender, & Sxltiy  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: Survey of American women's history examines the lives of elite, working, black, Indian and white women, and traces changes in women's legal, political, and economic status from the mid-17th century through the Civil War. Topics include slavery, suffrage, sexuality, and feminism. Cross-list: HIST 241.

SWGS 235 - U.S. WOMEN'S HISTORY II: CIVIL WAR TO THE PRESENT  
Short Title: U.S. WOMEN'S HISTORY, II  
Department: Stdy of Women, Gender, & Sxltiy  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: Survey of American women's history examines the lives of black, Asian American, Chicana, Native American, and white women, and traces changes in women's legal, political, and economic status from the Civil War to the present. Topics include suffrage, anti-lynching, welfare, birth control, and the modern civil rights and feminist movements. Cross-list: HIST 242.

SWGS 238 - SPECIAL TOPICS  
Short Title: SPECIAL TOPICS  
Department: Stdy of Women, Gender, & Sxltiy  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory, Internship/Practicum, Seminar, Lecture, Laboratory  
Credit Hours: 1-4  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

SWGS 250 - SEX, MONEY, AND POWER AROUND THE WORLD  
Short Title: SEX, MONEY, AND POWER  
Department: Stdy of Women, Gender, & Sxltiy  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: An interdisciplinary course exploring lives and well-being in the context of gendered international and domestic politics and economic processes. Emphasis on the implications of power relations at levels from the household to the global for women and men around the world (with particular attention to Asia). Cross-list: ASIA 251, POLI 250.
SWGS 273 - MEDICINE AND MEDIA  
**Short Title:** MEDICINE AND MEDIA  
**Department:** Stdy of Women, Gender, & Sxly  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Lower-Level  
**Description:** An interdisciplinary exploration of the role of imaging technologies in the practice of medicine, and the role of mass media in shaping our understandings of the body, health, and disease. This course examines visual media structure 'ways of seeing' for physicians and for the public. Emphasis will be placed on developing media literacy skills.  
Cross-list: ENGL 273.  
**Course URL:** [www.english.rice.edu](http://www.english.rice.edu)  

SWGS 301 - ARTHURIAN LITERATURE  
**Short Title:** ARTHURIAN LITERATURE  
**Department:** Stdy of Women, Gender, & Sxly  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** A survey of the origins and development of the Arthurian legend from the earliest chronicles in the sixth century and later medieval French, Welsh, Irish, and English Arthurian poems to modern adaptations of Arthurian material, including films. Cross-list: ENGL 317, MDEM 317.  

SWGS 303 - GENDER AND SCIENCE  
**Short Title:** GENDER AND SCIENCE  
**Department:** Stdy of Women, Gender, & Sxly  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course introduces students to the historical, philosophical and social dimensions of science and technology through the lens of feminist and gender studies. It will explore the ways in which science has factored in producing cultural norms for gender and race, disability, sexuality, and geography. The course will include sharing food with one another, going on field trips, and participating in an engaged food justice project. Repeatable for Credit.  

SWGS 305 - CHAUCER  
**Short Title:** CHAUCER  
**Department:** Stdy of Women, Gender, & Sxly  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** An introduction to Geoffrey Chaucer’s The Canterbury Tales, Middle English, and the political and cultural climate of the fourteenth century. Cross-list: ENGL 316, MDEM 316.  

SWGS 306 - HUMAN SEXUALITY  
**Short Title:** HUMAN SEXUALITY  
**Department:** Stdy of Women, Gender, & Sxly  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course is designed to explore the physiological, psychological, and sociological parameters of human sexuality, while providing accurate information and helping students develop healthy attitudes toward sexuality. Cross-list: HEAL 306.  

SWGS 308 - THE FUTURE OF FOOD: FEMINIST, QUEER, AND CRITICAL APPROACHES  
**Short Title:** FOOD FEMINIST QUEER APPROACHES  
**Department:** Stdy of Women, Gender, & Sxly  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course examines food studies, food movements, and food politics through feminist, queer, and critical approaches, analyzing throughout the course food's relationships to gender, class, race, disability, sexuality, and geography. The course will include sharing food with one another, going on field trips, and participating in an engaged food justice project. Repeatable for Credit.  

SWGS 315 - GENDER AND ISLAM  
**Short Title:** GENDER AND ISLAM  
**Department:** Stdy of Women, Gender, & Sxly  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Explores the lives of Muslim women in Asia, the Middle East, Europe, and North America; analyzes constructions of gender in the Islamic world overtime; the challenges faced from such diverse quarters as colonial administrators, Western feminists, and states; as well as movements and individuals within the Muslim world. Cross-list: ASIA 315, RELI 315.  

SWGS 317 - TRANSGENDER STUDIES  
**Short Title:** TRANSGENDER STUDIES  
**Department:** Stdy of Women, Gender, & Sxly  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course surveys the evolving category of transgender in global context with a specific focus on the United States. Drawing on medicine, history, law, anthropology, cultural studies, women’s studies, and sexuality studies, participants will explore the contested meanings of “transgender” and related terms like “non-binary” and “gender non-conforming.” Instructor Permission Required. Recommended Prerequisite(s): SWGS 101 or SWGS 201.
SWGS 318 - ISRAELI WOMEN WRITERS
Short Title: ISRAELI WOMEN WRITERS
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: In the last 25 years there has been an explosion of women’s poetry and fiction in Israel. In this course we will explore Israeli women's writing since the inception of the state of Israel and examine what the work of contemporary women writers means for Israeli culture, society, and politics. Cross-list: JWST 318.

SWGS 319 - FEMINIST PHILOSOPHY
Short Title: FEMINIST PHILOSOPHY
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course is an introduction to feminist philosophy, including texts by both historical and contemporary thinkers (e.g. Wollstonecraft, Mill, de Beauvoir, MacKinnon, Gilligan, Irigaray). We shall discuss both feminists’ radical critiques of traditional values and beliefs, and feminist alternative views of justice, ethical judgment, and truth. Cross-list: PHIL 319.

SWGS 320 - GENDER, SEXUALITY AND THE ADAPTATION OF TRANSNATIONAL LITERATURE TO PERFORMANCE
Short Title: GENDER AND PERFORMANCE
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines the embodiment of gender and sexuality through the oral interpretation of transnational literature. Students will learn how to analyze and adapt to performance novels and short stories from various global and historical contexts that exemplify the genre of the ‘coming of age’ narrative. Cross-list: THEA 320.

SWGS 321 - EXHIBITING SEXUALITIES
Short Title: EXHIBITING SEXUALITIES
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This class investigates how sexuality has been constructed, avoided, celebrated, and suppressed in museums. In addition to studying a genealogy of sexual display and spectatorship in museums, students will also do the work of collectors, curators, and critics of artistic, historical, and scientific displays of sex and sexuality. Cross-list: HART 399.

SWGS 324 - SOCIOLOGY OF GENDER
Short Title: SOCIOLOGY OF GENDER
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will teach students the important influences and consequences of American family life. We will consider issues such as sex and sexualities, marriage and cohabitation, divorce, family structure, same-sex marriage, domestic violence, and household labor. We will also examine the role of social institutions and social inequality in shaping family norms and constraints on family behaviors. Cross-list: SOCI 334.

SWGS 327 - TOPICS IN WOMEN WRITERS
Short Title: TOPICS IN WOMEN WRITERS
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A variable topics course that focuses on women from various traditions. Cross-list: ENGL 381. Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

SWGS 329 - THE AMERICAN WEST AND ITS OTHERS
Short Title: THE AMERICAN WEST & ITS OTHERS
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Survey of a body of literature, film, and critical theory about the American West and the concept of regionalism. Explores region in relation to the nation and its borders, global media, coloniality, indignity and race, gender, and an ethics of place. Cross-list: ENGL 369.
Course URL: www.english.rice.edu (http://www.english.rice.edu)
SWGS 331 - PSYCHOLOGY OF GENDER
Short Title: PSYCHOLOGY OF GENDER
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Overview of research and theory on gender in psychology. Cross-list: PSYC 331.

SWGS 332 - SEX, SELF, AND SOCIETY IN ANCIENT GREECE
Short Title: SOCIETY IN ANCIENT GREECE
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An introductory venture into conducting fieldwork in the past. The course treats a wide range of artifacts, from philosophical essays to vase paintings. It derives its focus from a rich corpus of recent research into the ancient problemization of desire and self-control. Cross-list: ANTH 325.

SWGS 333 - MASCULINITIES
Short Title: MASCULINITIES
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course deals with masculinities in the West, concentrating on concepts of masculine protagonism and personhood. Readings explore identities constructed in realms such as law, politics, finances, art, the home, and war. Cross-list: ANTH 311.

SWGS 336 - THE ANTHROPOLOGY OF THE HISTORICAL IMAGINATION
Short Title: THE HISTORICAL IMAGINATION
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores ideas of history and attitudes toward the past as culturally conditioned phenomena. Emphasizes history as a statement of cultural values as well as conceptualizations of cause, change, time, and reality. Cross-list: ANTH 308.

SWGS 338 - 19TH CENTURY WOMEN'S NARRATIVES
Short Title: 19TH C. WOMEN'S NARRATIVES
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines the experiences of women in the United States during the nineteenth century through first-hand accounts and scholarly readings. Students will ready a variety of materials to explore the social and legal status of women and consider the impact of race on women's lives. Cross-list: HIST 338.

SWGS 343 - JANE AUSTEN'S WORLDS
Short Title: JANE AUSTEN'S WORLDS
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An exploration of Jane Austen as Regency writer and contemporary icon. The course will focus both on Austen's writing her novels, her juvenilia and her letters and on visual and textual adaptations of her work. Cross-list: ENGL 343.

SWGS 345 - HISTORY OF FEMINISM
Short Title: HISTORY OF FEMINISM
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Explores feminism as political thought and social movement in various times and places. Readings will include classic as well as non-canonical texts. We will consider the historical contexts of feminist action, and examine controversies over and within feminisms. Cross-list: HIST 340.

SWGS 346 - SEMINAR ON LOVE: MAKING LOVE IN MODERN ART AND THOUGHT
Short Title: MAKING LOVE IN MODERN ART
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar explores various conceptions of love from the classical era to our postmodern age. Ranging from eros to philia to agape, we will examine literary, philosophical, and artistic expressions of love in painting, cinema, literature, psychoanalysis, philosophy, religion, and culture. Cross-list: HART 346.
SWGS 348 - SEX AND GENDER IN MODERN JEWISH CULTURE
Short Title: SEX & GENDER IN JEWISH CULTURE
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: How has Jewish identity historically been constructed as gendered, and how has that affected Jewish self-perception and representation as well as the representations of others? This course explores the intersection between gender and Jewishness from several different historical and cultural perspectives, using literature, film, and philosophy. Cross-list: JWST 348. Mutually Exclusive: Cannot register for SWGS 348 if student has credit for RELI 347/SWGS 347.

SWGS 353 - ILLNESS, DISABILITY, AND THE GENDERED BODY
Short Title: DISABILITY AND GENDERED BODIES
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course draws on critical disability studies and medical anthropology to explore how gender and sexuality matter in contexts of illness and disability across a range of institutional, social, and national contexts. We pay particular attention to the ways illness and disability expose, disturb, or retrench normative arrangements of gender. Cross-list: ANTH 354. Graduate/Undergraduate Equivalency: SWGS 554. Mutually Exclusive: Cannot register for SWGS 353 if student has credit for SWGS 554.

SWGS 354 - CHICANO/A LITERATURE
Short Title: CHICANO/A LITERATURE
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A mixed-genre course focusing on the Chicano movement, the Chicano renaissance, and alternative literary and mythic traditions associated with them. Cross-list: ENGL 371, SPPO 354.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

SWGS 361 - NEW GERMAN FILM: HITLER’S CINEMATIC CHILDREN
Short Title: NEW GERM FILM: HITLER’S CINEMA
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: From the 1960 to 2000, Germany has developed a very distinct auteur cinema with independent filmmakers such as Fassbinder, Herzog, Wenders, Adlon, Trotta, Sander, Brueckner, Doerrie, Garnier, Tykwr, and others. The first 20 years of German film were oriented on coming to terms with the fascist past; the second 20 years focused on more contemporary issues. Film, critical reading and class discussion in English. All films are subtitled in English and will be assessed with podium technology. Taught in English. Cross-list: GERM 338, HUMA 373.

SWGS 364 - QUEER LITERARY CULTURES
Short Title: QUEER LITERARY CULTURES
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An introduction to queer literary theory by reading works in several genres, from Sappho to the present day, including Shakespeare, Dickinson, Tennyson, Whitman, Proust, Stein and Woolf. Cross-list: ENGL 354.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

SWGS 370 - AFRICAN AMERICAN LITERATURE
Short Title: AFRICAN AMERICAN LITERATURE
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A course that traces, through various genres and themes, African American literary history from the late eighteenth century to the present. Attention is given to theories and critiques of African American literature and culture. Cross-list: ENGL 370.
Course URL: www.english.rice.edu (http://www.english.rice.edu)
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Short Title: SEXUAL DEBATES IN U.S.
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: How do sex acts and sexualities enter public conversations over time? This course surveys a variety of sexual debates in the United States with a focus on the social and cultural contacts and the legacies of those debates. Topics vary, but examples include miscegenation, obscenity, abortion and sodomy.

SWGS 389 - YOUTH STUDIES
Short Title: YOUTH STUDIES
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A variable topics course exploring the cultural productions of youth, their social geographies, and youth as a critical field important to the theorization of activism, technology, law and incarceration, reproductive politics, sexuality, consumerism, citizenship, environment. Previous topics have included sexualities, Marriage and Its Others, and Third Wave Feminism. Cross-list: ENGL 389. Repeatable for Credit.

Course URL: [www.english.rice.edu](http://www.english.rice.edu)

SWGS 390 - TRENDS IN HISPANIC CINEMA
Short Title: TRENDS IN HISPANIC CINEMA
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines the ways in which films in both Spain and Latin America have represented the cultural contexts of their countries. Focus is on the theme of power, and the consequences on social and individual lives. Cross-list: SPPO 385. Recommended prerequisite(s): Third-year Spanish or permission of instructor.

SWGS 393 - SCIENCE, FEMINISM AND CHRISTIANITY IN THE AMERICAN 20TH CENTURY
Short Title: SCIENCE/FEMINISM/CHRISTIANITY
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines a history of sex and gender at the intersection of American science and American Christianity over the past century. Students will be invited to interrogate the boundaries between scientific and religious discourse as they investigate how these have interacted in producing sex and gender identity.

SWGS 398 - FREEDOM OF SPEECH
Short Title: TOPICS IN LEGAL HISTORY
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Course on selected topics in legal history. Cross-list: HIST 398.

SWGS 399 - WOMEN IN CHINESE LITERATURE
Short Title: WOMEN IN CHINESE LITERATURE
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course examines women's roles in Chinese literature as writers, readers, and characters, focusing particularly on the tension between women's lived bodily experiences and the cultural experiences inscribed on the female body and how, in the process, women have contrarily gendered patriarchal culture into their own. It will also touch on Chinese women's incorporation of the Western Tradition. Cross-list: ASIA 399, MDEM 379.

SWGS 407 - FEMINIST STUDIES
Short Title: FEMINIST STUDIES
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A variable topics course designed to build on student knowledge of feminist theory gained earlier in the curriculum. Past topics have included sexualities, Marriage and Its Others, and Third Wave Feminism. Cross-list: ENGL 481. Repeatable for Credit.
SWGS 415 - SOCIOLINGUISTICS
Short Title: SOCIOLINGUISTICS
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 301 or ANTH 301 or LING 311 or ANTH 323 or LING 501 or ANTH 501 or LING 511 or ANTH 523
Description: This course covers contemporary sociolinguistic theory and methodologies. We examine the linguistic consequences to speakers of their group memberships such as gender, race, class and sexuality. Cross-list: LING 415.

SWGS 424 - WOMEN IN FRANCE
Short Title: WOMEN IN FRANCE
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course studies women in education, the workplace, politics, and in social and cultural institutions in French society. The class explores the history of the French women's movement and analyzes French concepts of gender and feminism in comparison to American models. Effective May 15, 2019, this course does not carry D1 credit. Cross-list: FREN 424.

SWGS 434 - SEEING SEX IN EUROPEAN ART, 1400-1700
Short Title: SEEING SEX IN EUROPEAN ART
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will examine the visual history of sexuality from 1400-1700. It will explore how imagery structured sexual desire; the role of erotic sacred art; the rise of pornography; the intersection of spatial topography and sexuality; the linkage of licit and illicit sexualities; and the sexuality of artist and patrons. Cross-list: HART 434, MDEM 434. Graduate/Undergraduate Equivalency: SWGS 534. Mutually Exclusive: Cannot register for SWGS 434 if student has credit for SWGS 534.

SWGS 449 - CULTURES OF SEXUALITY
Short Title: CULTURES OF SEXUALITY
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: What is ‘sexuality’ across cultural milieux? This course analyzes understandings and practices of sexuality from a global, comparative perspective, including different social configurations of gender and intimacy, reproduction, sensuality and the erotic. Case studies explore the complex relationships between sexuality and gender, ethnicity, nationalism, globalization, commodification, politics, media, health and medicine. Cross-list: ANTH 449.

SWGS 453 - STUDIES IN AFRICAN AMERICAN LITERATURE
Short Title: AFRICAN AMERICAN STUDIES
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A variable topics course designed to build on student knowledge of African American literature gained earlier in the curriculum. Recent topics include Black Women Writers. Cross-list: ENGL 470. Repeatable for Credit.

SWGS 465 - GENDER AND HEALTH
Short Title: GENDER AND HEALTH
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar explores the relationship between gender and health (longevity, physical illness and functioning, mental health, and health behavior). Specific topics include masculinity, disease expression, medical research, health care use, stress and social relationships, and intersectionality (race/ethnicity and sexuality) as they relate shaping health outcomes among men and women. Cross-list: SOCI 465.

SWGS 466 - LATIN AMERICAN WOMEN'S CULTURE
Short Title: LATIN AMERICAN WOMEN'S CULTURE
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Studies the cultural production (literary, artistic, cinematic) of intellectual women in Latin America. Examines the struggles for interpretive power in works by women from the colonial period to the present. Cross-list: SPPO 430.
SWGS 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

SWGS 494 - PRE-SEMINAR IN ENGAGED RESEARCH
Short Title: PRE-SEMINAR: ENGAGED RESEARCH
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course prepares students for the Spring semester and practicum sequence (496 and 497) by establishing a baseline of skills in research design and filing paperwork with the Institutional Review Board at Rice and elsewhere as needed.

SWGS 495 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Open to SWGS majors only. Instructor Permission Required.

SWGS 496 - ENGAGED RESEARCH PRACTICUM
Short Title: ENGAGED RESEARCH PRACTICUM
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An applied research complement to the Seminar consisting of six hours/week participating in a research-based project at a local public service agency that addresses the needs of women or is focused on gender and/or sexuality related work. Planning for the practicum takes place during the previous fall semester in consultation with the SWGS Director. Practicum projects are presented to a public audience. Permission of the instructor and some background in the study of women, gender or sexuality required.

SWGS 497 - ENGAGED RESEARCH SEMINAR
Short Title: ENGAGED RESEARCH SEMINAR
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Taken in conjunction with SWGS 496, the Seminar develops students' research skills and situates the practicum project within a range of perspectives on feminist theory and practice, grassroots organizing, and policy-making around the issues of women, gender, and sexuality, for example, domestic violence, gender and the prison industry, reproductive freedom, the feminization of AIDS. Permission of the instructor and some background in gender or sexuality studies are required.

SWGS 498 - RESEARCH IN THE STUDY OF WOMEN GENDER SEXUALITY
Short Title: RES STUDY WOMEN GENDER SXLYT
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Research seminar for SWGS seniors to fulfill capstone requirement. Open to SWGS majors only.

SWGS 499 - RESEARCH IN THE STUDY OF WOMEN GENDER SEXUALITY
Short Title: RES STUDY WOMEN GENDER SXLYT
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Research seminar for SWGS seniors to fulfill capstone requirement. Open to SWGS majors only. Instructor Permission Required.

SWGS 501 - FEMINIST DEBATES
Short Title: FEMINIST DEBATES
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course identifies and traces three streams of thought by debates about major issues in women's studies. While the content of these streams will vary the course will always be attentive to the historical and theoretical context of the debates in question and to the intersection of these debates with others. Topics might include: public and private spheres; the relation between the local and the global links between gender and sexuality; the problem of identity; the relation between activist and academic feminism.
SWGS 502 - GENDER, THE DISCIPLINES, AND INTERDISCIPLINARITY
Short Title: GENDER, DISCIPL. & INTERDISCIP
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): SWGS 501
Description: Structured as a workshop, this course offers SWGS certificate students critically to engage cross-disciplinary feminist scholarship as they integrate the study of women, gender and/or sexuality into their doctoral writing by transforming existing papers into works that are of publishable quality.

SWGS 503 - DIRECTED READING
Short Title: DIRECTED READING
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Directed reading under the supervision of a SWGS faculty member with permission of the instructor. May count only once toward major requirements. Instructor Permission Required.

SWGS 534 - SEEING SEX IN EUROPEAN ART, 1400-1700
Short Title: SEEING SEX IN EUROPEAN ART
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Cross-list: HART 534. Graduate/Undergraduate Equivalency: SWGS 434. Mutually Exclusive: Cannot register for SWGS 534 if student has credit for SWGS 434.

SWGS 542 - VICTORIAN FICTION
Short Title: VICTORIAN FICTION
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Please consult the English department website for additional information. Recent topics have included 'The Victorian Marriage Plot', 'The History of the Novel, Part II'; and 'Victorian and Modern Sexualities'. Cross-list: ENGL 542. Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

SWGS 546 - SPECIAL TOPICS: 20TH CENTURY BRITISH LITERATURE
Short Title: SP 20TH CENTURY BRITISH LIT
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Cross-list: ENGL 546. Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

SWGS 554 - ILLNESS, DISABILITY, AND THE GENDERED BODY
Short Title: DISABILITY AND GENDERED BODIES
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course draws on critical disability studies and medical anthropology to explore how gender and sexuality matter in contexts of illness and disability across a range of institutional, social, and national contexts. We pay particular attention to the ways illness and disability expose, disturb, or retrench normative arrangements of gender. Cross-list: ANTH 554. Graduate/Undergraduate Equivalency: SWGS 353. Mutually Exclusive: Cannot register for SWGS 554 if student has credit for SWGS 353.

SWGS 556 - SEMINAR IN SOCIOLINGUISTICS
Short Title: SEMINAR IN SOCIOLINGUISTICS
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate.
Course Level: Graduate
Prerequisite(s): LING 415
Description: This course will examine the concepts of social class and community of practice in depth as they relate to sociolinguistic variation. Specific attention will be paid to how these concepts are treated in the field of linguistics, as well as complimentary fields such as sociology and anthropology. Cross-list: LING 556.

SWGS 581 - CULTURAL STUDIES: CONTEMPORARY LITERATURE, CULTURE AND POLITICS
Short Title: CONTEMLIT., CULTURE & POLI
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Please consult the English department website for additional course information. Recent topics have included Contemporary Issues in U.S. Culture and Studies in Sexuality. Thinking Sex Under Neo-Liberalism. Cross-list: ENGL 581. Repeatable for Credit.
Course URL: www.english.rice.edu (http://www.english.rice.edu)
SWGS 585 - POSTCOLONIALISM AND BEYOND
Short Title: POSTCOLONIALISM AND BEYOND
Department: Stdy of Women, Gender, & SxltY
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A course that serves both as an introduction to postcolonial theory and as a reevaluation of its political and ethical ends vis-a-vis recent debates around globalization and cosmopolitanism. For additional course information please consult the English department website. Cross-list: ENGL 585.
Course URL: www.english.rice.edu (http://www.english.rice.edu)

SWGS 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Stdy of Women, Gender, & SxltY
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar, Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.
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Vice Provost and University Librarian  Sara Lowman  
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**Administrative and Enterprise Systems & Services (OIT)**  Randy Castiglioni  
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**Counseling Center**  Timothy Baumgartner  
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**Emergency Medical Service (EMS)**  Lisa Basgall  
**Environmental Health and Safety**  Kathryn Cavender  
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**Information Security (OIT)**  Marc Scarborough  
**Institutional Effectiveness and Institutional Research**  John M. Cornwell  
**International Students and Scholars**  Adria Baker  
**Multicultural Affairs**  Catherine E. Clack  
**News and Media Relations**  Doug Miller  
**Payroll Office**  Kim Parr  
**Police Department (RUPD)**  James Tate  
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**Risk Management**  Renee Block  
**Sponsored Research & Research Compliance (SPARC)**  Krystal Toups  
**Student Center and Student Activities**  E. Kate Abad  
**Student Health**  Jessica McKelvey  
**Student Judicial Programs**  Emily Garza  
**Student Wellbeing**  Agnes Ho  
**Study Abroad**  Beata Loch  
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*PDF Generated 1/29/2020*
Faculty

Aazzhang, Behnaam, 1985. J.S. Abercrombie Professor of Electrical and Computer Engineering  

Abdullah, Kenneth, C., 2017. Lecturer of Earth, Environmental and Planetary Sciences  
BSc (1978) University of the West Indies; PhD (1995) Rice University

Aboouzaid, Shaimaa, 2019. Lecturer of Arabic  
BA (2006), Pre-MS (2007) Cairo University, Egypt

Abreu, Vitor dos Santos, 2000. Adjunct Professor of Earth, Environmental and Planetary Sciences, Lecturer  

Achard, Michel, 1997. Professor of Linguistics and French Studies, Magister of Sid Richardson College  

Adams, Wade, 2018. Associate Research Professor of Materials Science and Nanoengineering  
PhD (1984) University of Massachusetts: Amherst

Ajayan, Pulickel M., 2007. Benjamin M. and Mary Greenwood Anderson Professor in Engineering and Professor of Materials Science and NanoEngineering, Chemistry, and Chemical and Biomolecular Engineering, Department Chair of Materials Science and NanoEngineering  
B Tech (1985) Banaras Hindu University, India; PhD (1989) Northwestern University

Ajo-Franklin, Caroline, 2019. Professor of BioSciences  
BS (1997) Emory University; PhD (2004) Stanford University

Ajo-Franklin, Jonathan, 2019. Professor of Earth, Environmental and Planetary Sciences  

Akin, John Edward, 1983. Professor of Mechanical Engineering and Computational and Applied Mathematics  
BS (1964) Tennessee Polytechnic Institute; MS (1966) Tennessee Technological University; PhD (1968) Virginia Polytechnic Institute

Akins, Brian, 2012. William S. Mackey, Jr. and Verne F. Simons Distinguished Assistant Professor of Accounting  

Alabastri, Alessandro, 2015. Texas Instruments Assistant Research Professor of Electrical and Computer Engineering  
BSc (2007), MSc (2009) Politecnico University-Milan; PhD (2014) Italian Institute of Technology and University of Genoa, Italy

Al-Maqtari, Ali, 2017. Lecturer of Arabic  
BS(1997) University of Sana’a,Yemen; MA (2000) Universite de Fance-Compte, France

Albarede, Francis, 2009. Weiss Visiting Professor of Earth, Environmental and Planetary Sciences  
PhD (1976) University of Paris 7

Albers, Andrew, 2008. Lecturer of Architecture  
BS (1995) Georgia Institute of Technology; MArch (1999) Rice University

Albert, Laurence (Larry), 2001. Lecturer of Architecture  
BA (1986) Yale University; MArch (1997) Rice University

Alemany, Lawrence B., 1994. NMR Manager and Lecturer of Chemistry  
BS (1975) City College of New York; PhD (1980) University of Chicago

Alexander, David, 2003. Professor of Physics and Astronomy, Director of Rice Space Institute  
BSc (1985), PhD (1988) University of Glasgow, Scotland

Alfaro, Ernesto, 2008. Lecturer of Architecture  

Alford, John R., 1985. Professor of Political Science  
BS (1975), MPA (1977) University of Houston; MA (1980), PhD (1981) University of Iowa

Allen, Genevieve I., 2010. Associate Professor of Statistics and Electrical and Computer Engineering  

Alpak, F. Omer, 2014. Adjunct Associate Professor of Computational and Applied Mathematics  
BSc (1997) Middle East Technical University; MSc (1999), PhD (2005) University of Texas–Austin

Alpan, Gokalp, 2017. G.C. Evans Instructor of Mathematics  
BS (2010), MS (2012), PhD (2017) Bilkent University

Alvarez, Pedro J. J., 2003. George R. Brown Professor of Civil and Environmental Engineering, Professor of Chemistry and Chemical & Biomolecular Engineering  

Alward, Stephanie, 2019. Assistant Professor of Psychological Sciences  

Al-Zand, Karim, 2002. Professor of Composition and Theory  

Ambrose, Catherine G., 2009. Adjunct Associate Professor of Bioengineering  

Amin, Mustafa, 2015. Assistant Professor of Physics and Astronomy  
Amstutz, Steven, 2018. Lecturer of Education
BS (1981) Wheaton College; MED (1985) University of Houston

Anandasabapathy, Sharmila, 2007. Adjunct Professor of Bioengineering
BA (1993) Yale University; MD (1998) Albert Einstein College of Medicine

Anding, Roberta, 1997. Lecturer of Kinesiology
BS (1977), MS (1980) Louisiana State University

Angelaki, Dora E., 2012. Adjunct Professor of Electrical and Computer Engineering and Psychological Sciences

Antoulas, Athanasios C., 1985. Professor of Electrical and Computer Engineering
Diploma in Electrical Engineering (1975), Diploma in Mathematics (1975), PhD (1980) Eidgenössische Technische Hochschule, Switzerland

Aparicio, Jaime, 2016. Lecturer of Kinesiology

Aranda, José F., Jr., 1994. Allison Sarofim Associate Professor for Distinguished Teaching in Humanities, Associate Professor of English and Spanish, Portuguese and Latin American Studies, Co-Coordinator of Undergraduate Mellon Program

Araya Polo, Mauricio, 2016. Adjunct Associate Professor of Computational and Applied Mathematics
BSc (1998) University of Chile; MSc (2003), PhD (2006) University of Nice

Areppali, Sivaram, 2001. Adjunct Professor of Chemical and Biomolecular Engineering
BS (1968) Andhra University; MS (1971), PhD (1979) Indian Institute of Technology

Arnold, William M., 2009. Professor in the Practice of Management
AB (1966) Cornell University; MA (1968), MBA (1972) University of Texas–Austin

Asthagiri, Dilip, 2019. Associate Research Professor of Chemical and Biomolecular Engineering

Atherholt, Robert, 1984. Professor of Oboe
BMus (1976), MMus (1977) Juilliard School of Music

Atkinson, E. Neely, 1985. Senior Lecturer of Statistics

Bachelot, Beneficie, 2017. Huxley Research Instructor of BioSciences

Back, Kerry E., 2009. J. Howard Creekmore Professor of Finance
BA (1978) Western Kentucky University; PhD (1983) University of Kentucky

Bader, Graham, 2008. Associate Professor of Art History

Bae, Kyung-Hee, 2012. Lecturer of the Program in Writing and Communication
BS (1993) Seoul Women’s University; MA (2003) University of Houston

Baig, Fatima, 2016. Lecturer of German
BA (2001) Rupert Charles University; PhD (2011) University of Iowa

Balabanlilar, Lisa A., 2007. Associate Professor of History

Balakrishnan, Karthik, 2019. Associate Professor of Accounting

Ball, Zachary T., 2006. Professor of Chemistry

Ballestero, Andrea, 2012. Associate Professor of Anthropology

Ballew, Halley, 2019. Assistant Professor of Accounting
BS (1999) University of Kansas; PhD (2019) Ohio State University

Bao, Gang, 2015. Hoyt Family Professor of Bioengineering and Professor of Chemistry, and Materials Science and NanoEngineering
BS (1976) Shandong University; (1981) MSc, Shandong University; PhD (1987) Lehigh University

Baraniuk, Richard G., 1992. Victor E. Cameron Professor of Electrical and Computer Engineering

Baran, Matthew G., 2000. Professor of Physics and Astronomy

Barlow, Tani E., 2008. George and Nancy Rupp Professor of Humanities
BA (1975) San Francisco State University; MA (1979), PhD (1985) University of California–Davis

Barnett, Gregory, 2002. Professor of Musicology

Barnhill, Allen, 2010. Associate Professor of Trombone
BM (1977) Eastman School of Music

Barrera, Enrique V., 1990. Professor of Materials Science and NanoEngineering
BS (1979), MS (1985), PhD (1987) University of Texas–Austin

Barrett, Deborah, 1998. Professor of the Practice of Professional Communication
BA (1972), MA (1977) University of Houston; PhD (1983) Rice University

Bartel, Bonnie, 1995. Ralph and Dorothy Looney Professor of BioSciences
BA (1983) Bethel College; PhD (1990) Massachusetts Institute of Technogoly

Basen-Engquist, Karen, 2010. Adjunct Professor of Kinesiology
BA (1982) Saint Olaf College; PhD (1989) University of Texas; MPH (1990) University of Texas School of Public Health

Basgal, Lisa, 2009. Lecturer of Kinesiology
Bayazitoglu, Yildiz, 1977. Harry S. Cameron Professor of Mechanical Engineering and of Materials Science and NanoEngineering
BA (1967) Middle East Technological University; MS (1969), PhD (1974) University of Michigan

Beason-Abmayr, Beth, 2001. Teaching Professor of BioSciences
BS (1990) Auburn University; PhD (1996) University of Alabama at Birmingham

Beauchamp, Michael S., 2005. Adjunct Professor of Psychological Sciences

Beauchamp, Michael S., 2005. Adjunct Professor of Psychological Sciences

Beaudrot, Lydia, 2018. Assistant Professor of BioSciences

Beckingham, Kathleen M., 1980. Professor of Biochemistry and Cell Biology
BA (1967), MA (1968), PhD (1972) University of Cambridge

Bedient, Philip B., 1975. Herman Brown Professor of Engineering, Department Chair of Civil and Environmental Engineering
BS (1969), MS (1972), PhD (1975) University of Florida

Begley, Charles E., 1989. Adjunct Associate Professor of Economics
BS (1969) Northern Arizona University; MA (1972), PhD (1978) University of Texas–Austin

Behr, Marek, 1999. Adjunct Professor of Chemical and Biomolecular Engineering
BS (1988), PhD (1992) University of Minnesota

Behringer, Richard, 2008. Adjunct Professor of BioSciences
PhD (1986) University of South Carolina

Beier, Margaret E., 2004. Professor of Psychological Sciences, Magister of McMurtry College

Bejan, Maria, 2010. Distinguished Research Professor of Economics

Belik, Katerina, 2013. Lecturer of the Program in Writing and Communication
BA (1993), PhD (1995) Kuban State University, Russia

Bencomo, Mario J., 2019. Pfeiffer Postdoctoral Instructor of Computational and Applied Mathematics

Bennaji, Charla, 2017. Lecturer of Spanish
BA (1999) Thiel College; MA (2005) University of Houston

Bennett, George N., 1978. E. Dell Butcher Professor of BioSciences, Professor of Chemical and Biomolecular Engineering
BS (1968) University of Nebraska; PhD (1974) Purdue University

Bennett, Matthew, 2009. Associate Professor of BioSciences, Magister of Will Rice College
BS (2000), PhD (2006) Georgia Institute of Technology

Bernstein, Josh, 2014. Lecturer of Studio Art

Bertolusso, Roberto, 2013. Lecturer of Statistics

Besbris, Max, 2017. Assistant Professor of Sociology

Bharadwaj, Palash, 2016. Texas Instruments Assistant Professor of Electrical and Computer Engineering

Bharadwaj, Vasudha, 2018. Lecturer of the Program in Writing and Communication

Biddle, Kevin Thomas, 2016. Adjunct Professor of Earth, Environmental and Planetary Sciences
BSc (1973) University of California–Santa Cruz; MA (1976) PhD (1979) University of Houston

Bissada, K. K., 1996. Adjunct Professor of Earth, Environmental and Planetary Sciences
BSc (1962) University of Assiut, Egypt; MS (1965), PhD (1967) Washington University

Biswa, Sibani Lisa, 2006. Professor of Chemical and Biomolecular Engineering and of Materials Science and NanoEngineering, Associate Department Chair of Chemical & Biomolecular Engineering

Blackburn, James B., 1981. Professor in the Practice of Environmental Law
BA (1969), JD (1972) University of Texas–Austin; MS (1974) Rice University

Blanch, Joakim O., 2010. Adjunct Professor of Computational and Applied Mathematics

Blätter, Damian, 2013. Assistant Professor of Music Theory

Blinchert-Toft, Janne, 2009. Wiess Visiting Professor of Earth, Environmental and Planetary Sciences
MSc (1990), PhD (1993) University of Copenhagen

Blumenthal-Barby, Martin, 2009. Associate Professor of German Studies
MA, MPhil (2006), PhD (2008) Yale University
Butler, Barbara, 2013. Professor of Trumpet and Director of Artist Diploma Program
BMus (1974) Northwestern University

Buyse, Leone, 1997. Joseph and Ida Kirkland Mullen Professor of Flute

Byrd, Alexander X., 2001. Associate Dean of Humanities, Associate Professor of History

Byrne, John H., 1994. Adjunct Professor of Psychological Sciences and Electrical and Computer Engineering
BS (1968), MA (1970), PhD (1973) New York University School of Engineering

Byrne, Michael D., 1999. Professor of Psychological Sciences

Calabrese, John, 2013. Adjunct Instructor of Mathematics

Caldwell, Peter C., 2008. Schlumberger Chair of Advanced Studies and Schlumberger Professor of Father of Humanities
BS (1973) University of Pennsylvania; PhD (1979) Temple University

BA (1897) New York University; MA (1901), PhD (1903) Cornell University

Campana, Joseph A., Jr., 2006. Alan Dugald McKillop Chair in English, Professor of English Literature

Canning, Kathleen, 2018. Dean of the School of Humanities, Andrew W. Mellon Professor of History

Capretta, David R., 1987. Teaching Professor of BioSciences
BS (1974) Case Western Reserve University; MS (1979), PhD (1982) Cleveland State University

Carlin, Barbara A., 2013. Lecturer for the Professional Science Masters Program
BA (1975) University of Arizona; MSIS (1976) University of Pittsburgh; PhD (1991) University of Texas-Austin

Carin, Bruce, 2019. Professor of Finance

Carson, Daniel D., 2009. Schlumberger Chair of Advanced Studies and Research, Professor of Biochemistry and Cell Biology
BS (1975) University of Pennsylvania, PhD (1979) Temple University

Carter, Richard, 1997. Adjunct Professor of Computational and Applied Mathematics
BS (1979) Mississippi State University; PhD (1986) Rice University

Cartwright, Robert S., Jr., 1980. Professor of Computer Science

Casbarian, John J., 1973. Harry K. and Albert K. Smith Professor of Architecture, Interim Dean of the Rice School of Architecture, Director of RSA External Programs
BA (1969) Rice University; MFA (1971) California Institute of the Arts; BArch (1972) Rice University

Castellon Gonzalez, Juan Jose, 2018. Assistant Professor of Architecture

Catanese, Jamie, 2015. Assistant Teaching Professor of BioSciences
BS (1998) Texas A&M University; PhD (2005) Rice University

Cates, Mary Susan, 2003. Lecturer of BioSciences
BS (1995) University of Houston; PhD (2000) Rice University

Cavallaro, Joseph R., 1988. Professor of Electrical and Computer Engineering and Computer Science

Chaguine, Petr, 2005. Assistant Research Professor of Physics and Astronomy
MS (1982) Institute for Physics and Technology, Moscow PhD (1991) Institute for High Energy Physics, Russia

Chambers, Gregory, 2017. Assistant Professor of Mathematics
BA, MS (2009), PhD (2014) University of Toronto

Chan, Anthony A., 1993. Professor of Physics and Astronomy

Chan, Jesse, 2013. Assistant Professor of Computational and Applied Mathematics
BS (2008) Rice University; PhD (2013) University of Texas–Austin

Chang-Diaz, Franklin R., 1998. Adjunct Professor of Physics and Astronomy
BS (1973) University of Connecticut; PhD (1977) Massachusetts Institute of Technology

Chapman, Walter G., 1990. William W. Akers Professor of Chemical and Biomolecular Engineering

Chappell, James, 2017. Assistant Professor of BioSciences
BS (2008), PhD (2013) Imperial College, London

Chaudhuri, Swarat, 2011. Associate Professor of Computer Science

Chavez, Sergio, 2010. Associate Professor of Sociology

Chehab, E. Wassim, 2007. Lecturer of BioSciences
BS (1998) American University of Beirut; PhD (2003) University of Nevada

Chen, Ang, 2017. Assistant Professor of Computer Science
BEng (2009) Wuhan University; PhD (2017) University of Pennsylvania

Chen, Shih-Hui, 2000. Professor of Composition and Theory
Chen, Wei. 2005. Adjunct Professor of Civil and Environmental Engineering
BS (1992) Nankai University, Tianjin, China; MS (1997), PhD (2000) Rice University

Chi, Taijun. 2019. Assistant Professor of Electrical and Computer Engineering
BS (2012) University of Science and Technology of China; PhD (2017) Georgia Institute of Technology

Chiao, Leroy. 2012. Lecturer of Mechanical Engineering

Chiu, Wah. 2004. Adjunct Professor of Computer Science
BA (1969), PhD (1975) University of California – Berkeley

Chung, Jae-yen. 2018. Assistant Professor in Marketing

Cibor, Joseph. 2001. Adjunct Professor of the Practice in Civil Engineering Management
BS (1976), MS (1978) Purdue University

Citino, Nathan. 2015. Barbara Kirkland Chiles Professor of History

Ciufolini, Marco A. 2000. Adjunct Professor of Chemistry
BS (1978) Spring Hill College; PhD (1981) University of Michigan

Clementi, Cecilia. 2001. Wiess Career Development Chair, Professor of Chemistry and of Chemical and Biomolecular Engineering

Clements, Niki. 2014. Watt and Lilly Jackson Assistant Professor of Biblical Studies, Assistant Professor of Religion

Cohan, Daniel. 2006. Associate Professor of Civil and Environmental Engineering

Cohen, G. Daniel. 2003. Samuel W. and Goldye Marian Spain Associate Professor of Jewish Studies, Associate of McMurtry College

Coker, Marya. 2016. Lecturer of Chemical and Biomolecular Engineering
BS (2009), PhD (2013) University of Calgary

Colman, Scott. 2010. Assistant Professor of Architecture

Colopy, Andrew. 2014. Assistant Professor of Architecture

Comer, Krista. 1998. Professor of English


Cone, Michael. 2015. Instructor of Physics and Astronomy
BA, BS (2003) Truman State University; PhD (2014) Texas A&M University

Connelly, Brian. 1984. Artist Teacher of Piano and Director of Piano Chamber Music and Accompanying Program
BMus (1980), MMus (1983) University of Michigan

Cook, David. 2001. Professor of Religion, Associate of Brown College

Cooper, Keith D.. 1990. L. John and Ann H. Doerr Chair in Computational Engineering, Professor of Computer Science and Electrical and Computer Engineering, Department Chair of Computational and Applied Mathematics
BS (1978), MA (1982), PhD (1983) Rice University

Cordero, Zachary. 2016. Assistant Professor of Material Science and NanoEngineering
BSc (2010), PhD (2015) Massachusetts Institute of Technology

Cornwell, John M.. 2007. Associate Vice President for Institutional Effectiveness, Adjunct Professor of Psychological Sciences
BA (1977) Capital University; MS (1982) Georgia Institute of Technology; PhD (1987) University of Tennessee

Costello, Leo. 2005. Associate Professor of Art History, Department Chair of Art History

Couti, Jacqueline. 2018. Laurence H. Fawrot Associate Professor of Classical and European Studies
MA (2004), PhD (2008) University of Virginia

Cowan, Kenneth. 2012. Professor of Organ

Cox, Alan L.. 1991. Professor of Computer Science and of Electrical and Computer Engineering

Cox, Dennis. 1992. Professor of Statistics
BA (1972) University of Colorado; MS (1976) University of Denver; PhD (1980) University of Washington

Cox, Kenneth R.. 2000. Professor in the Practice of Chemical and Biomolecular Engineering
BS (1974) Ohio State University; MS (1977), PhD (1979) University of Illinois

Crane, Alan David. 2010. William S. Mackey, Jr. and Verne F. Simons Distinguished Associate Professor of Finance
BS (2002), BA (2002) Trinity University; PhD (2010) University of Texas – Austin

Crawford, Margaret. 2013. Lecturer of Education
BS (1967) Northwestern University; M.Ed (1989) University of St. Thomas

Crawford-Brown, Sophie. 2020. Assistant Professor of Art History

Crear, Shelah, 2013. Lecturer of Education
BA (1998), MED (2001) University of Texas–Austin; PhD (2013) Texas A&M University

Creek, Jefferson L., 2007. Adjunct Professor of Chemical and Biomolecular Engineering
BS (1967) Middle Tennessee State University; MS (1969), PhD (1975) Southern Illinois University–Carbondale

Cronin, Justin C., 2003. Writer-in-Residence in English

Crossey, Diane, 2015. Professor in the Practice of Sport Management
BBA (1992), MS (1994) University of Massachusetts

Crotty, Kevin, 2012. Associate Professor of Finance

Crowell, Steven G., 1983. Joseph and Joanna Nazzo Mullen Professor of Philosophy, Professor of Philosophy

Cruz, Miguel, 2007. Adjunct Assistant Professor of Bioengineering
BS (1983) University of Puerto Rico; PhD (1989) University of Puerto Rico—School of Medicine

Cummins-Muñoz, Elizabeth, 2015. Lecturer of the Program in Writing and Communication

Cunha, Flávio, 2014. Ervin Kenneth Zingler Professor of Economics

Cutler, Scott E., 2001. Professor in the Practice of Computer Technology
BS (1973), MS (1973), PhD (1976) Massachusetts Institute of Technology

Dabak, Anand, 2003. Adjunct Associate Professor of Electrical and Computer Engineering

Dabney, James B., 2000. Adjunct Professor of Mechanical Engineering

Dasco, Clifford C., 2010. Adjunct Professor of Electrical and Computer Engineering
BA (1972), MA (1972) University of Pennsylvania; MD (1975) Baylor College of Medicine; MPH (1980) University of Texas School of Public Health; MBA (1990) Pepperdine University

Dai, Pengcheng, 2013. Professor of Physics and Astronomy
dabneyBS (1984) Zhenzhou University, PhD (1993) University of Missouri

Damanik, David, 2006. Robert L. Moody, Sr. Chair of Mathematics

Dane, Erik, 2007. Jones School Distinguished Associate Professor of Management

Dannemiller, James L., 2004. Lynette S. Autrey Professor of Psychological Sciences
BA (1974) Northwestern University; PhD (1983) University of Texas–Austin

Dasgupta, Rajdeep, 2008. Professor of Earth, Environmental and Planetary Sciences
BS (1998), MSc (2000) Jadavpur University, India; PhD (2006) University of Minnesota

Dautenhahn, Nathan, 2018. Assistant Professor of Computer Science
BS (2008) University of New Mexico; PhD (2016) University of Illinois at Urbana-Champaign

DeAngelis, David, 2012. Assistant Professor of Finance

DeConick, April D., 2006. Isla Carroll Turner and Percy Turner Professor of Religion

Dee, Sylvia, 2018. Assistant Professor of Earth, Environmental and Planetary Sciences

Deem, Michael W., 2002. John W. Cox Professor of Biochemical and Genetic Engineering; Professor of Bioengineering and Physics and Astronomy
BS (1991) California Institute of Technology; PhD (1994) University of California–Berkeley

de Hoop, Maarten V., 2015. Simons Chair in Computational and Applied Mathematics and Earth, Environmental and Planetary Sciences, Professor of Mathematics

DeLucia, Patricia, 2018. Professor of Psychological Sciences

Denny, Bryan T., 2016. Assistant Professor of Psychological Sciences

DerHovsepian, Joan, 2001. Artist Teacher of Viola
BM (1991), MM (1994) Eastman School of Music

Dermont, Amber, 2013. Gladys Louise Fox Associate Professor of English

Derrick, Scott S., 1990. Associate Professor of English
BA (1975) Albright College; MA (1978) University of Chicago; PhD (1987) University of Pennsylvania

DesRoches, Reginald, 2017. William and Stephanie Sick Dean of the George R. Brown School of Engineering, Professor of Civil and Environmental Engineering and Mechanical Engineering
BS (1990), MS, PhD (1998) University of California–Berkeley


Dickman, J. David, 2012. Adjunct Professor of Psychological Sciences, Director of the Neuroscience Program. BA (1979) University of Oklahoma; MS, PhD (1985) University of Wyoming

Diddle, Roberta M., 1985. Adjunct Assistant Professor and Lecturer of Psychological Sciences. BA (1976) Wesleyan University; PhD (1989) Boston University


Djerejian, Edward P., 1994. Edward A. and Hermena Hancock Kelly University Chair for Senior Scholars, Janice and Robert McNair Director of the James A. Baker III Institute for Public Policy. BS (1960), Doctor of Humanities (Hon) (1992) Georgetown University


Dodds, Stanley A., 1977. Associate Professor of Physics and Astronomy, Associate Chair for Administration. BS (1968) Harvey Mudd College; PhD (1975) Cornell University

Domingues Da Silva, Daniel, 2017. Assistant Professor of History. BA (2004), MA (2009), PhD (2011) Emory University

Dongarra, Jack, 1988. Adjunct Professor of Computer Science. BS (1972) Chicago State University; MS (1973) Illinois Institute of Technology; PhD (1980) University of New Mexico


Duno-Gottberg, Luis, 2008. Professor of Spanish, Portuguese and Latin American Studies, Department Chair of Spanish, Portuguese and Latin American Studies, Magister of Baker College

Ecklund, Elaine Howard, 2008. Herbert S. Autrey Chair and Professor of Sociology

Ecklund, Karl M., 2008. Professor of Physics and Astronomy

Egan, Scott, 2014. Assistant Professor of Ecology and Evolutionary Biology

Egap, Eilaf, 2017. William Marsh Rice Trustee Chair, Assistant Professor of Materials Science and Nanotechnology
BS, MS (2005), Stony Brook University; PhD (2011) University of Washington

Eich, Elizabeth, 2006. Lecturer of BioSciences
BS (1998) Texas A&M University; PhD (2005) Rice University

El-Bakry, Amr, 1998. Adjunct Professor of Computational and Applied Mathematics

El-Dahdah, Farès, 1996. Director of the Humanities Research Center, Professor of Humanities

El-Gamal, Mahmoud A., 1998. Professor of Islamic Economics, Finance, and Management; Professor of Economics and Statistics

Ellenbogen, Sarah, 2000. Associate Professor of English

Elliot, James, 2014. Professor of Sociology, Department Chair of Sociology

Elliott, Matthew, 2015. Lecturer of Mechanical Engineering
BS (2000), MS (2008), PhD (2013) Texas A&M University

Ellison, Paul V. H., 1975. Lynette S. Autrey Professor of Double Bass
BME (1965) Eastern New Mexico University; MM (1966) Northwestern University

Emami, Farshid, 2020. Assistant Professor of Art History

Emami, Maryam, 2010. Lecturer of French

Emden, Christian J., 2003. Professor of German Studies, Department Chair of Classical and European Studies

Engel, Paul S., 1970. Professor of Chemistry
BS (1964) University of California at Los Angeles; PhD (1968) Harvard University

Englebreton, Robert, 2000. Associate Professor of Linguistics, Department Chair of Linguistics

Ensor, Katherine Bennett, 1987. Noah G. Harding Professor of Statistics

Eraslan, Hülya, 2014. Ralph S. O’Connor Chair in Economics, Professor of Economics

Ernst, Philip A., 2014. Associate Professor of Statistics

Esch, Sophie, 2018. Assistant Professor of Spanish, Portuguese and Latin American Studies
MA (2009) Freie Universität Berlin; PhD (2014) Tulane University

Fagundes, Christopher P., 2015. Associate Professor of Psychological Sciences, Renate Associate Faculty Fellow of Lovett College
BA (2005) University of California, Davis; MS (2008), PhD (2010) University of Utah

Fang, Songying, 2009. Associate Professor of Political Science

Fanger, Claire, 2009. Associate Professor of Religion
BA (1979) Reed College; MA (1983) Boston University; MA (1987), PhD (1994) University of Toronto

Farach-Carson, Mary C., 2009. Adjunct Professor of BioSciences
BS (1978) University of South Carolina; PhD (1982) Medical College of Virginia/Virginia Commonwealth University

Farajzadeh, Rouhollah, 2015. Adjunct Assistant Professor of Chemical and Biomolecular Engineering

Faubion, James D., 1993. Professor of Anthropology, Radoslav A. Tsanoff Chair of Public Affairs in the Department of Anthropology, Associate of Jones College

Fernández, Esther, 2015. Assistant Professor of Spanish, Portuguese and Latin American Studies, Resident Associate of Wiess College
Dottore in Matematica (1985) Università di Padova, Italy; MS (1987), PhD (1989) University of California–Berkeley

Ferris, David, 1998. Associate Professor of Musicology

**Festa, Elizabeth A.**, 2007. Lecturer of the Program in Writing and Communication

**Fette, Julie**, 2005. Associate Professor of French Studies

**Finley, Dawn**, 2001. Associate Professor of Architecture, Director of Graduate Studies

**Firoozabadi, Abbas**, 2019. Distinguished Research Professor of Chemical and Biomolecular Engineering
BS (1970) Abadan Institute of Technology; MS (1972), PhD (1975) Illinois Institute of Technology

**Fischer, Jeanne Kierman**, 1992. Artist Teacher of Piano and Collaborative Skills

**Fischer, Norman**, 1992. Herbert S. Autrey Professor of Cello
BMus (1971) Oberlin College

**Fischer-Baum, Simon J.**, 2012. Assistant Professor of Psychological Sciences

**Fleishacker, Alan**, 2003. Senior Lecturer of Architecture
BA (1973) Oklahoma State University; JD (1976) University of Oklahoma

**Fleisher, Jeffrey B.**, 2007. Associate Professor of Anthropology
BA (1992), MA (1997), PhD (2003) University of Virginia

**Fleming, Jefferson D.**, 1993. Fayez Sarofim Vanguard Professorship of Finance, Deputy Dean of Academic Affairs in the Jesse H. Jones Graduate School of Business

**Flynn, Jonathan R.**, 2018. Assistant Teaching Professor of Neuroscience
BS (2010) University of North Carolina at Wilmington; PhD (2017) University of Texas Health Science Center at Houston

**Foote, Jill**, 2003. Senior Lecturer of Finance

**Foster, Matthew S.**, 2012. Associate Professor of Physics and Astronomy
BEng (2000) The Cooper Union for the Advancement of Science and Art; PhD (2006) University of California, Santa Barbara

**Fowler, Will**, 2015. Lecturer of Studio Art

**Fox, David Stephen**, 1990. Lecturer of Architecture
BA (1973), BArch (1975) Rice University

**Fox, Jeremy**, 2015. Professor of Economics

**Franklin, Amy**, 2009. Adjunct Assistant Professor of Cognitive Sciences

**Frantz, Gene**, 2012. Professor in the Practice of Electrical and Computer Engineering

**Fregly, Benjamin J.**, 2017. Professor of Mechanical Engineering and Bioengineering, Magister of Brown College

**French, Princeton**, 1999. Artist Teacher of Cello Orchestral Repertoire
BMus (1982) North Park University

**French, Melodie**, 2016. Assistant Professor of Earth, Environmental and Planetary Sciences

**Fu, Liang**, 2010. Lecturer of Chinese

**Fuentes David T.**, 2019. Adjunct Assistant Professor of Computational and Applied Mathematics
BS (2002), MS (2005), PhD (2008) University of Texas-Austin

**Fukuyama, Tohru**, 1995. Adjunct Professor of Chemistry
BS (1971), MS (1973) Nagoya University; PhD (1977) Harvard University

**Furr, James**, 2003. Senior Lecturer of Architecture
BArch (1969) Louisiana State University

**Gao, Xue**, 2017. Ted N. Law Assistant Professor of Chemical and Biomolecular Engineering
BS (2005), MS (2007) Tianjin University; PhD (2013) University of California–Los Angeles

**Gao, Yang**, 2017. Assistant Professor of Biosciences
BS (2007) University of Science and Technology of China; PhD (2013) Iowa State University

**Gao, Zhiyong**, 1986. Associate Professor of Mathematics
BA (1979) Fudan University; PhD (1984) State University of New York–Stony Brook

**García-Rueda, Claudia**, 2019. Lecturer of Spanish

**Geiser, Reto**, 2011. Associate Professor of Architecture, Director of Undergraduate Studies
MArch (2002), PhD (2010) ETH Zurich

**Georges, Eugenia**, 1986. Professor of Anthropology, Department Chair of Anthropology

**Geurts, Franciscus Johannes Maria**, 2008. Professor of Physics and Astronomy

**Geyer, Charles.** 2013. Professor of Trumpet
B.Music Education, Northwestern University, MM (1969) University of Maryland-College Park

**Ghorbel, Fathi.** 1994. Professor of Mechanical Engineering and Bioengineering

**Ghosn, Bilal.** 2014. Lecturer of Bioengineering
BS (2002) Louisiana State University; MS (2004) Louisiana State University; PhD (2009) University of Texas–Austin

**Gibson, Brian.** 1996. Clinical Professor of Kinesiology
BA (1990), MA (1993), PhD (1996) University of Texas–Austin

**Gigliott-Labay, Jennifer.** 2019. Adjunct Clinical Assistant Professor of Education

**Gilbertson, Michelle.** 2009. Lecturer of Chemistry
BS (1990) Valparaiso University; MS (1992), PhD (1994) Northwestern University

**Gilbertson, Scott R.,** 2006. Adjunct Professor of Chemistry

**Gilberti, M. Cristina.** 2014. Lecturer of Italian
MA, PhD (2000) Universita’ degli Studi di Bari, Italy

**Gillenwater, Ann M.,** 2006. Adjunct Professor of Bioengineering
BA (1983) Brown University; MD (1987) University of Virginia–Charlottesville

**Gillman, Adrianna.** 2014. Adjunct Assistant Professor of Computational and Applied Mathematics

**Glassberg, Jeffrey.** 2007. Adjunct Professor of Ecology and Evolutionary Biology
BS (1969) Tufts University; PhD (1976) Rice University; JD (1993) Columbia University School of Law

AB (1975) University of Michigan; PhD (1981) University of California–Berkeley

**Glowinski, Roland.** 1986. Adjunct Professor of Computational and Applied Mathematics
Ecole Polytechnique (1958); Ecole Nationale Superieue das Telecommunications; PhD (1970) University of Paris

**Goldman, Ronald N.,** 1990. Professor of Computer Science
BS (1968) Massachusetts Institute of Technology; MA, PhD (1973) Johns Hopkins University

**Goldsmith, Kenneth.** 1991. Professor of Violin
BM (1966) George Peabody College for Teachers; MA (1968) Leland Stanford University

**Gonnermann, Helge,** 2009. Associate Professor of Earth, Environmental and Planetary Sciences

**Gonzalez, Ramon,** 2018. Adjunct Professor of Chemical and Biomolecular Engineering
BS (1993), MS (1999), PhD (2001) University of Chile

**González-Stephan, Beatriz,** 2001. Lee Hage Jamail Chair of Latin American Literature, Spanish, Portuguese and Latin American Studies

**Goodman, Wayne,** 2017. Adjunct Professor of Electrical and Computer Engineering
BS (1974) Colombia University; MD (1981) Boston University School of Medicine; PhD (1986) Yale University

**Gopalkrishnan, Arun,** 2019. Assistant Professor of Marketing

BA (1975) University of California–Santa Cruz; MS (1977), PhD (1979) Stanford University

**Gorman, Bridget K.,** 2002. Dean of Undergraduates, Professor of Sociology

**Gottschalk, Arthur W.,** 1977. Professor of Composition and Theory

**Grande-Allen, Kathryn Jane,** 2003. Isabel C. Cameron Professor of Bioengineering, Department Chair of Bioengineering
BA (1991) Transylvania University; PhD (1998) University of Washington

**Gray, Gary,** 2015. Lecturer of Earth, Environmental and Planetary Sciences
BA (1980) Southern Oregon State College; PhD (1985) University of Texas-Austin

**Greig, Nancy,** 1991. Adjunct Assistant Professor of Ecology and Evolutionary Biology
BA (1980), PhD (1991) University of Texas–Austin

**Greiner, John,** 1997. Lecturer of Computer Science

**Greitzer, Mary,** 2013. Lecturer of Music

**Grenader, Nonya S.,** 1995. Professor in the Practice of Architecture
BArch (1976) University of Texas; MArch (1994) Rice University

**Griffin, Robert J.,** 2008. Senior Associate Dean of Brown School of Engineering, Professor of Civil and Environmental Engineering and Chemical and Biomolecular Engineering
Grullon, Gustavo, 1998. Jesse H. Jones Professor of Finance

Guerra, Rudy, 2001. Professor of Statistics, Department Chair of Statistics

Guindani, Michele, 2011. Adjunct Professor of Statistics
BS (2001), MS (2001), PhD (2005) Universita Commerciale Luigi Bocconi

Gunel, Gockce, 2019. Assistant Professor of Anthropology

Guo, Hua, 2015. Assistant Research Professor in Materials Science and NanoEngineering
BA (2001) Northeastern University, Shenyang, China; PhD (2009) Chinese Academy of Sciences, Shenyang

Gürçanlı, Özge, 2012. Lecturer of Psychological Sciences

Gurewitz, Omer, 2012. Adjunct Lecturer of Electrical and Computer Engineering
BA (1990) Ben Gurion University of the Negev-Beersheva; MS (2000), PhD (2005) Technion-Israel Institute of Technology-Haifa

Gustín, Michael C., 1988. Professor of BioSciences, Magister of Lovett College
AB (1974) Johns Hopkins University; PhD (1981) Yale University

Hafner, Jason H., 2008. Professor of Chemistry, Magister of Lovett College

Halas, Naomi J., 1989. Stanley C. Moore Professor of Electrical and Computer Engineering, Professor of Chemistry, of Bioengineering, of Physics and Astronomy, and of Materials Science and NanoEngineering, Director of Laboratory for Nanophotonics

Halen, Eric, 2008. Artist Teacher of Violin Orchestral Repertoire
BM (1977) Central Missouri State University; MM (1979) University of Illinois

Hall, Randal L., 2008. Professor of History

Hamm, Keith Edward, 1988. Thomas Cook and Mary Elizabeth Edwards Memorial Chair in American Government, Professor of Political Science
AB (1969) Franklin and Marshall College; MA (1972) Florida Atlantic University; PhD (1977) University of Wisconsin–Milwaukee

Hand, Paul, 2014. Adjunct Assistant Professor of Computational and Applied Mathematics

Haptonstall, Clark D., 2003. Professor in the Practice of Sport Management, Director of the Sport Management Program, Department Chair of Sport Management

Hardt, Robert M., 1988. W. L. Moody Professor of Mathematics
BS (1967) Massachusetts Institute of Technology; PhD (1971) Brown University

Harrington, Daniel A., 2009. Adjunct Assistant Professor of BioSciences

Harter, Deborah A., 1990. Associate Professor of Classical and European Studies

Harterink, Jeffrey D., 2002. Professor of Chemistry and of Bioengineering, Associate Department Chair for Graduate Studies

Hartigan, Patrick M., 1994. Professor of Physics and Astronomy
BS (1981) University of Minnesota; PhD (1987) University of Arizona

Hartley, Maria K., 2011. Adjunct Assistant Professor of Ecology and Evolutionary Biology

Hartley, Peter Reginald, 1986. George A. Peterkin Professor of Economics
BA (1974), MEc (1977) Australian National University; PhD (1980) University of Chicago

Harvey, Shelly L., 2005. Professor of Mathematics
BS (1997) California Polytechnic State University; PhD (2002) Rice University

Hassanzadeh, Pedram, 2016. Assistant Professor of Mechanical Engineering
BSc (2005) University of Tehran; MASc (2007) University of Waterloo; PhD (2013) University of California–Berkeley

Hawley, Richard, 2011. Professor of Clarinet
BM (1992) Curtis Institute of Music

Hayes, Matthew, 2017. Assistant Professor of Political Science

Hazzard, Kaden, 2014. Assistant Professor of Physics and Astronomy

He, Yinghua, 2016. Assistant Professor of Economics

Heaston, Michael, 2018. Professor of Opera, Director of the Opera Studies Program

Hebl, Michelle "Mikki" R., 1998. Martha and Henry Malcolm Lovett Chair of Psychological Sciences, Professor of Psychological Sciences, Professor of Management

Heffes, Gisela, 2009. Associate Professor of Spanish, Portuguese and Latin American Studies, Associate of Duncan College
UBA (1997) Universidad de Buenos Aires; PhD (2007) Yale University

Heinkenschloss, Matthias, 1996. Noah Harding Chair and Professor of Computational and Applied Mathematics
BS (1988), PhD (1991) Universität Trier, Germany

**Hemmer, Thomas**, 2009. Houston Endowment Professor of Accounting
BA (1984), MBA (1986), PhD (1990) Odense University, Denmark

**Hennessy, Rosemary**, 2006. L.V. Favrot Chair in Humanities, Professor of English Literature, Department Chair of English, Director of the Center for the Study of Women, Gender, and Sexuality
BA (1972) University of Pennsylvania; MA (1976) Temple University; PhD (1990) Syracuse University

**Henze, Matthias**, 1997. Isla Carroll and Percy E. Turner Professor of Biblical Studies and Professor of Religion, Director of the Program in Jewish Studies
MDiv (1992) University of Heidelberg; PhD (1997) Harvard University

**Hicks, Illya V.**, 2007. Professor of Computational and Applied Mathematics

**Higgs, III, C. Fred**, 2016. Vice Provost for Academic Affairs, John and Ann Doerr Professor in Mechanical Engineering, Professor of Bioengineering, Faculty Director of RCEL

**Hight, Christopher**, 2003. Associate Professor of Architecture

**Hill, N. Ross**, 2010. Adjunct Professor of Earth, Environmental and Planetary Sciences
BS (1971) Louisiana State University; MS (1973) University of New Orleans; PhD (1978) University of Virginia

**Hilton, Isaac**, 2017. Assistant Professor of BioSciences, Assistant Professor of Bioengineering
BS (2004) University of Missouri–Columbia; PhD (2013) University of North Carolina–Chapel Hill

**Hirschi, Kendal**, 2003. Adjunct Professor of BioSciences

**Ho, Vivian**, 2004. James A. Baker III Institute Chair in Health Economics, Professor of Economics

**Hobby, William P.**, 1989. Radoslav A. Tsanoff Professor of Public Affairs
BA (1953) Rice Institute

**Hochberg, Scott**, 2013. Lecturer of Education
BA (1975), MEE (1976) Rice University

**Hochberg, Yael**, 2013. Ralph S. O’Connor Professor in Entrepreneurship, Director of Entrepreneurship Initiatives

**Hoebig, Desmond**, 2008. Professor of Cello
BM (1982), MM (1983) The Juilliard School of Music

**Hohl, Detlef**, 2016. Adjunct Professor of Computational and Applied Mathematics

**Hoj, Jerry**, 2018. Assistant Professor of Political Science

**Hotez, Peter Jay**, 2011. Adjunct Professor of Bioengineering

**Hou, Jerry**, 2014. Associate Conductor

**Houlik-Ritchey, Emily**, 2015. Assistant Professor of English

**Howe, A. Cymene**, 2009. Associate Professor of Anthropology

**Huang, Huey W.**, 1973. Sam and Helen Worden Chair of Physics and Astronomy
BS (1962) National Taiwan University; PhD (1967) Cornell University

**Huang, Shih-Shan Susan**, 2006. Associate Professor of Art History
BA (1991) National Taiwan University; MA (1993) National University of Taiwan; PhD (2002) Yale University

**Huang, Xuelin**, 2008. Adjunct Associate Professor of Statistics
BS (1994) Peking University, China; MS (1997) Texas A&M University; PhD (2002) University of Michigan

**Huderman, Brian Michael**, 1975. Professor of Visual Arts
MFA Equivalent (1974) National Film School of Great Britain

**Huchette, Joseph**, 2019. Assistant Professor of Computational and Applied Mathematics
BA (2013) Rice University; PhD (2014) Massachusetts Institute of Technology

**Hughes, Daniel C.**, 2016. Lecturer of Kinesiology

**Hughes, Gordon**, 2008. Associate Professor of Art History

**Hughes, Thomas J. R.**, 2002. Adjunct Professor of Mechanical Engineering

**Hulet, Randall G.**, 1987. Fayez Sarofim Professor of Physics and Astronomy
BS (1978) Stanford University; PhD (1984) Massachusetts Institute of Technology

**Hunter, Allison**, 2012. Artist in Residence in Visual and Dramatic Arts

Hunter, Deirdre, 2016. Lecturer, Oshman Engineering Design Kitchen

Hutchinson, John S., 1983. Professor of Chemistry
BS (1977), PhD (1981) University of Texas–Austin

Igoshin, Oleg A., 2006. Professor of Bioengineering, Chemistry, Bioengineering Associate Chair

Irish, Maya Soifer, 2010. Associate Professor of History

Jalbert, Pierre D, 1996. Professor of Composition and Theory

Jeanneret, P. Richard "Dick," 2003. Adjunct Professor of Psychological Sciences
BA (1962) University of Virginia; MA (1963) University of Florida; PhD (1969) Purdue University

Jaber, Thomas I., 1988. Professor of Music, Director of Choral Ensembles

Jalbert, Pierre D., 1996. Professor of Composition and Theory

Jeanneret, P. Richard "Dick," 2003. Adjunct Professor of Psychological Sciences
BA (1962) University of Virginia; MA (1963) University of Florida; PhD (1969) Purdue University

Jenkins, Jasmine, 2018. Lecturer of Education
BA (2006) Loyola University; MA (2011) University of Houston; PhD (2013) University of Houston

Jermaine, Christopher M., 2009. Professor of Computer Science, Director of Data Science

Jimenez, Carlos, 1997. Professor of Architecture
BArch (1981) University of Houston

John, Randy, 2015. Lecturer of Materials Science and NanoEngineering
BS (1976), MS (1977), PhD (1979) Ohio State University

Johns-Krull, Christopher M., 2001. Professor of Physics and Astronomy, Faculty Senate Speaker
BA, BS (1989) University of Texas–Austin; MA (1991), PhD (1994) University of California–Berkeley

Johnson, Amanda L., 2015. Lecturer of English

Johnson, Bruce R., 1994. Research Professor in Chemistry, Executive Director of the Rice Quantum Institute
BA (1975) University of Minnesota; PhD (1981) University of Wisconsin–Madison

Johnson, David B., 2000. Professor of Computer Science and of Electrical and Computer Engineering
BA (1982), MS (1985), PhD (1990) Rice University

Johnson, Lacy, 2016. Assistant Professor of Creative Writing

Johnson, Raymond, 2006. Adjunct Professor of Mathematics
BSc (1967), MA (1968) University of Cambridge; PhD (1970) University of Warwick

BS (1992) Rice University; MS (1997) University of Virginia

Jones, B. Frank, Jr., 1962. Noah Harding Professor of Mathematics
BA (1958) Rice Institute; PhD (1961) Rice University

Johnson, Stephanie, 2019. Assistant Professor of Finance

Jones, Mark P., 2004. Joseph D. Jamail Chair in Latin American Studies, Professor of Political Science
BA (1989) Tulane University; PhD (1994) University of Michigan

Jones, Matthew, 2017. Norman and Gene Hackerman Assistant Professor in Chemistry and Materials Science and NanoEngineering

Jones, Steven L., 2015. Lecturer of Kinesiology
BS (1977) Baylor University; MA (2002) Bryn Mawr College; PhD (2008) University of Texas–Austin

Joseph, Betty, 1995. Associate Professor of English

Joyner, Mack, 2016. Assistant Teaching Professor and Director of the Professional Master's Program
BS (2002), MS (2005), PhD (2008) Rice University

Junntti, Markku, 2007. Adjunct Professor of Electrical and Computer Engineering
MS (1993), PhD (1997) University of Oulu, Finland

Kale, Prashant, 2007. Associate Professor of Strategic Management

Kalra, Ajay, 2008. Herbert S. Autry Chair in Business, Professor of Marketing

Kamakura, Wagner, 2013. Jesse H. Jones Professor of Marketing
BS (1974) Aeronautical Institute of Technology, MS (1979) University of Sao Paolo, PhD (1983) University of Texas–Austin

Kamins, Benjamin C., 1987. Professor of Bassoon
Kaminski, Vincent, 2001. Professor in the Practice of Management  
PhD (1975) Main School of Planning and Statistics, Warsaw, Poland; MBA (1978) Fordham University  

Kantor, Paul, 2012. Sallie Shepherd Perkins Professor of Violin  
BMus (1977), MMus (1978) The Juilliard School  

Kaplan, S.C., 2017. Lecturer of French  

Kavvaki, Lydia, 1996. Noah Harding Professor of Computer Science, Bioengineering, and Mechanical Engineering  

Keefe, Christina, 2008. Professor in the Practice in Theatre, Director of the Theatre Program  
BFA (1979) New York University; MFA (1994) University of South Carolina  

Kelly, Kevin, 2002. Associate Professor of Electrical and Computer Engineering, Applied Physics Graduate Program Chair  

Kemere, Caleb, 2012. Associate Professor of Electrical and Computer Engineering  

Kemmer, Suzanne E., 1993. Associate Professor of Linguistics and Cognitive Sciences  

Kiang, Ching-Hwa, 2002. Associate Professor of Physics and Astronomy  
BS (1987) National Taiwan University; PhD (1995) California Institute of Technology  

Kieffer, Alexandra, 2015. Assistant Professor of Musicology  
BA Grinnell College; MA (2009), MPhil (2011), PhD (2014) Yale University  

Killian, Thomas C., 2000. Professor of Physics and Astronomy, Associate Dean  

Kim, Eun Hee, 2019. Lecturer of Korean  

Kimbro, Rachel Tolbert, 2007. Professor of Sociology  

Kimmel, Marek, 1990. Professor of Statistics and Bioengineering, Associate Department Chair of Statistics  
MS (1977), PhD (1980) Silesian Technical University  

Kincaid, Kristi, 2016. Assistant Teaching Professor  
BS (1998) University of California–Berkeley; PhD University of Colorado–Boulder  

King, Danielle, 2018. Assistant Professor of Psychological Sciences  

King, Eden, 2017. Associate Professor of Psychological Sciences  

King, Stephen, 2003. Lynette S. Autrey Professor of Voice  

Kirchner, Stefan, 2009. Adjunct Assistant Professor of Physics and Astronomy  

Kirienco, Natasha, 2015. Assistant Professor of BioSciences  

Kirk, David E., 1982. Associate Professor of Tuba  
BM (1982) Juilliard School of Music  

Klein, Andrew A., 2014. Lecturer of the Program in Writing and Communication  

Klein, Anne C., 1989. Professor of Religion  

Klie, Hector, 2018. Adjunct Professor of Computational and Applied Mathematics  

Kley, Katharina, 2015. Lecturer of German  

Knepley, Matthew, 2015. Adjunct Associate Professor of Computational and Applied Mathematics  
BS (1994) Case Western Reserve; MS (1996) University of Minnesota; PhD (2000) Purdue University  

Knightly, Edward W., 1996. Sheafor-Lindsay Professor of Electrical and Computer Engineering, and Professor of Computer Science  

Kohn, Michael H., 2004. Associate Professor of Ecology and Evolutionary Biology  
MSc (1994) University of Munich; PhD (2000) University of California–Los Angeles  

Koka, Balaji, 2008. Associate Professor of Strategic Management  

Kolomeisky, Anatoly B., 2000. Professor of Chemistry and of Chemical and Biomolecular Engineering, Department Chair of Chemistry  

Kong, Yunmi, 2016. Assistant Professor of Economics  

Kono, Junichiro, 2000. Professor of Electrical and Computer Engineering, of Physics and Astronomy, and of Materials Science and NanoEngineering, Applied Physics Graduate Program Chair
BS (1990), MS (1992) University of Tokyo; PhD (1995) State University of New York—Buffalo

Kortum, Philip T., 2005. Associate Professor of Psychological Sciences
BS (1988) University of Nebraska; MS (1990) Northeastern University; PhD (1994) University of Texas—Austin

Kowal, Daniel R., 2017. Assistant Professor of Statistics

Kriegel, Uriah, 2019. Professor of Philosophy

Kripal, Jeffrey J., 2002. J. Newton Rayzor Professor of Religion, Associate Dean of Humanities

Krouskop, Mark, 2013. Lecturer of Theater and Theater Production Manager
BA (2002), MFA (2012) University of Houston

Krouskop, Thomas A., 2013. Adjunct Professor of Kinesiology

Kürti, László, 2015. Associate Professor of Chemistry, Associate Co-Chair for Graduate Studies

Kyrillidis, Anastasios, 2018. Assistant Professor of Computer Science, Assistant Professor of Electrical and Computer Engineering

LaBove, Shannon, 2013. Lecturer of Forensics

Lairson, David R., 1977. Adjunct Professor of Economics
BA (1970), MA (1971), PhD (1975) University of Kentucky

Lamos, Colleen R, 1989. Associate Professor of English
BA (1978) State University of New York–Binghamton; PhD (1988) University of Pennsylvania

Landes, Christy F., 2009. Professor of Chemistry, of Electrical and Computer Engineering and of Chemical and Biomolecular Engineering
BS (1998) George Mason University; PhD (2003) Georgia Institute of Technology

Lane, David M., 1977. Associate Professor of Psychological Sciences, Statistics, and Management
BA (1971) Clark University; MA (1973) Tufts University; PhD (1977) Tulane University

Lansford, Benjamin, 2014. Professor in the Practice of Accounting

Lapinski, Lisa, 2014. Assistant Professor of Visual and Dramatic Arts

Lavenda, Richard A., 1987. Professor of Composition and Theory
BA (1977) Dartmouth College; MMus (1979) Rice University; DMA (1983) University of Michigan

Lee, Cin-Ty, 2002. Professor of Earth, Environmental and Planetary Sciences, Department Chair of Earth, Environmental and Planetary Sciences

Leebron, David W., 2004. President and Professor of Political Science
BA (1976) Harvard University; JD (1979) Harvard Law School

Leeds, Brett Ashley, 2001. Professor of Political Science, Department Chair of Political Science
BA (1991), University of North Carolina at Chapel Hill; PhD (1998) Emory University

LeGrand, Thomas, 2003. Associate Professor of Clarinet
BMus (1980) Curtis Institute of Music

Lenardic, Adrian, 1999. Professor of Earth, Environmental and Planetary Sciences
BA (1986) University of Wisconsin; MS (1990), PhD (1995) University of California—Los Angeles

Levander, Alan R., 1984. Carey Croneis Professor of Earth, Environmental and Planetary Sciences
BS (1976) University of South Carolina; MS (1978), PhD (1984) Stanford University

Levander, Caroline F., 2000. Vice President for Digital Education and Strategic Initiatives, Carlson Professor in the School of Humanities, Professor of English

Levin, Harvey S., 2004. Adjunct Professor of Psychological Sciences
BA (1967) City University of New York; MA (1971), PhD (1972) University of Iowa

Levy, Eugene H., 2000. Andrew Hays Buchanan Professor of Astrophysics, Professor of Physics and Astronomy
AB (1966) Rutgers University; PhD (1971) University of Chicago

Lewis, Steven W., 1996. Professor in the Practice, Research Fellow at the James A. Baker III Institute for Public Policy, Associate Director at the Chao Center for Asian Studies

Li, Haiyang, 1985. Ohio University; PhD (1996) Stanford University

Li, Hui, 2015. Noah Harding Assistant Professor in Statistics
Li, Qilin, 2006. Professor of Civil and Environmental Engineering, Materials Science and NanoEngineering and Chemical Biomolecular Engineering 
BE (1995) Tsinghua University, Beijing, China; MS (1999), PhD (2002) University of Illinois–Urbana-Champaign

Li, Siran, 2017. G.C. Evans Instructor of Mathematics 

Li, Wei, 2012. Associate Professor of Physics and Astronomy 
BS (2004) University of Science and Technology of China; PhD (2009) Massachusetts Institute of Technology

Liang, Edison P., 1991. Andrew Hays Buchanan Professor of Astrophysics 
BA (1967), PhD (1971) University of California–Berkeley

Lichtarge, Olivier, 2008. Adjunct Professor of Biochemistry and Cell Biology 

Lillevik, Peter Y., 2008. Adjunct Associate Professor of BioEngineering 
BS (1994), MS (1997) University of Northern Iowa; PhD (2001) Kansas State University

Lin, Cho-Liang, 2006. Benjamin Armistead Shepherd Distinguished Professor, Professor of Violin 
BMus (1981) The Juilliard School of Music

Lin, Yingyan, 2018. Assistant Professor of Electrical and Computer Engineering 

Link, Stephan, 2006. Professor of Chemistry, Professor of Electrical and Computer Engineering 
MA (1996) Technical University of Braunschweig, Germany; PhD (2000) Georgia Institute of Technology

Little, Stephen H., 2010. Adjunct Associate Professor of Bioengineering 
BS (1993) York University, Canada; MD (1997) McMaster University, Canada

Loch-Temzelides, Ted, 2008. George and Cynthia Mitchell Chair in Sustainable Development, Professor of Economics 
BA (1988) University of Piraeus, Greece; PhD (1995) University of Minnesota

Loewen, Peter V., 2006. Associate Professor of Musicology 
BMus (1987) University of Manitoba; MMus (1990), PhD (2000) University of Southern California

Long, Andrew, 2018. Assistant Professor of Physics and Astronomy 

Loos, Peter, 2014. Professor in the Practice of Materials Science and NanoEngineering 
BA (1977); MS (1982), PhD (1986) Rice University

López-Alonso, Moramay, 2009. Associate Professor of History 

López-Durán, Fabiola, 2011. Associate Professor of Art History, Magister of Hanszen College 
BA (1987) Universidad de los Andes School of Architecture; PhD (2009) Massachusetts Institute of Technology

Lord, Tom F., 1992. Lecturer of Architecture 
BA (1960) Southern Methodist University; MA (1965) Yale University

Lou, Jun, 2005. Professor of Materials Science and NanoEngineering, Associate Department Chair of Materials Science and NanoEngineering 

Loveland, Katherine A., 1991. Adjunct Professor of Psychological Sciences 
BA (1975) University of Virginia; PhD (1980) Cornell University

Ludwig, Joseph A. IV, 2007. Adjunct Assistant Professor of Bioengineering 
BBA (1994) University of Iowa College of Business; MD (1998) University of Iowa College of Medicine

Luan, Lan, 2019. Assistant Professor of Electrical and Computer Engineering 
BS (2004) University of Science and Technology of China; PhD (2011) Stanford University

Lukic, Milivoje, 2016. Associate Professor of Mathematics 

Lurie, Susan, 1987. Associate Professor of English 

Lwigale, Peter Y., 2008. Associate Professor of BioSciences 
BS (1994), MS (1997) University of Northern Iowa; PhD (2001) Kansas State University

Ma, Jianpeng, 2000. Professor of Bioengineering, Professor of BioSciences 
BS (1985) Fudan University P.R. China; PhD (1996) Boston University

Maas, Michael R., 1984. William Gaines Twyman Professor of History 
BA (1973) Cornell University; MA (1975), PhD (1982) University of California–Berkeley

Mackie, Hilary S., 1993. Associate Professor of Classical and European Studies 

MacKintosh, Frederick C., 2016. Abercrombie Professor of Chemical and Biomolecular Engineering, Professor of Physics & Astronomy, and Professor of Chemistry 

Mackwell, Stephen J., 2005. Adjunct Professor of Earth, Environmental and Planetary Sciences 
BS (1978), MS (1979) University of Canterbury, Christchurch, NZ; PhD (1985) Australian National University

Maher, Lynn M., 2007. Adjunct Professor of Psychological Sciences 

Makdisi, Ussama, 1997. Arab-American Educational Foundation Professor of Arab Studies in History, Professor of History


Manca, Joseph, 1989. Nina J. Cullinan Professor of Art History, Professor of Art History, Associate of Baker College

Marcie, Amanda, 2019. William Marsh Rice Trustee Chair, Assistant Professor of Chemical and Biomolecular Engineering
BS (2008), PhD (2015) University of Illinois

Marquez, Eleazar, 2016. Assistant Teaching Professor of Mechanical Engineering
BS (2008), MS (2010) University of Texas Pan-America; PhD (2016) Rice University

Marte-Wood, Alden, 2019. Assistant Professor of English

Martí-Arbona, Angel A., 2008. Associate Professor of Chemistry, of Bioengineering, and of Materials Science and NanoEngineering

Martin, Randi C., 1982. Elma Schneider Professor of Psychological Sciences
BA (1971) University of Oregon; MS (1977), PhD (1979) Johns Hopkins University

Martinez de Videa, Luz Maria, 2011. Adjunct Associate Professor of Chemistry

Masiello, Caroline A., 2004. Professor of Earth, Environmental and Planetary Sciences

Matsuda, Seichichi P. T., 1995. Dean of Graduate and Postdoctoral Studies, E. Dell Butcher Professor of Chemistry, Professor of BioSciences

Matthews, Kathleen Shive, 1972. Stewart Memorial Professor of BioSciences
BS (1966) University of Texas–Austin; PhD (1970) University of California–Berkeley

Matthews, Kirstin, 2003. Lecturer with the Professional Science Masters Program
BA (1996) University of Texas-Austin; PhD (2003) University of Texas Health Science Center-Houston

Mawlawi, Osama R., 2002. Lecturer of Electrical and Computer Engineering

McDaniel, W. Caleb, 2008. Associate Professor of History, Magister of Duncan College

McDavid, Carol, 2008. Adjunct Assistant Professor of Anthropology

McGill, Scott, 2001. Professor of Classical and European Studies
BA (1990) Salve Regina College; PhD (2001) Yale University

McGinley, Matthew, 2017. Adjunct Professor of Electrical and Computer Engineering

McGlamery Jr., Gerald, 2018. Lecturer of Chemical and Biomolecular Engineering

McGovern, Patrick J., 2005. Lecturer of Earth, Environmental and Planetary Sciences
SB (1986), PhD (1996) Massachusetts Institute of Technology

McHugh, Kevin, 2019. Assistant Professor of Bioengineering
BS (2009) Case Western Reserve University; MS (2012), PhD (2014) Boston University

McIntosh, Susan Keech, 1980. Herbert S. Autrey Professor in Anthropology, Interim Dean of Social Sciences
BA (1973) University of Pennsylvania; MA (1975) Girton College, Cambridge University; MA (1976), PhD (1979) University of California–Santa Barbara

McNeil, Caroline V., 2008. Laboratory Coordinator, Lecturer of Chemistry

McNeil, Linda M., 1984. Professor of Education
BA (1966) Texas Tech University; MA (1968) Baylor University; PhD (1977) University of Wisconsin–Madison

McNew, James A., 2000. Professor of BioSciences
BS (1989) Texas A&M University; PhD (1994) University of Texas Southwestern Medical Center–Dallas

McPhail, S. Morton, 2003. Adjunct Associate Professor of Psychological Sciences
BA (1972) Trinity University; MS (1975), PhD (1978) Colorado State University

Meade, Andrew, J., 1989. Professor of Mechanical Engineering

Medlock, Kenneth, 2003. Adjunct Assistant Professor of Economics
MA (1999), PhD (2000) Rice University

Mellor-Crummey, John M., 1989. Professor of Computer Science and Electrical and Computer Engineering

Merényi, Erzsébet, 2000. Research Professor of Statistics
MSc (1975) Attila Jozsef University, Hungary; PhD (1980) Attila Jozsef University and Central Research Institute for Physics, Hungarian Academy of Sciences

Merlo, Antonio, 2014. Adjunct Professor of Economics

Messmer, David K., 2009. Lecturer of the Program for Writing and Communication

Metcalf, Alida C., 2009. Harris Masterson Jr. Professor of History, Professor of History
BA (1976) Smith College; MA (1978), PhD (1983) University of Texas–Austin

Michie, Helena, 1990. Agnes Cullen Arnold Professor of Humanities, Professor of English, Director of the Center for the Study of Women, Gender and Sexuality
BA (1979) Princeton University; PhD (1984) University of Pennsylvania

Mikos, Antonios G., 1991. Louis Calder Professor of Chemical Engineering, Professor of Bioengineering and Materials Science and NanoEngineering, Director of Center for Excellence in Tissue Engineering and J.W. Cox Laboratory for Biomedical Engineering
Diploma (1983) Aristotle University of Thessaloniki, Greece; MS (1985), PhD (1988) Purdue University

Miles, Jonathan, 2018. Lecturer of Management

Miller, Jordan, 2013. Assistant Professor of Bioengineering

Miller, Thomas E. X., 2009. Associate Professor of Ecology and Evolutionary Biology
BA (2002) Colgate University; PhD (2007) University of Nebraska

Miranda, Marie Lynn, 2015. Professor of Statistics

Mittal, Vikas, 2007. J. Hugh Liedtke Professor of Marketing

Mohite, Aditya D., 2018. Associate Professor of Chemical and Biomolecular Engineering and Materials Science and NanoEngineering
BS (1999), MS (2001), PhD (2007) University of Louisville

Mok, Chin Man William, 2017. Lecturer of Earth, Environmental and Planetary Sciences

Mooijman, Marlon, 2019. Assistant Professor of Organizational Behavior
MSc (2012), PhD (2015) Leiden University

Moore, Janet, 2016. Lecturer of Communication
BSFS (1984) Georgetown University; JD (1987) University of Texas School of Law

Moorthy, Bhagavatula, 2018. Adjunct Professor of Chemical and Biomolecular Engineering
BS (1979) Madras University-India; MSc (1982) Andhra University-India; PhD (1988) Indian Institute of Science-India

Morey, Daryl, 2010. Adjunct Professor of Sport Management

Morgan, Alexander, 2015. Assistant Professor of Philosophy

Morgan, Julia K., 1999. Professor of Earth, Environmental and Planetary Sciences, Associate of Hanszen College

Morgan, T. Clifton, 1987. Albert Thomas Professor of Political Science
BA (1978) University of Oklahoma; MA (1980), PhD (1986) University of Texas–Austin

Morones, Jessica, 2017. Lecturer of Spanish
BA (2011) Universidad Autónoma de Tamaulipas; MA University of Massachusetts

Morosan, Emilia, 2007. Professor of Physics and Astronomy, of Chemistry, and of Materials Science and NanoEngineering
BS (1999) A. I. Cuza University; PhD (2005) Iowa State University

Morris, Jeffrey, 2011. Adjunct Professor of Statistics

Morrison, Donald Ray, 1988. Professor of Philosophy

Morton, Scott A., 2004. Adjunct Professor of Computational and Applied Mathematics

Morton, Timothy, 2012. Rita Shea Guffey Chair in English, Professor of English
BA (1989) Oxford University; PhD (1992) Oxford University

Moskvitina, Larisa, 2017. Lecturer of Russian
BA (1988), MA (1988) Irkutsk State University, Russia; PhD (1995) St. Petersburg University, Russia

Muharemovic, Tariq, 2011. Adjunct Professor in Electrical and Computer Engineering

Mukamel, Ronen, 2015. Assistant Professor of Mathematics

Mulligan, John, 2015. Lecturer of the Humanities

Musher, Lydia, 2016. Lecturer of Communication

Myers, Risa, 2017. Assistant Teaching Professor
Nagarajaiah, Satish, 1999. Professor of Civil and Environmental Engineering, Materials Science and NanoEngineering, and Mechanical Engineering
BS (1980) Bangalore University, India; MS (1982) Indian Institute of Science, India; PhD (1990) State University of New York—Buffalo

Nagrath, Deepak, 2018. Adjunct Associate Professor of Chemical and Biomolecular Engineering

Naik, Gururaj, 2016. Assistant Professor of Electrical and Computer Engineering

Najafi, Bijan, 2017. Adjunct Associate Professor of Electrical and Computer Engineering

Nakhle, Luay K., 2004. J. S. Abercrombie Professor, Professor of Computer Science, BioSciences, Department Chair of Computer Science

Naranjo-Olivares, Patricia, 2014. Assistant Professor of Accounting
BE (2003) Pontificia Universidad Católica de Chile; PhD (2014) Massachusetts Institute of Technology

Natelson, Douglas, 2000. Professor of Physics and Astronomy, of Electrical and Computer Engineering, and of Materials Science and NanoEngineering, Department Chair of Physics and Astronomy

Neagley, Linda E., 1993. Associate Professor of Art History

Nelson, Joanna, 2018. Assistant Professor of Mathematics
BS (2007) University of Illinois at Urbana-Champaign; PhD (2013) University of Wisconsin–Madison

Nelson-Campbell, Deborah, 1974. Professor of French
BA (1960) Wittenberg University; Certificat d'études Francaises, Ier Degré (1961) University of Grenoble, France; MA (1964), PhD (1970) Ohio State University

Nevidomskyy, Andriy, 2010. Associate Professor of Physics and Astronomy
MSc (2001) Ivan Franko National State University of Lviv; PhD (2005) University of Cambridge

Newell, Charles J., 1993. Adjunct Professor of Civil and Environmental Engineering

Newsome, Mary R., 2001. Adjunct Assistant Professor of Psychological Sciences

Ng, T. S. Eugene, 2003. Professor of Computer Science and Electrical and Computer Engineering

Nichol, Carolyn A., 2009. Assistant Research Professor of Chemistry
BS (1984) University of Massachusetts–Amherst; MS (1990), PhD (1992) University of Texas–Austin

Nicolau, D. Colette, 2012. Lecturer of Psychological Sciences

Nicolau, K.C., 2013. Harry C. and Olga K. Wiess Professor of Chemistry
B.Sc. (1969) Bedford College, University of London; PhD (1972) University College, University of London

Niedzielski, Nancy A., 1999. Associate Professor of Linguistics, Associate of Lovett College

Nikonowicz, Edward P., 1993. Professor of BioSciences
BS (1985) St. Louis University; PhD (1990) Purdue University

Nittroeur, Jeffrey, 2012. Assistant Professor of Earth, Environmental and Planetary Sciences

Niu, Fenglin, 2002. Professor of Earth, Environmental and Planetary Sciences
BS (1988) University of Science and Technology of China; MS (1994), PhD (1997) University of Tokyo

Nixon, Burke, 2014. Lecturer of the Program in Writing and Communication
BA (2003) University of Texas–Austin; MFA (2011) University of Mississippi

Nordlander, Peter, 1989. Wiess Chair in Physics and Astronomy, Professor of Electrical and Computer Engineering, and of Materials Science and NanoEngineering
BA (1977) Swedish Cavalry Officers’ School; MS (1980), PhD (1985) Chalmers University of Technology, Gothenburg, Sweden

Novotny, Alma M., 2000. Lecturer of BioSciences
BS (1968) Duke University; PhD (1972) Purdue University

Nunn, Jeffrey A., 2000. Lecturer of Earth, Environmental and Planetary Sciences

O’Brien, Diana, 2019. Albert Thomas Associate Professor of Political Science

Oden, Z. Maria, 2004. Teaching Professor of Bioengineering, Director of the Oshman Engineering Design Kitchen, Co-Director of Rice 360° Institute for Global Health

Odzierzowska-Katarzyna, Katarzyna, 2019. Assistant Professor of Management

Oesmann, Astrid, 2013. Associate Professor of German
Oukaderova, Lida, 2008. Associate Professor of Art History
BA (1997) Martin-Luther University; MA (1999), PhD (2005) University of Texas–Austin

Ozaki, Naoko, 2015. Lecturer of Japanese
BA (1997) University of Arizona; MS (2005), PhD (2011) Indiana University

Padgett, Jamie Ellen, 2007. Associate Professor of Civil and Environmental Engineering

Padley, B. Paul, 1996. Professor of Physics and Astronomy
BS (1981) York University; MS (1984), PhD (1987) University of Toronto

Pagano, Guido, 2019. Assistant Professor of Physics and Astronomy

Page, Paula, 1985. Associate Professor of Harp
BMus (1969) Cleveland Institute of Music

Pagel, Mark, 2017. Adjunct Professor of Chemistry

Pai, Mallesh, 2016. Associate Professor of Economics
BSc (1986) University of Orissa; MS (1988) University of Buckingham; PhD (1994) University of California

Page, Paula, 1985. Associate Professor of Harp
BMus (1969) Cleveland Institute of Music

Palmer, Michael T, 2001. Adjunct Professor of Mathematics

Ochoa, Jesus A., 2019. Assistant Professor of Psychology
PhD (2010) University of California

O'Driscoll, John, 2004. Assistant Professor of Psychology

O'Sullivan, Elizabeth, 2001. Senior Lecturer of Communications

Oobie, Carroll, 1999. Adjunct Professor of Civil and Environmental Engineering
BS (1958) University of Southwestern Louisiana; MS (1956) Ohio State University; PhD (1966) Rice University

Ouharoun, Noureddine, 2008. Assistant Professor of Computer Science
BA (1993) Université de Montréal; MS (1997) Université de Montréal; PhD (2001) University of California

Papageorgiou, Theodora Dorina, 2016. Adjunct Assistant Professor of Psychology
BA (1995) University of Georgia; MSc (1997) Johns Hopkins University; PhD (2006) University of Texas, MD Anderson Cancer Center

Park, Sohyoung, 2000. Graduate Teaching Assistant in Biology

Parsons, Sandra V., 2011. Assistant Teaching Professor of Psychological Sciences, Director of Pedagogy, Resident Associate of Will Rice College

Parsons, William B., 1993. Professor of Religion, Associate of Brown College
BA (1979) Brandeis University; MDiv (1982) Yale University; PhD (1993) University of Chicago

Pasquali, Matteo, 1999. A.J. Hartsough Professor of Chemical and Biomolecular Engineering, of Materials Science and NanoEngineering, and of Chemistry
MS (1992) University of Bologna; PhD (1999) University of Minnesota

Patel, Ankit, 2006. Adjunct Assistant Professor of BioSciences
BA (1986) Orissa University; MS (1988) University of Buckingham; PhD (1995) University of Calgary

Patel, Ankita, 2017. Assistant Professor of Electrical and Computer Engineering

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Pazgal, Amit. 2006. Friedkin Chair in Management, Professor of Marketing
BS (1987), MS (1992) Tel Aviv University; PhD (1997) Northwestern University

Pearson, Deborah A. 1991. Adjunct Professor of Psychological Sciences
BA (1979) Wesleyan University; MA (1982), PhD (1986) Rice University

Pellis, Neal R. 1997. Adjunct Professor of BioSciences
PhD (1972) Miami University

Perkins, Heidi. 2008. Teaching Professor of Kinesiology, Department Chair of Kinesiology
BS (1988) Missouri State University; MEd (1992), PhD (2006) University of Houston

Perkins Ball, Amanda. 2017. Assistant Teaching Professor of Kinesiology

Perren, Isabelle. 2012. Professor of Economics

Petrick, Elizabeth. 2019. Associate Professor of History

Petitt, B. Montgomery. 2010. Adjunct Professor of Chemistry
BS (1975), PhD (1980) University of Houston

Peyravan, Leila. 2016. Assistant Professor of Accounting
BA (2004), MBA (2007), PhD (2016) University of Toronto

Phillips, Dereth. 2004. Lecturer of BioSciences

Phillips, George. 2012. Professor of BioSciences, Associate Dean of Research, Associate Chair
BA (1974) Rice University; PhD (1976) Rice University

Piazza, Alessandro. 2018. Assistant Professor of Strategy

Pimpinelli, Alberto. 2014. Assistant Research Professor of Materials Science and NanoEngineering
MS (Laurea, 1986) University of Milan, Italy; PhD (1989) University of Parma, Italy

Pinn, Anthony B. 2004. Agnes Cullen Arnold Professor of Humanities, Professor of Religion

Pitkow, Xaq. 2012. Assistant Professor of Electrical and Computer Engineering

Pitts, Timothy. 1992. Professor of Double Bass

Pollnitz, Aysha. 2016. Associate Professor of History

Pomerantz, James R. 1988. Professor of Psychological Sciences
BA (1968) University of Michigan; PhD (1974) Yale University

Pope, Albert H. 1986. Gus Sessions Wortham Professor of Architecture

Porter, Constance Elise. 2011. Visiting Assistant Professor of Marketing

Preston, Daniel. 2019. Assistant Professor of Mechanical Engineering
BS (2012) University of Alabama; MS (2014), PhD (2017) Massachusetts Institute of Technology

Protasov, Anastasiya. 2017. Lecturer of Computational and Applied Mathematics
BS (2005), MS (2007) Novosibirsk State University; PhD (2016) Rensselaer Polytechnic Institute

Pu, Han. 2003. Professor of Physics and Astronomy, Associate Chair for the Graduate Program
BS (1992) University of Science and Technology of China; MS (1994), PhD (1999) University of Rochester

Puruganan, Mary M. 2000. Senior Lecturer of Professional Communications
BS (1990) Texas A&M University; PhD (1998) Rice University

Putnam-Farr, Eleanor. 2018. Assistant Professor in Marketing

Qian, Nanxiu. 1993. Professor of Chinese Literature
MA (1982) Nanjing University; PhD (1994) Yale University

Rachleff, Larry. 1991. Walter Kris Hubert Professor of Orchestra Conducting
BS (1977) University of Connecticut; MM (1979) University of Michigan

Radigan, Judy. 2002. Lecturer of Education
MFA (1985) University of Houston; MEd (1997) University of St. Thomas; PhD (2001) University of Houston

Ragsdale, Lyn. 2006. Radoslav A. Tsanoff Chair of Public Affairs, Professor of Political Science
Reynolds, Michael A., 2010. Herbert S. Autrey Professor of Accounting

Ramos, Renata, 2010. Associate Teaching Professor of Bioengineering
BS (2002) Instituto Tecnológico y de Estudios Superiores de Monterrey, Mexico; PhD (2008) University of Arizona

Rao, Arvind, 2014. Adjunct Assistant Professor of Electrical and Computer Engineering

Raphael, Robert M., 2001. Associate Professor of Bioengineering
BS (1989) University of Notre Dame; MS (1992), PhD (1996) University of Rochester

Rarick, Janet, 1992. Associate Professor of Music Career Development
BM (1973) University of Southern California

Raun, Loren Hopkins, 2006. Professor in the Practice of Statistics, Environmental Analysis
BS (1986) University of Texas; MS (1989), PhD (1998) Rice University

Redding, Stephen, 2009. Lecturer of Architecture
BS (1970) Rice University; MME (1971) Rice University

Regier, Alexander T., 2009. Professor of English

Reid, Alan, 2017. Edgar Odell Lovett Professor of Mathematics, Department Chair of Mathematics

Reif, Patricia H., 1992. Professor of Physics and Astronomy, Associate Director of Outreach Programs, Rice Space Institute
BS (1971) Oklahoma State University; MS (1974), PhD (1975) Rice University

Reynolds, Michael A., 2013. Adjunct Professor of Chemical and Biomolecular Engineering

Rhodes, Anna, 2017. Assistant Professor of Sociology

Rice, John Robin, 2018. Professor of Voice

Richards-Kortum, Rebecca, 2005. The Malcolm Gillis University Professor, Professor of Bioengineering, Professor of Electrical and Computer Engineering, Director of Rice 360: Institute for Global Health Technology
BS (1985) University of Nebraska; MS (1987), PhD (1990) Massachusetts Institute of Technology

Richardson, Eric, 2013. Adjunct Associate Professor of Bioengineering
BS (2005) Brigham Young University; PhD (2009) University of Minnesota

Rivière, Béatrice M., 2008. Noah Harding Chair and Professor of Computational and Applied Mathematics

Ramesh, Kris, 2010. Herbert S. Autrey Professor of Accounting

Rao, Arvind, 2014. Adjunct Assistant Professor of Electrical and Computer Engineering

Raphael, Robert M., 2001. Associate Professor of Bioengineering
BS (1989) University of Notre Dame; MS (1992), PhD (1996) University of Rochester

Rarick, Janet, 1992. Associate Professor of Music Career Development
BM (1973) University of Southern California

Raun, Loren Hopkins, 2006. Professor in the Practice of Statistics, Environmental Analysis
BS (1986) University of Texas; MS (1989), PhD (1998) Rice University

Redding, Stephen, 2009. Lecturer of Architecture
BS (1970) Rice University; MME (1971) Rice University

Regier, Alexander T., 2009. Professor of English

Reid, Alan, 2017. Edgar Odell Lovett Professor of Mathematics, Department Chair of Mathematics

Reif, Patricia H., 1992. Professor of Physics and Astronomy, Associate Director of Outreach Programs, Rice Space Institute
BS (1971) Oklahoma State University; MS (1974), PhD (1975) Rice University

Reynolds, Michael A., 2013. Adjunct Professor of Chemical and Biomolecular Engineering

Rhodes, Anna, 2017. Assistant Professor of Sociology

Rice, John Robin, 2018. Professor of Voice

Richards-Kortum, Rebecca, 2005. The Malcolm Gillis University Professor, Professor of Bioengineering, Professor of Electrical and Computer Engineering, Director of Rice 360: Institute for Global Health Technology
BS (1985) University of Nebraska; MS (1987), PhD (1990) Massachusetts Institute of Technology

Richardson, Eric, 2013. Adjunct Associate Professor of Bioengineering
BS (2005) Brigham Young University; PhD (2009) University of Minnesota

Rivière, Béatrice M., 2008. Noah Harding Chair and Professor of Computational and Applied Mathematics

Ramesh, Kris, 2010. Herbert S. Autrey Professor of Accounting

Rao, Arvind, 2014. Adjunct Assistant Professor of Electrical and Computer Engineering

Raphael, Robert M., 2001. Associate Professor of Bioengineering
BS (1989) University of Notre Dame; MS (1992), PhD (1996) University of Rochester

Rarick, Janet, 1992. Associate Professor of Music Career Development
BM (1973) University of Southern California

Raun, Loren Hopkins, 2006. Professor in the Practice of Statistics, Environmental Analysis
BS (1986) University of Texas; MS (1989), PhD (1998) Rice University

Redding, Stephen, 2009. Lecturer of Architecture
BS (1970) Rice University; MME (1971) Rice University

Regier, Alexander T., 2009. Professor of English

Reid, Alan, 2017. Edgar Odell Lovett Professor of Mathematics, Department Chair of Mathematics

Reif, Patricia H., 1992. Professor of Physics and Astronomy, Associate Director of Outreach Programs, Rice Space Institute
BS (1971) Oklahoma State University; MS (1974), PhD (1975) Rice University

Reynolds, Michael A., 2013. Adjunct Professor of Chemical and Biomolecular Engineering

Rhodes, Anna, 2017. Assistant Professor of Sociology

Rice, John Robin, 2018. Professor of Voice

Richards-Kortum, Rebecca, 2005. The Malcolm Gillis University Professor, Professor of Bioengineering, Professor of Electrical and Computer Engineering, Director of Rice 360: Institute for Global Health Technology
BS (1985) University of Nebraska; MS (1987), PhD (1990) Massachusetts Institute of Technology

Richardson, Eric, 2013. Adjunct Associate Professor of Bioengineering
BS (2005) Brigham Young University; PhD (2009) University of Minnesota

Rivière, Béatrice M., 2008. Noah Harding Chair and Professor of Computational and Applied Mathematics

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Roykovich, Justin, 2018. Lecturer of Photography
BFA (2011) George Mason University; MFA (2014) Mason Gross School of the Arts, Rutgers University

Rudolf, Volker H. W., 2007. Professor of BioSciences

Rusin, Craig, 2013. Adjunct Assistant Professor of Computational and Applied Mathematics
BSE (2001) Princeton University; PhD (2009) University of Virginia

Rusk, Jerrold G., 2006. Professor of Political Science
BS (1963) Brigham Young University; PhD (1968) University of Michigan

Russell, Jeff, 2018. Senior Lecturer in Communication
BA (2007), MBA (2014) University of Texas–Austin

Ryang, Sonia, 2014. T.T. and W.F. Chao Center Professor of Asian Studies, Director of the Chao Center for Asian Studies

Sabharwal, Ashutosh, 2001. Professor of Electrical and Computer Engineering, Department Chair of Electrical and Computer Engineering

Sachdeva, Kunal, 2018. Assistant Professor of Finance

Salaberry, M. Rafael, 2013. Mary Gibbs Jones Professor of Humanities; Professor of Spanish, Director of Research, Center for Languages and Intercultural Communication

Salas, Eduardo, 2015. Allyn R. and Gladys M. Cline Professor, Department Chair of Psychological Sciences
BA (1978) Florida International University; MS (1980) University of Central Florida; PhD (1984) Old Dominion University

Saltz, Julia, 2014. Assistant Professor of Ecology and Evolutionary Biology
AB (2005) Princeton University; PhD (2011) University of California-Davis

Sams, Clarence F., 1997. Adjunct Assistant Professor of BiocSciences
BA (1975), PhD (1983) Rice University

Samuels, Danny M., 1981. Professor in the Practice of Architecture
BArch (1971) Rice University

San, Ka-Yiu, 1984. E.D. Butcher Professor of Bioengineering, Professor of Chemical and Biomolecular Engineering

Sanders, Paula A., 1987. Professor of History, Director of the Boniuk Institute

Sano, Akane, 2018. Rice Trustee Chair, Assistant Professor of Electrical and Computer Engineering

Santos, Hélade, 2014. Lecturer of Spanish and Portuguese, Director of Language Instruction, Center for Languages and Intercultural Communication

Sarkar, Vivek, 2007. Adjunct Research Professor of Computer Science

Saterbak, Ann, 2002. Adjunct Professor
BA (1990) Rice University; PhD (1995) University of Illinois

Sazykin, Stanislav, 2005. Associate Research Professor of Physics and Astronomy
BS (1994) Utah State University; MS (1996) Moscow Institute of Physics and Technology; PhD (2000) Utah State University

Schaefer, Andrew J., 2015. Noah Harding Chair, Professor of Computational and Applied Mathematics and Computer Science, Magister of Wiess College

Schaefer, Laura, 2015. Burton J. and Ann M. McMurtrey Chair in Engineering, Professor of Mechanical Engineering, Department Chair of Mechanical Engineering, Magister of Wiess College
BA, BS (1995) Rice University; MA (1997), PhD (2000) Georgia Institute of Technology

Schaum, R. Troy, 2011. Associate Professor in Architecture

Schell, Rick, 2006. Senior Lecturer of Management
BA (1971) Eastern Michigan University; MA (1975), PhD (1976) Rice University

Schell, Wendy, 2008. Senior Lecturer of Kinesiology
BS (1994) Auburn University; BS (1996) Georgia State University; MS (2007) Texas Women's University

Schimmel, Ian, 2011. Senior Lecturer of English
BA (2005) Tufts University; MFA (2010) University of Houston

Schroeder, Timothy, 2015. Professor of Philosophy, Department Chair of Philosophy

Schuler, Douglas A., 1992. Associate Professor of Business and Public Policy
BS (1985) University of California–Berkeley; PhD (1992) University of Minnesota

Schwanauer, Stephen, 2011. Adjunct Professor in Electrical and Computer Engineering
BS (1981), PhD (1986) Yale University

Schweinberger, Michael, 2013. Assistant Professor of Statistics
MS (2002), PhD (2007) University of Groningen, the Netherlands
Schwindt-Bayer, Leslie A., 2013. Professor of Political Science

Scott, David W., 1979. Noah Harding Professor of Statistics
BA (1972), MA, PhD (1976) Rice University

BS (1979), PhD (1983) University of Buenos Aires

Segarra, Santiago, 2018. Assistant Professor of Electrical and Computer Engineering
BSc (2011) Buenos Aires Institute of Technology; MSc (2014), PhD (2016) University of Pennsylvania

Segatori, Laura, 2007. Associate Professor of Chemical and Biomolecular Engineering, Bioengineering, and BioSciences
BS (2000), MS (2000) University of Bologna, Italy; PhD (2005) University of Texas–Austin

Segner, III, Edmund, 1996. Professor of the Practice in Civil Engineering Management
BS Rice University; MA University of Houston

Self, Bethany, 2014. Artist Teacher of Opera Studies


Senftle, Thomas, 2017. William Marsh Rice Trustee Chair, Assistant Professor of Chemical and Biomolecular Engineering

Sershen, Cheryl L., 2019. Lecturer in Computational and Applied Mathematics

Shahsavari, Rouzbeh, 2011. Adjunct Assistant Professor of Civil and Environmental Engineering and of Materials Science and NanoEngineering
BS (2002) Sharif University of Technology, Iran; MS (2005) McGill University, Canada; PhD (2010) Massachusetts Institute of Technology

Shamoo, Yousef, 1998. Vice Provost for Research, Professor of BioSciences

Shaw, Chad A., 2004. Adjunct Assistant Professor of Statistics

Sheafor, Stephen J., 2002. Adjunct Professor of Electrical and Computer Engineering
BS (1972), MEE (1972), Rice University; PhD (1974) University of Illinois; MBA (1979) Santa Clara University

Shehabuddin, Elora, 2001. Associate Professor of Humanities and Political Science

Shen, Yu, 2002. Adjunct Professor of Statistics

Sher, George, 1991. Herbert S. Autrey Professor of Humanities, Professor of Philosophy
BA (1964) Brandeis University; PhD (1972) Columbia University

Shibatani, Masayoshi, 2002. Deedee McMurtry Professor of Humanities, Professor of Linguistics
BA (1970), PhD (1973) University of California–Berkeley

Shimizu, Sayuri Guthrie, 2014. Dunlevie Family Chair in History, Professor of History

Shrivastava, Anshumali, 2015. Assistant Professor of Computer Science and Statistics

Shumway, Nicolas, 2010. Frances Moody Newman Professor of Humanities, Professor of Spanish, Portuguese and Latin American Studies

Si, Qimiao, 1994. Harry C. and Olga K. Wiess Professor of Physics and Astronomy
BS (1986) University of Science and Technology of China; PhD (1991) University of Chicago

Sickles, Robin, 1985. Reginald Henry Hargrove Chair in Economics and Professor of Statistics
BS (1972) Georgia Institute of Technology; PhD (1976) University of North Carolina

Sidbury, James, 2011. Andrew W. Mellon Distinguished Professor of Humanities, Professor of History

Siebach, Kirsten, 2018. Assistant Professor of Earth, Environmental and Planetary Sciences
BA (2011) Washington University in St. Louis; PhD (2016) California Institute of Technology

Siefert, Janet, 2002. Associate Research Professor in Statistics
BS (1975) University of Central Arkansas; PhD (1997) University of Houston

Siemann, Evan, 1998. Harry C. and Olga K. Wiess Professor of BioSciences
AB (1989) Cornell University; PhD (1997) University of Minnesota

Siewert, Charles, 2010. Robert Alan and Kathryn Dunlevie Hayes Chair of Humanities, Professor of Philosophy
BA (1983) Reed College; PhD (1994) University of California–Berkeley

Silberg, Jonathan J., 2004. Stewart Memorial Professor of BioSciences

Simar, Ray, Jr., 2009. Professor in the Practice of Computer Architecture and Electrical and Computer Engineering
BS (1981) Texas A&M University; MS (1983) Rice University

Simoes Correa, Adrienne, 2012. Assistant Professor of BioSciences

Simpson, Robert, 2002. Lecturer of Church Music
AB (1970) Brown University; SMM (1972) Union Theological Seminary

Sinclair, James B., 1978. Lecturer of Electrical and Computer Engineering, Associate Dean of Engineering
BSEE (1973), MEE (1974), PhD (1979) Rice University

Sivaramakrishnan, K., 2012. Henry Gardiner Symonds Professor of Accounting

Skura, Meredith, 1978. Libby Shearn Moody Professor of English, Professor of English
BA (1965) Swarthmore College; PhD (1971) Yale University

Smith, Brinton Averil, 2005. Associate Professor of Cello

Smith, D. Brent, 2000. Associate Professor of Management and Psychological Sciences, Senior Associate Dean of Executive Education

Snow, Edward A., 1981. Mary Gibbs Jones Chair for the Humanities, Professor of English
BA (1964) Rice University; MA (1966) University of California—Riverside; PhD (1969) State University of New York—Buffalo

Solomon, Scott, 2009. Associate Teaching Professor of BioSciences
BS (2000) University of Illinois—Urbana-Champaign; PhD (2007) University of Texas—Austin

Somerville, Ted, 2008. Lecturer of Classical and European Studies
BA (1999) University of Texas—Austin; PhD (2007) Harvard University

Sonenschein, Scott, 2007. Henry Gardiner Symonds Professor of Management

Song, Jayoung, 2016. Lecturer of Korean
BA (2005) Kyung Hee University; MA (2010), PhD (2014) University of Texas—Austin

Song, Yongcheng, 2009. Adjunct Assistant Professor of Chemistry
BS (1993) Nanjing University; PhD (2001) National University of Singapore/Institute of Molecular and Cell Biology

Spanos, Pol D., 1984. Lewis B. Ryon Professor of Mechanical Engineering and Civil Engineering, Civil and Environmental Engineering
Diploma (1973) National Technical University, Greece; MS (1974), PhD (1976) California Institute of Technology

Sparagana, John, 1989. Grace Christian Vietti Chair in Visual Arts, Professor of Visual and Dramatic Arts, Department Chair of Visual and Dramatic Arts

Sperandio, Christopher, 2008. Associate Professor of Visual and Dramatic Arts

Spieler, Christof, 2000. Senior Lecturer of Architecture
BS (1997), MS (1999) Rice University

Stadler, Lauren, 2015. Assistant Professor of Civil and Environmental Engineering

Stallings, Tom, 2007. Professor in the Practice of Sport Management
BA (1991) University of Texas; MED (2008) University of Houston

Stallmann, Kurt, 2002. Professor of Composition and Theory

Stanciulescu, Ilina, 2009. Associate Professor of Civil and Environmental Engineering and of Mechanical Engineering

Stasevicius, Maria Luján, 2016. Lecturer of Spanish

Stein, Robert M., 1979. Lena Gohlman Fox Professor of Political Science
BA (1972) Ohio Wesleyan University; MA (1974), PhD (1977) University of Wisconsin—Milwaukee

Steiner, Uwe, 2001. Professor of German Studies

Stenson, Jared, 2013. Wiess Instructor of Physics and Astronomy
BS (2003), MS (2005) Brigham Young University; PhD (2010) Oregon State University

Stern, Michael, 1991. Professor of BioSciences
BS (1978) Stanford University; PhD (1985) University of California—San Francisco

Stevenson, Randolph T., 1997. Professor of Political Science

Stewart, Charles R., 1969. Professor of BioSciences
BS (1962) University of Wisconsin—Madison; PhD (1967) Stanford University

Stoll, Richard J., 1979. Albert Thomas Professor of Political Science
AB (1974) University of Rochester; PhD (1979) University of Michigan

Stratton, Richard B., 2007. Adjunct Professor of Chemical and Biomolecular Engineering
BS (1970) Ohio State University; MBA (1978) University of Tulsa

Strassmann, Diana, 2004. Carolyn & Fred McManis Distinguished Professor in the Practice of Humanities

Strauss, Matthew, 2015. Associate Professor of Percussion
Stringer, Tish, 2012. Lecturer of Film, Film Program Manager
BA (1997) University of Minnesota; PhD (2006) Rice University

Stroup, John M., 1988. Harry and Hazel Chavanne Professor of Religion, Professor of Religion
AB (1968) Washington University; MDiv (1972) Concordia Seminary; MPhil (1975), PhD (1980) Yale University

Studer, Christoph, 2013. Adjunct Assistant Professor of Electrical and Computer Engineering
MSc (2005), DrSc (2009) ETZ Zurich

Suarez-Potts, William, 2018. Associate Professor of History

Subramanian, Devika, 1995. Professor of Computer Science and of Electrical and Computer Engineering

Suh, Junghae, 2007. Associate Professor of Bioengineering and Chemical and Biomolecular Engineering

Summers, Carolyn, 1999. Adjunct Professor of Physics and Astronomy
BA (1970) Vanderbilt University; MEd (1977), EdD (1979) University of Houston

Swint, John Michael, 1977. Adjunct Professor of Economics
BA (1968) California State University–Humboldt; MA, PhD (1972) Rice University

Szablowski, Jerzy, 2020. Assistant Professor of Bioengineering

Tabor, Jeffrey J., 2010. Associate Professor of Bioengineering
BA (2001), PhD (2006) University of Texas–Austin

Taghikhani, Vahid, 2015. Adjunct Professor of Chemical and Biomolecular Engineering

Takayama, Hiromi, 2015. Assistant Professor of Materials Science and NanoEngineering

Tang, Xun, 2014. Henry S. Fox Chair, Professor of Economics

Tao, Yizhi Jane, 2002. Professor of BioSciences
BS (1992) Peking University; PhD (1999) Purdue University

Tapia, Richard A., 1970. University Professor, Maxfield-Oshman Professor of Computational and Applied Mathematics
BA (1961), MA (1966), PhD (1967) University of California–Los Angeles

Tavakkoli, Mohammad, 2017. Lecturer of Chemical and Biomolecular Engineering
BSc (2006), MSc (2009), PhD (2013) Sharif University of Technology-Iran


Tezduyar, Tayfun E., 1998. James F. Barbour Professor of Mechanical Engineering
MS (1978), PhD (1982) California Institute of Technology

Thall, Peter, 2017. Adjunct Professor of Statistics
BS (1971) Michigan State University; MS (1973) Florida State University; PhD (1975) Florida State University

Thomann, Isabella, 2012. Assistant Professor of Electrical and Computer Engineering
MS (2001) ETH Zurich; PhD (2009) University of Colorado: Boulder

Thomas, Edwin L., 2011. Ernest Dell Butcher Professor of Engineering, Professor of Materials Science and NanoEngineering, Chemical and Biomolecular Engineering and Chemistry
BS (1969) University of Massachusetts; PhD (1974) Cornell University

Tkaczuk, Tomasz, 2007. Professor of Bioengineering

Toffoletto, Frank R., 1996. Professor of Physics and Astronomy, Magister of Martel College
BS (1981) La Trobe University; PhD (1987) Rice University

Tomson, Mason B., 1977. Professor of Civil and Environmental Engineering
BS (1967) Southwestern State College; PhD (1972) Oklahoma State University

Tong, Sheng, 2015. Associate Research Professor of Bioengineering

Torres, Mark, 2017. Assistant Professor of Earth, Environmental and Planetary Sciences
BA (2010) Pitzer College; PhD (2015) University of Southern California

Torres, Michelle, 2019. Assistant Professor of Political Science

Tour, James M., 1999. T. T. and W. F. Chao Professor of Chemistry, and of Materials Science and NanoEngineering
BS (1981) Syracuse University; PhD (1986) Purdue University

Tran Lu, Lesa, 2012. Lecturer of Chemistry
BS (2007), MA (2009), PhD (2012) Rice University

Treangen, Todd, 2018. Assistant Professor of Computer Science
BSc (2002) University of Nebraska–Omaha; PhD (2008) Polytechnic University of Catalonia

Tsai, Ah-Lim, 2007. Adjunct Professor of BioSciences
BS (1974) National Taiwan University; PhD (1983) Rice University

Tunnell, Christopher, 2018. Assistant Professor of Physics and Astronomy, and of Computer Science
BSc (2008) University of Texas; PhD (2013) University of Oxford

Turbesi, Christopher, 2019. Lecturer of Music

Turi, Luziris Pineda, 2010. Lecturer of Spanish
BA (2003), MA (2005), PhD (2012) University of Houston

Turley, Ruth N. Lopez, 2010. Professor of Sociology

Umar, Tarik, 2017. Assistant Professor of Finance
BA (2010) Harvard University; MBA, PhD (2017) University of Chicago

Uribe, Rosa, 2017. Assistant Professor of BioSciences
BS (2006) San Francisco State University; PhD (2012) University of Texas–Austin

Vajtai, Robert, 2008. Research Professor in Materials Science and NanoEngineering
MSc (1986) Jate University; PhD (1997) Szeged University, Hungary

Van der Werff, Ivo-Jan, 2007. Professor of Viola
Associate Hons (1980) Royal College of Music

Vannucci, Marina, 2006. Noah Harding Professor of Statistics
BS (1982), PhD (1996) University of Florence, Italy

Vardi, Moshe, 1993. University Professor, Karen Ostrum George
Distinguished Service Professor of Computing Engineering, Director of Ken Kennedy Institute for Information Technology
BS (1975) Bar-Ilan University; MS (1980) Feinberg Graduate School of the Weizmann Institute of Science; PhD (1982) Hebrew University

Vargas Arreola, Francisco M., 2013. Louis Owen Assistant Professor of Chemical and Biomolecular Engineering
BS (1999), MS (2002) Tecnologico de Monterrey, Mexico; PhD (2009) Rice University

Varilly-Alvarado, Anthony, 2009. Professor of Mathematics

Varman, Peter J., 1983. Professor of Electrical and Computer Engineering and Computer Science
Btech (1978) Indian Institute of Technology, Kanpur; MSEE (1980), PhD (1983) University of Texas–Austin

Vassallo-Fernando, Jesus, 2013. Gus Wortham Assistant Professor of Architecture

Vasudevan, Venu, 2009. Adjunct Assistant Professor of Electrical and Computer Engineering
BS (1984) Indian Institute of Technology, New Delhi; PhD (1990) Ohio State University

Veeraraghavan, Ashok, 2010. Associate Professor of Electrical and Computer Engineering

Veiseh, Omid, 2017. Assistant Professor of BioEngineering

Verduzco, Rafael, 2009. Associate Professor of Chemical and Biomolecular Engineering, and of Materials Science and NanoEngineering

Verm, Karen Roethlisberger, 2016. Assistant Research Professor of the Practice of French

Videanu, Marcelo, 2011. Adjunct Associate Professor of Chemistry
BSc (1993) Instituto Tecnologico y de Estudios Superiores de Monterrey; PhD (1999) Arizona State University

Vieux, Baxter, 2003. Adjunct Professor of Civil and Environmental Engineering

Visweswaran, Kamala, 2020. T.T. and W.F. Chao Professor of Transnational South Asian Studies

Volz, Tracy, 1999. Professor of the Practice in Professional Communication, Director of the Engineering Communications Program

Wagner, Daniel S., 2003. Associate Professor of BioSciences
BA (1990) University of Texas; PhD (1997) University of Texas Health Science Center

Wainerdi, Richard E., 2012. Distinguished Adjunct Professor of Wiess School of Natural Sciences
BS (1952) University of Oklahoma; MS (1955), PhD (1958) Pennsylvania State University

Waligora-Davis, Nicole, 2008. Associate Professor of English

Waller, Dan Seth, 1998. Professor of Computer Science and of Electrical and Computer Engineering

Wallach, Steve, 2010. Adjunct Professor of Computer Science
BSEE (1966) Polytechnic University; MSEE (1967) University of Pennsylvania; MBA (1973) Boston University

Wamble, Mark S., 1991. Professor in the Practice of Architecture
Wang, Haotian. 2019. William Marsh Rice Trustee Chair, Assistant Professor of Chemical and Biomolecular Engineering
BS (2011), PhD (2016) Stanford University

Wang, Stephen. 2015. Associate Teaching Professor of Mathematics

Ward, Kerry R., 2001. Associate Professor of History

Ward, Robin A., 2008. Clinical Assistant Professor of Wiess School of Natural Sciences
BA (1986) Immaculata College; MA (1989) Villanova University; PhD (1997) University of Virginia

Ward-Griffin, Danielle, 2019. Assistant Professor of Musicology

Warmflash, Aryeh, 2014. Assistant Professor of BioSciences and Bioengineering

Warren, Joe D., 1986. Professor of Computer Science

BM (1966), MM (1967), DMA (1975) Eastman School of Music

Weckstrom Kantor, Virginia, 2012. Artist Teacher of Piano Chamber Music and Accompanying
BA (1969) Western College of Women; MMus (1971) Yale University School of Music

Wehmeyer, Geoffrey, 2018. Assistant Professor of Mechanical Engineering
BS (2013) University of Texas—Austin; PhD (2018) University of California—Berkeley

Weinberg, Armin D., 2010. Adjunct Professor of Kinesiology
BSc (1966), PhD (1971) Ohio State University

Weininger, Melissa, 2015. Anna Smith Fine Lecturer of Jewish Studies
BA (1996) Harvard University; PhD (2010) University of Chicago

Weisman, R. Bruce, 1979. Professor of Chemistry and of Materials Science and NanoEngineering, Associate Chair for Teaching
BA (1971) Johns Hopkins University; PhD (1977) University of Chicago

Weissenberger, Klaus H. M., 1971. Professor of German Studies
MA (1965) University of Hamburg, Germany; PhD (1967) University of Southern California

Wensel, Theodore G., 2010. Adjunct Professor of BioSciences
BS (1980) University of South Florida; PhD (1984) University of California

Welch, Chapman, 2009. Lecturer of Music

West, Julian, 2019. Assistant Professor of Chemistry

Westbrook, Robert A., 1989. William Alexander Kirkland Professor of Marketing
AB (1969), MBA (1971), PhD (1975) University of Michigan

Weston, James P., 2000. Harmon Whittington Professor in Finance

Wettergreen, Matthew, 2009. Associate Teaching Professor, Oshman Engineering Design Kitchen
BS (2001) University of Illinois at Chicago; PhD (2008) Rice University

White, Frank S., 1982. Lecturer of Architecture
BS (1977) Rochester Institute of Technology

Whitehead, Kerry, 2001. Lecturer of Architecture

Whitford, Sheila, 2013. Lecturer of Education
BA (1970) Texas Woman's University; MBA (1983) University of Houston, Clear Lake

Whitmire, Kenton H., 1982. Associate Dean of the Wiess School of Natural Sciences, Professor of Chemistry

Whitmore, Mihriban, 1999. Adjunct Assistant Professor of Psychological Sciences

Whitson, Peggy, 1997. Adjunct Associate Professor of BioSciences
BS (1981) Iowa Wesleyan College; PhD (1986) Rice University

Wickham, Hadley, 2017. Adjunct Professor of Statistics

Wildenthal, Lora, 2003. John Antony Weir Professor of History

Wilson, Jennifer S., 2012. Senior Lecturer and Director of the Program in Writing and Communication

Wilson, Lon J., 1973. Professor of Chemistry
BA (1966) Iowa State University; PhD (1971) University of Washington—Seattle

Wilson, Patrick "Burke", 2015. Lecturer of Kinesiology
BA (2003) Texas A&M University; DPT (2012) UT Southwestern Medical Center

Wilson, Rick K., 1983. Herbert S. Autrey Professor of Political Science, Professor of Statistics and of Psychological Sciences
BA (1975), MA (1977) Creighton University; PhD (1982) Indiana University

Windsor, Duane, 1977. Lynette S. Autrey Professor of Management
BA (1969) Rice University; AM (1973), PhD (1978) Harvard University

Winer, Rachel T., 2004. Adjunct Assistant Professor of Psychological Sciences
Winkler, Kathleen. 1992. Dorothy Richard Starling Chair of Classical Violin
BMus (1972) Indiana University; MMus (1974) University of Michigan

Winningham, Geoffrey L., 1969. Lynette S. Autrey Professor of
Humanities, Professor of Visual and Dramatic Arts
BA (1965) Rice University; MS (1968) Illinois Institute of Technology

Witte, Ron. 2010. Adjunct Professor of Architecture
Princeton University

Wittenberg, Gordon G., Jr., 1979. Professor of Architecture
BFA (1968) Trinity College, Connecticut; MArch (1972) Washington University

Woffinden, David. 2015. Adjunct Professor of Mechanical Engineering

Wolf, Michael. 1988. Professor of Mathematics
BS (1981) Yale University; PhD (1986) Stanford University

Wolf, Cary E. 2003. Bruce and Elizabeth Dunlevie Professor of English

Wolfthal, Diane. 2008. David and Caroline Minter Professor of Humanities, Professor of Art History

Wolpin, Kenneth. 2014. Lay Family Chair in Economics and Distinguished Research Professor
BS (1967) City College of New York; PhD (1974) Graduate School of the City University of New York

Wolynes, Peter G. 2011. D.R.Bullard-Welch Foundation Professor of Science, Professor of Chemistry, BioSciences, and Physics and Astronomy, Co-Director of Center for Theoretical Biological Physics
AB (1971) Indiana University; AM (1972) Harvard University; PhD (1976) Harvard University

Wong, Michael S. 2001. Professor of Chemical and Biomolecular Engineering, Chemistry, and Materials Science and NanoEngineering, Civil and Environmental Engineering, Department Chair of Chemical and Biomolecular Engineering

Wong, Stephen B. 2001. Lecturer of Computer Science

Wood, Philip R. 1990. Associate Professor of French

Woods, Gary L. 2008. Professor in the Practice of Computer Technology and Electrical and Computer Engineering

Wool, Zoë. 2015. Assistant Professor of Anthropology

Yekovich, Robert A. 2003. Dean of the Shepherd School of Music, Elma Schneider Professor of Music

Yepes, Pablo P. 1994. Associate Research Professor of Physics and Astronomy
BS (1982), MS (1983), PhD (1988) University of Santiago de Compostela

Yeung, Laurence. 2015. Assistant Professor of Earth, Environmental and Planetary Sciences
Emeritus Faculty

BA (1953) Willamette University; MA (1954) Stanford University; Certificat d'études politiques (1955) University of Bordeaux; PhD (1964) University of California–Berkeley

Anders, John F., 1982–91. Professor Emeritus of Environmental Science and Engineering
BSCE (1951), MS (1954) University of Arkansas; PhD (1964) University of California–Berkeley

BA (1963) University of Michigan; MA (1965) Stanford University; PhD (1970) University of Michigan

BS (1968) University of South Alabama; MS (1970) University of New Mexico; PhD (1972) Florida State University

Licence es lettres (1967) Université de Montpellier, France; PhD (1975) University of Washington

Armeniades, Constantine D., 1969–2006. Professor Emeritus of Chemical and Biomolecular Engineering


Yi, Ming, 2018. Assistant Professor of Physics and Astronomy
BS (2007) Massachusetts Institute of Technology; PhD (2014) Stanford University

Yost, Julianne M., 2011. Wiess Instructor of Chemistry

Yu, Lam, 2012. Wiess Instructor of Physics and Astronomy

Yuan, Ying, 2010. Adjunct Professor of Statistics
BS (1995) Huazhong University of Science and Technology, China; MA, MS (2000) Brandeis University; PhD (2005) University of Michigan


Zavyalova, Anastasiya, 2012. Associate Professor of Strategic Management
BS (2006) Methodist University; PhD (2012) University of Maryland, College Park

Zeff, Stephen A., 1978. Keith Anderson Professor of Accounting
BS (1955), MS (1957) University of Colorado; MBA (1960), PhD (1962) University of Michigan; Dr. Econ. (Hon.) (1990) Turku School of Economics and Business Administration, Finland; DLitt (Hon.) (2010) University of Waterloo, Canada; Dr. Econ. Mgmt Sci (Hon.) (2011) Universidad de Alcalá, Spain

BS (1984) University of Victoria; PhD (1989) University of British Columbia

Zhang, David, 2013. Associate Professor of Bioengineering

Zhang, Yan Anthea, 2001. Fayez Sarofim Vanguard Professor of Management
BA (1992), MA (1995) Nanjing University; MA (1997) City University of Hong Kong; PhD (2001) University of Southern California

Zhang, Yin, 1996. Professor of Computational and Applied Mathematics

Zhong, Lin, 2005. Professor of Electrical and Computer Engineering and of Computer Science

Zhou, Jing, 2003. Mary Gibbs Jones Professor of Management, Director for Asian Management Research and Education

Zhu, Hanyu, 2018. Assistant Professor of Materials Science and NanoEngineering
BS (1961) Northeastern University; MS (1967) Case Institute of Technology; PhD (1969) Case Western Reserve University


Bally, Albert W., 1981–96. Harry Carothers Wiess Professor Emeritus of Geology PhD (1953) University of Zurich, Switzerland

Barron, Andrew R., 2019-2020. Associate Professor Emeritus of Electrical and Computer Engineering, Research Professor

Ba (1957), BSEE (1958), Rice Institute; MS (1960) Rice University; PhD (1965) Stanford University

Bally, Albert W., 1981–96. Harry Carothers Wiess Professor Emeritus of Geology PhD (1953) University of Zurich, Switzerland

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Bally, Albert W., 1981–96. Harry Carothers Wiess Professor Emeritus of Geology PhD (1953) University of Zurich, Switzerland

Barron, Andrew R., 2019-2020. Associate Professor Emeritus of Electrical and Computer Engineering, Research Professor

Ba (1957), BSEE (1958), Rice Institute; MS (1960) Rice University; PhD (1965) Stanford University
Dufour, Reginald J. BA (1961) University of Texas at Austin; PhD (1965) Cornell University


Etnyre, Bruce, 1984. Professor Emeritus of Kinesiology BS (1973) Valparaiso University; MS (1977) Purdue University; PhD (1984) University of Texas–Austin


Hempel, John, 1964-2013. Milton B. Porter Professor of Mathematics BS (1957) University of Utah; MS (1959), PhD (1962) University of Wisconsin at Madison

Heymann, Dieter, 1966–98. Professor Emeritus of Geology and Geophysics, Adjunct Professor of Chemistry MS (1954), PhD (1957) University of Amsterdam, The Netherlands

Hirasaki, George J., 1989 - 2013. A. J. Hartsook Professor Emeritus of Chemical and Biomolecular Engineering BS (1963) Lamar University; PhD (1967) Rice University

BS (1973), MA (1975) Brigham Young University; PhD (1984) University of California–Irvine

Huddle, Donald L., 1964–92. Professor Emeritus of Economics
BS (1959), MA (1960) University of California–Los Angeles; PhD (1964) Vanderbilt University

BA (1961) Wesleyan University; MA (1964), PhD (1966) Yale University

BS (1973) University of Dayton; MEd (1975) University of Toledo; PhD (1978) Ohio State University


BA (1957) Millsaps College; MA (1958), PhD (1960) Eastman School of Music, University of Rochester

BS (1960), MS (1962) University of Cincinnati; MS (1965), PhD (1968) University of Michigan

BS (1966) City College of New York; PhD (1971) University of Kansas; PhD (1978) Johns Hopkins University

Kauffmann, Robert Lane, 1976–2015. Professor Emeritus of Spanish

Kaun, Kathleen, 1998–2013. Lynette S. Autrey Professor Emerita of Voice
BM (1966) Indiana University; MM (1970) University of Texas–Austin

Kecht, Maria-Regina, 1997–2010. Associate Professor Emerita of German Studies
Teacher’s Diploma (1978) Pushkin Institute, Moscow State University; MA (1979) University of Illinois–Urbana-Champaign; PhD (1982) Innsbruck University

Keeton, Darra, 1994-2012. Professor Emerita of Visual Arts
BFA (1974) Miami University, Ohio; MFA (1979) Queens College, New York


Kiperman, Anita, 1976–98. Lecturer Emerita of Spanish
BA (1957) Universidad Nacional de Buenos Aires; MA (1971) University of Houston

Klineberg, Stephen L., 1972-2018. Professor Emeritus of Sociology


BS (1963), Providence College; PhD (1968) University of Wisconsin

Kulstad, Mark, 1975–2015. Professor Emeritus of Philosophy
BA (1969) Macalester College; PhD (1975) University of Michigan

BA (1951) Yale University; PhD (1958) University of California–Berkeley

Lane, Neal F., 1996–2014. Malcolm Gillis University Professor Emeritus, Professor Emeritus of Physics and Astronomy
BS (1960), MS (1962), PhD (1964) University of Oklahoma

BS (1962) North Texas State University; MEd (1967) Sam Houston State University; EdD (1974) Louisiana State University

Leeds, J. Venn, Jr., 1964–89. Professor Emeritus of Electrical and Computer Engineering
BA (1955), BSEE (1956) Rice Institute; MSEE (1960), PhD (1963) University of Pittsburgh; JD (1972) University of Houston


Long, Elizabeth, 1978–2014. Professor Emerita of Sociology, Department Chair of Sociology, Associate of Baker College
BA (1966) Stanford University; MA (1974), PhD (1979) Brandeis University

Lüttge, Andreas, 1999-2013. Professor Emeritus of Earth, Environmental and Planetary Sciences, Professor Emeritus of Chemistry, Associate of Rice College

Marcus, George E., 1975–2006. Professor Emeritus of Anthropology
BA (1968) Yale University; PhD (1976) Harvard University


Matusow, Allen J., 1963–2015. William Gaines Twyman Professor Emeritus of History, Associate Director Emeritus for Academic Programs of the James A. Baker III Institute for Public Policy; Research Professor in History
BA (1958) Ursinus College; MA (1959), PhD (1963) Harvard University

BA (1963) University of Cincinnati; MA (1965) University of Washington; MA (1968) University of Cincinnati

McIntosh, Roderick J., 1980. Professor Emeritus of Anthropology
BA (1973) Yale University; MLITT (1975), PhD (1979) Trinity College, University of Cambridge

BMet (1957) Sheffield University; PhD (1962) Leeds University

McLendon, George, 2010-2016. Professor Emeritus of Chemistry
BS (1972) University of Texas–El Paso; PhD (1976) Texas A&M University

Kulstad, Mark, 1975–2015. Professor Emeritus of Philosophy
BA (1969) Macalester College; PhD (1975) University of Michigan

BA (1951) Yale University; PhD (1958) University of California–Berkeley

Lane, Neal F., 1996–2014. Malcolm Gillis University Professor Emeritus, Professor Emeritus of Physics and Astronomy
BS (1960), MS (1962), PhD (1964) University of Oklahoma

BS (1962) North Texas State University; MEd (1967) Sam Houston State University; EdD (1974) Louisiana State University

Leeds, J. Venn, Jr., 1964–89. Professor Emeritus of Electrical and Computer Engineering
BA (1955), BSEE (1956) Rice Institute; MSEE (1960), PhD (1963) University of Pittsburgh; JD (1972) University of Houston


Marcus, George E., 1975–2006. Professor Emeritus of Anthropology
BA (1968) Yale University; PhD (1976) Harvard University


Matusow, Allen J., 1963–2015. William Gaines Twyman Professor Emeritus of History, Associate Director Emeritus for Academic Programs of the James A. Baker III Institute for Public Policy; Research Professor in History
BA (1958) Ursinus College; MA (1959), PhD (1963) Harvard University

BA (1963) University of Cincinnati; MA (1965) University of Washington; MA (1968) University of Cincinnati

McIntosh, Roderick J., 1980. Professor Emeritus of Anthropology
BA (1973) Yale University; MLITT (1975), PhD (1979) Trinity College, University of Cambridge

BMet (1957) Sheffield University; PhD (1962) Leeds University

McLendon, George, 2010-2016. Professor Emeritus of Chemistry
BS (1972) University of Texas–El Paso; PhD (1976) Texas A&M University
BS (1957), MA (1959) McGill University; PhD (1963) Johns Hopkins University


BA, BS (1961) Rice University; PhD (1969) University of Minnesota

BA (1969) Yale University; PhD (1976) University of Minnesota

BA (1970) North Dakota State University; MA (1975), PhD (1975) University of Kentucky

BA (1966), MBA (1968), PhD (1971) University of Texas—Austin

BS (1957), MS (1958) University of Michigan; PhD (1962) University of California—Berkeley

ODell, Charles Robert, 1982–2000. Andrew Hays Buchanan Professor Emeritus of Astrophysics
BSED (1959) Illinois State University; PhD (1962) University of Wisconsin—Madison

Olson, John Steven, 1973-2018. Ralph and Dorothy Looney Professor Emeritus of Biochemistry and Cell Biology
BS (1968) University of Illinois; PhD (1972) Cornell University

BS (1957), PhD (1962) University of Sheffield

BA (1964) Occidental College; PhD (1968) Brandeis University

Patten, Robert L., 1969–2012. Lynette S. Autry Professor Emeritus in Humanities, Professor Emeritus of English
BA (1960) Swarthmore College; MA (1962), PhD (1965) Princeton University

BSEE (1958), MSEE (1959) University of Arkansas; PhD (1962) Purdue University

Philpott, Charles William, 1964–96. Professor Emeritus of Ecology and Evolutionary Biology
BA (1957), MS (1958) Texas Technological College; PhD (1962) Tulane University

BS (1956) University of Notre Dame; MS (1961), PhD (1966) University of Chicago

BFA (1965) Atlanta School of Art; MFA (1968) Tulane University

BA (1976) University of Illinois; PhD (1982) University of Michigan

Rachford, Henry H., Jr., 1964–82. Professor Emeritus of Mathematical Sciences
BS (1945), MA (1947) Rice Institute; ScD (1950) Massachusetts Institute of Technology

Rau, Carl, 1983. Professor Emeritus of Physics and Astronomy
BS (1963), MS (1967), PhD (1970) Technical University, Munich

BA (1954) New York University; MA (1964) University of Houston; PhD (1970) University of Texas–Austin

BA (1966), MA (1968), PhD (1972) University of California–Davis

BA (1954) Augustana College; PhD (1957) University of Southern California

BA (1962) Wabash College; PhD (1966) Stanford University

BA (1958) Rosary College; MMus (1960), PhD (1966) University of Illinois

Seed, Patricia, 1982–2006. Professor Emerita of History
BA (1971) Fordham University; MA (1975) University of Texas–Austin; PhD (1980) University of Wisconsin—Madison

BFA (1969) San Francisco Art Institute; MA (1972) Hunter College

BA (1958) University of British Columbia; PhD (1964) Yale University

Sorensen, Danny C., 1989-2016. Noah Harding Professor Emeritus of Computational and Applied Mathematics and Research Professor
BS (1972) University of California—Davis; MA (1975), PhD (1977) University of California—San Diego

Spence, Dale W., 1963. Professor Emeritus of Kinesiology
BS (1956) Rice Institute; MS (1959) North Texas State University; EdD (1966) Louisiana State University

Speziale, Marie, 2002–2013. Professor Emerita of Trumpet
BM (1964) College Conservatory of Music, University of Cincinnati

Spuler, Richard, 1992-2013. Senior Lecturer Emeritus of German
Stebbing, Ronald F., 1968–95. Professor Emeritus of Space Physics and Astronomy
BSc (1952), PhD (1956) University College, London

BA (1976) Cambridge University; PhD (1979) Imperial College

Strassmann, Joan, 1980–2011. Professor Emerita of BioSciences
BS (1974) University of Michigan; Ph.D. (1979) University of Texas–Austin

Stormer, John C., Jr., 1983–95. Croneis Professor Emeritus of Geology
AB (1963) Dartmouth College; PhD (1971) University of California–Berkeley

BA (1949) Hobart College; MA (1952), PhD (1955) University of Missouri

BA (1971) University of California–Berkeley; PhD (1975) Harvard University

BScHons (1951), MSc (1953) Delhi University; PhD (1959) Columbia University; PhD (Honoris Causa) (1981) Oslo University

BA (1966) Harvard University; Diploma (1969), PhD (1973) Oxford University

BA (1960) Westminster College; MA (1964) University of Nebraska; PhD (1970) University of Minnesota

Thompson, Ewa M., 1970–2012. Professor Emerita of Slavic Studies
BA (1963) University of Warsaw; MFA (1963) Sopot Conservatory of Music, Poland; PhD (1967) Vanderbilt University

BA (1955), MA, PhD (1959) Oxford University

BA (1957) Simpson College; MA (1962), PhD (1964) Stanford University

BA (1968), MBA (1970), PhD (1973) University of Texas–Austin

Profesorado (1956) La Plata National University, Argentina; PhD (1968) Stanford University

AB (1952) Dartmouth College; MS (1953), PhD (1959) Northwestern University

BEng (1962), MS (1964) Stevens Institute of Technology; MA (1967) University of Michigan; PhD (1970) University of London

BS (1948) Robert College, Turkey; MS (1950), PhD (1953) University of Illinois

BA (1963) Bryn Mawr; MA (1965), PhD (1967) Stanford University

Wang, Chao-Cheng, 1968–2000. Noah Harding Professor Emeritus of Computational and Applied Mathematics, Associate Professor of Mechanical Engineering and Materials Science
BS (1959) National Taiwan University; PhD (1965) Johns Hopkins University

BS (1955) New Mexico State University; MS (1958), PhD (1960) Cornell University; MPH (1978) University of Texas School of Public Health

BA (1962) Rice University; MS (1964), PhD (1965) New York University

BA (1962) Brandeis University; MA (1963), PhD (1967) Harvard University

BS (1966) University of Pennsylvania; PhD (1968) University of Texas–Austin

Winkler, Michael, 1967–2000. Professor Emeritus of German Studies
BA (1961) St. Benedict's College; MA (1963), PhD (1966) University of Colorado

BEngPhys (1962) Cornell University; PhD (1966) California Institute of Technology

BA (1968) East Texas State University; MA (1970) University of Texas–Arlington

Young, James, 1990–2016. Professor Emeritus of Electrical and Computer Engineering
BS (1965), MS (1966) Massachusetts Institute of Technology; PhD (1970) Stanford University

BA (1951), MA (1954) University of Minnesota; PhD (1965) Carnegie Institute of Technology
**IMPORTANT NOTICES**

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**Accreditation**

Rice University is accredited by the Southern Association of Colleges and Schools Commission on Colleges to award baccalaureate, masters, and doctorate degrees. Please contact the Commission on Colleges at 1866 Southern Lane, Decatur, Georgia 30033-4097 (http://www.sacscoc.org/) or call 404-679-4500 for questions about the accreditation of Rice University or allegations of significant non-compliance with a requirement or standard. All other inquiries should be addressed directly to the appropriate office at Rice University.

**Complaints Process**

**Rice University’s Student Complaint Process (compliant with DOE “Program Integrity” Regulations)**

The Texas Higher Education Coordinating Board (THECB) and the Texas Administrative Code (19 TAC § 1.110-1.120) require Rice University – and all other Texas universities – to provide a student complaint procedure that complies with the U.S. Department of Education’s “Program Integrity” regulations as part of the university’s eligibility for Title IV federal funds.

The required complaint process must inform current, former, or prospective students who have exhausted Rice’s own grievance, complaint, or appeal processes how to initiate a complaint outside of Rice with THECB. The THECB’s procedures for such complaints are found here (http://www.thecb.state.tx.us/index.cfm?objectid=989FE9A0-2213-11E8-BC500050560100A9/). Students wishing to use this outside process should ensure they have first addressed their complaint to the appropriate Rice University complaint process. If Rice is unable to resolve the matter after the student has exhausted internal complaint and appeal processes, the student may then file a complaint with THECB according to the following:

Students may pursue a complaint with the THECB by submitting the required forms along with: (i) proof of completion of Rice’s complaint procedures, (ii) the ultimate outcome of the procedures, and (iii) evidence to support the complaint. The forms required by all students pursuing a complaint include: THECB Student Complaint Form, FERPA Consent and Release Form, and THECB Consent and Agreement Form. A student may also wish to consult the THECB’s webpage for a listing of issues or concerns that the THECB does not investigate.

THECB Student Complaint and Authorization Forms are available for download in one combined document here (http://www.thecb.state.tx.us/reports/PDF/8616.PDF?CFID=74916598&CFTOKEN=32269308). The required documentation can be submitted in one of three ways: online, by email, or by regular mail.

To submit a student complaint online, click here (https://www1.thecb.state.tx.us/Apps/CRAFT/Home/Create/). Under Contact Reason, select Student Complaint Against a Higher Education Institution. Once you click Submit, wait for an online student complaint form to appear. Note that complaints regarding students with disabilities must also submit a signed Authorization to Disclose Medical Record Information (http://www.thecb.state.tx.us/reports/PDF/9410.PDF?CFID=74952659&CFTOKEN=43285230) form.

Alternatively, students can send the required forms and supporting documentation in a PDF by email to studentcomplaints@thecb.state.tx.us, or by regular mail to the Texas Higher Education Coordinating Board, Office of General Counsel, PO. Box 12788, Austin, TX 78711-2788. Original documents should not be submitted, as the THECB cannot return documents received.

1. Complainants should understand that the THECB does not handle, investigate, or attempt to resolve complaints concerning actions that occurred more than two years prior to the filing of a student complaint form with the THECB (unless the delay in filing the THECB complaint was caused by the complainant exhausting Rice’s grievance procedures). The THECB also does not handle the various types of complaints listed in 19 TAC § 1.113.

2. Former students must file a complaint with the THECB no later than one year after the student’s last date of attendance at Rice, or within 6 months of discovering the grounds for complaint, unless the delay in filing the THECB complaint was caused by the complainant exhausting Rice’s grievance procedures.

3. The THECB may refer complaints alleging that Rice has violated state consumer protection laws to the Consumer Protection Division of the Office of the Attorney General of Texas for investigation and resolution. If THECB determines that a complaint is appropriate for investigation and resolution by Rice’s accrediting agency (SACSCOC – the Southern Associations of Colleges and Schools Commission on Colleges) or an educational association such as ICUT (Independent Colleges & Universities of Texas), the THECB may refer the complaint to the appropriate entity and may terminate the referral of the complaint to those entities at any time and proceed to investigate and adjudicate the complaint.

4. If a person wishes to file a complaint against Rice through the university’s accrediting agency, SACSCOC, that agency’s complaint process can be found here (http://www.sacscoc.org/pdf/081705/complaintpolicy.pdf). A complainant should complete SACSCOC’s Complaint Form and send two signed copies to the President, Southern Association of Colleges and Schools Commission on Colleges, 1866 Southern Lane, Decatur, GA 30033-4097. The details of the agency’s complaint process explain that it is intended to address significant, documented, alleged non-compliance with SACSCOC accreditation standards, policies, or procedures. Complainants are expected to have attempted to resolve the issue through Rice’s complaint processes before filing a complaint with SACSCOC.

5. If the complaint concerns compliance with statutes or regulations administered by the THECB and the complaint has not been referred to another entity, the THECB will initiate an investigation. The student must provide documentation that all Rice grievance, complaint, or appeal procedures have been exhausted.
6. The THECB, as part of its investigation, will request a Rice response, and may also contact other persons or entities named in the complaint or in Rice's response, in order to ascertain relevant facts. The THECB will also, where appropriate, attempt to facilitate an informal resolution acceptable to both the student and Rice. When this is not feasible, the THECB will evaluate investigation results and recommend action by the Commissioner of the THECB, who after considering any recommendations will render a written determination dismissing the complaint or requiring Rice to take specific actions to remedy the complaint. The Commissioner may also request the THECB to review and decide issues regarding institutional integrity.

**Disclaimer**

This publication represents the most accurate information available at the time of its posting. The university reserves the right, in its discretion, to correct or otherwise change any information without notice. The information contained in this publication is not intended to, and does not, confer any contractual rights on any individual. Regarding course offerings, the departments have attempted to anticipate which courses will be offered and by whom and when. However, course offerings may be affected by various factors, including changes in faculty, student demand, and funding. Although efforts have been made to indicate these uncertainties, course offerings are subject to change without notice.

**Ethical Concerns**

Rice University pursues excellence at all levels and strives to practice the highest standards of ethical conduct. Rice students are encouraged, as are all community members, to communicate ethical concerns or questions to officials in their schools or departments, to the dean of undergraduates, or to the dean of graduate and postdoctoral studies. They may also contact the offices of Human Resources, Internal Audit, General Counsel, Equal Employment Opportunity Programs/Affirmative Action, or Risk Management, all of which are listed in the university directory and on its website.

The University also provides an ethics reporting mechanism through the EthicsPoint website (a third-party agent) that allows students and other community members to report activities that may involve potential criminal conduct, ethical breaches, or violations of university policies. (Go to [https://www.rice.edu/ethics](https://www.rice.edu/ethics/).) Persons making reports through EthicsPoint may elect not to provide their names when making a complaint or raising a concern. Rice treats the investigation of any report as a confidential matter. Reports submitted to EthicsPoint are forwarded to the proper university officials for appropriate action. No person will be subjected to retaliation or reprisal who, in good faith, makes a report or inquiry, or who seeks guidance on dealing with potential or suspected improper behavior.

**Equal Opportunity Notice**

Rice University is committed to equal opportunity in education and employment. It is the policy of Rice University to attract qualified individuals of diverse backgrounds to its faculty, staff, and student body. Rice University does not discriminate against any individual on the basis of race, color, religion, sex, sexual orientation, gender identity, national or ethnic origin, ancestry, age, genetic information, disability, or veteran status in its admissions, educational programs, or employment. In employment, the university seeks to recruit, hire, and advance qualified candidates, including women, members of underrepresented minority groups, individuals with disabilities, and protected classes of military veterans specified by law.
Family Educational Rights and Privacy Act (FERPA)

Notification of Rights under the Family Educational Rights and Privacy Act (FERPA)

The Family Educational Rights and Privacy Act (FERPA) is a federal law that protects the privacy of, and limits access to, student education records. The law affords students the following rights with respect to their education records:

1. the right to inspect and review the student's education records within 45 days after the date Rice University (‘Rice’) receives a request for access;
2. the right to seek amendment of the student’s education records that the student believes are inaccurate, misleading, or otherwise in violation of the student’s privacy rights under FERPA;
3. the right to provide written consent to disclosures of personally identifiable information ('PII,' as defined by law) contained in the student’s education records, except to the extent FERPA authorizes disclosure without consent;
4. the right to file a complaint with the U.S. Department of Education concerning alleged failures by Rice to comply with the requirements of FERPA. The name and address of the federal office that administers FERPA is:

   Family Policy Compliance Office  
   U.S. Department of Education  
   400 Maryland Ave., S.W.  
   Washington, DC 20202

Inspect and Review Records

A student should make written request to any offices that maintain student education records, identifying the record(s) the student wishes to inspect. Though not exhaustive, as a guide for students, this is a list of the primary offices that maintain student education records: Office of the Registrar, Office of the Dean of Undergraduates, Office of Graduate and Postdoctoral Studies, Office of Student Judicial Programs, Office of Admission, Office of Financial Aid, Center for Career Development, Office of Student Activities, Office of Academic Advising, Office of International Students and Scholars, Cashier’s Office, and departmental offices. The appropriate Rice official will make arrangements for access and notify the student of the time and place where the records may be inspected. If the records are not maintained by the Rice official to whom the request is submitted, that Rice official will advise the student of the correct official to whom the request should be addressed.

Amendment of Records

Any questions, problems, or written requests for amendment of records should be submitted to the Office of the Registrar. A student requesting to amend a record should clearly identify the part of the record the student wants changed and specify why it should be changed. If Rice decides not to amend the record as requested, Rice will notify the student in writing of the decision and of the student’s right to a hearing regarding the request for amendment. Additional information regarding the hearing procedures will be provided to the student when the student is notified of the right to a hearing.

Disclosure of Information

As permitted by FERPA, Rice reserves the right to publish or release the following directory information without prior consent:

1. Name; permanent, local, mailing, and campus address; residential college affiliation; telephone and mobile number(s); campus email address(es); and Net ID
2. Date and place of birth
3. Classification, degrees or programs, and majors and minors
4. Participation in officially recognized activities and sports
5. Weight and height of members of athletic teams
6. Dates of attendance, degrees, honors, and awards received
7. The most recent previous educational agency or institution attended by the student
8. Photograph

Students who would like Rice to withhold this directory information may do so by logging in to ESTHER, clicking Personal Information, clicking Release or Withhold Directory Information, and indicating that the information should be withheld. Thereafter, Rice will withhold access to, and release of, the student's directory information until further written instruction is received from the student. For more information regarding FERPA, please visit the U.S. Department of Education's website (https://www2.ed.gov/policy/gen/guid/fpco/ferpa/).

FERPA permits the disclosure of PII from students’ education records, without consent of the student, if the disclosure meets certain conditions found in 34 C.F.R. §99.31 of the FERPA regulations. Except for disclosures to school officials, disclosures related to some judicial orders or lawfully issued subpoenas, disclosures of directory information, and disclosures to the student, Section 99.32 of the FERPA regulations requires the institution to record the disclosure. Eligible students have a right to inspect and review the record of disclosures. A postsecondary institution may disclose PII from the education records without obtaining prior written consent of the student –

- To other school officials, within Rice whom Rice has determined have legitimate educational interests and require this information in order to perform instructional, supervisory, advisory, administrative, or other duties for Rice. These school officials include faculty, research personnel, staff (including law enforcement unit personnel and health staff), trustees, or students serving on official committees (such as disciplinary or grievance committees) or assisting another school official. A school official has a legitimate educational interest if the official needs to review an educational record in order to fulfill his or her professional responsibility to Rice. This includes contractors, consultants, auditors, attorneys, collection agents, volunteers, or other parties to whom Rice has outsourced institutional services or functions, provided that the conditions listed in §99.31(a)(1)(i)(B)(1) - (a)(1)(i)(B)(3) are met. (§99.31(a)(1))
- To officials of another school where the student seeks or intends to enroll, or where the student is already enrolled if the disclosure is for purposes related to the student’s enrollment or transfer, subject to the requirements of §99.34. (§99.31(a)(2))
- To authorized representatives of the U.S. Comptroller General, the U.S. Attorney General, the U.S. Secretary of Education, or State and local educational authorities, such as a State postsecondary authority that is responsible for supervising the university’s State-supported education programs. Disclosures under this provision may be made, subject to the requirements of §99.35, in connection with an audit or evaluation of Federal- or State-supported education
programs, or for the enforcement of, or compliance with, Federal legal requirements that relate to those programs. These entities may make further disclosures of PII to outside entities that are designated by them as their authorized representatives to conduct any audit, evaluation, or enforcement or compliance activity on their behalf. (§§99.31(a)(3) and 99.35)

- In connection with financial aid for which the student has applied or which the student has received, if the information is necessary to determine eligibility for the aid, determine the amount of the aid, determine the conditions of the aid, or enforce the terms and conditions of the aid. (§99.31(a)(4))

- To organizations conducting studies for, or on behalf of, the school, in order to: (a) develop, validate, or administer predictive tests; (b) administer student aid programs; or (c) improve instruction. (§99.31(a)(6))

- To accrediting organizations to carry out their accrediting functions. (§99.31(a)(7))

- To parents of an eligible student if the student is a dependent for IRS tax purposes, though Rice limits such information to financial details of the student’s enrollment. (§99.31(a)(8))

- To comply with a judicial order or lawfully issued subpoena. (§99.31(a)(9))

- To appropriate officials in connection with a health or safety emergency, subject to §99.36. (§99.31(a)(10))

- Information the school has designated as "directory information” above and pursuant to §99.37. (§99.31(a)(11))

- To a victim of an alleged perpetrator of a crime of violence or a non-forcible sex offense, subject to the requirements of §99.39. The disclosure may only include the final results of the disciplinary proceeding with respect to that alleged crime or offense, regardless of the finding. (§99.31(a)(13))

- To the general public, the final results of a disciplinary proceeding, subject to the requirements of §99.39, if the school determines the student is an alleged perpetrator of a crime of violence or non-forcible sex offense and the student has committed a violation of the school's rules or policies with respect to the allegation made against him or her. (§99.31(a)(14))

- To parents of a student regarding the student’s violation of any Federal, State, or local law, or of any rule or policy of the school, governing the use or possession of alcohol or a controlled substance if the school determines the student committed a disciplinary violation and the student is under the age of 21. (§99.31(a)(15))

For further information regarding Rice's policy on student education records, please contact the Office of the Registrar.

Rice University
Office of the Registrar–MS 57
6100 Main Street
Houston, TX 77005-1892
Email: registrar@rice.edu

Rice University Privacy Notice

Additionally, you may also wish to consult privacy rights and practices discussed at https://privacy.rice.edu/ and https://privacy.rice.edu/GDPR (https://privacy.rice.edu/GDPR/).
Message from the President

Rice University prides itself on our contributions to our world, the excellence of our teaching and research, and our distinctive and supportive culture. Now six years into our second century, Rice University has changed a tremendous amount since 59 students and 12 faculty members participated in the first matriculation in the early fall of 1912. We have remained true to our founding ideals and ambitions, building over the course of a century one of the great universities of America. Rice’s mission and aspirations are captured in our mission statement:

As a leading research university with a distinctive commitment to undergraduate education, Rice University aspires to pathbreaking research, unsurpassed teaching, and contributions to the betterment of our world. It seeks to fulfill this mission by cultivating a diverse community of learning and discovery that produces leaders across the spectrum of human endeavor.

We are indeed an unusual university. We are among the renowned research universities of the world. Despite our comparatively small size, we are committed to a wide spectrum of endeavors ranging across our eight schools and many inter-disciplinary institutes and centers. Our success is built on the contributions of every part of our community: graduate and undergraduate students, faculty and staff, alumni and other supporters across our city and around the world.

We strive to be bold in our aspirations and entrepreneurial in our approach. We seek to make a distinctive contribution to our home city of Houston while achieving a global impact through education, research, and service. We are committed to enriching understanding, creating opportunity, discovering knowledge, and improving our world. Reflecting these ambitions, we have recently adopted a new strategic plan, the “V2C2”, which you can learn more about at https://v2c2.rice.edu/.

The General Announcements of the University sets forth the immense array of opportunities for our students, as well as the rules and policies which govern their participation as students in the university. But we demand more of each other than just adherence to rules and policies. We expect that all members of our community will be guided in all their endeavors by the core Rice values: Responsibility, Integrity, Community and Excellence. These values are just as important as the academic offerings and rules included in these announcements. If you have questions about how rules and policies may apply to you, we urge you to seek advice from one of the many sources available to you.

We take great pride in the diversity of our community in every aspect, even while recognizing we must continue the work of building a more diverse community across the university. Our success requires thoughtfulness and respect in every interaction on our campus, whether with members of the Rice community or the visitors we welcome. Each of us has a role to play in helping to assure access and inclusion for all members of our community. Our “culture of care” demands not only that we not cause harm to others, but also that we look out for each other and provide or seek help when needed.

We are pleased that you have chosen to become a part of this dynamic university as it embarks on its second century of excellence and achievement. On behalf of our faculty and staff, I wish you every success as you pursue your educational endeavors. We take pride in the special community of Rice, and look forward to working with you as you seize the opportunities of Rice to achieve your aspirations and dreams.

David W. Leebron
POLICIES

• Undergraduate Academic Policies and Procedures (p. 18)
• Graduate Academic Policies and Procedures (p. 55)
• Student Handbook (https://dou.rice.edu/student-resources/)
• Faculty Handbook (https://fachandbook.rice.edu/)
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